T.R.
PRIME MINISTRY
STATE PLANNING ORGANIZATION
UNDERSECRETARIAT

EASTERN ANATOLIA PROJECT MASTER PLAN

MASTER PLAN

PREPARED BY

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CONTENTS

TABLES

FIGURES

GRAPHS

ABBREVIATIONS MASTER PLAN

APK	Research, Planning and Coordination
BOT	Build-Operate-Transfer
BOTAŞ	Petroleum Pipeline Corporation Inc.
EAP	Eastern Anatolia Project
EDA	Economic Development Agency
EBSP	East Black Sea Project
EIA	Environmental Impact Assessment
MPCC	Multi-Purpose Community Centers
SSCPO	Social Services and Child Protection Organization
EAR	Eastern Anatolia Region
GDP	Gross Domestic Product
GNP	Gross National Product
HEB	Higher Education Board
HUNEE	Haccettepe University Population Studies Institute
FYDP	Five Year Development Plan
ISE	Istanbul Stock Exchange
KOSGEB	Administration for Developing Small and Medium Size Enterprises
M.K.E	Machinery and Chemical Industries
MNC	Multi-National Corporations
MNE	Ministry of National Education
MPHS	Multi-Program High School
MPSC	Multi-Purpose Society Centers
MTA	Mineral Research and Exploration
NGO	Non-Governmental Organization
OIZ	Organized Industrial Zones
ORKOY	General Directorate of Forest-Village Affairs
RPBS	Regional Primary Boarding School
RTÜK	Radio and television High Council
SAP	Southeastern Anatolia Region
SHW	State Hydraulic Works
SIS	State Institute of Statistics
SMEs	Small and Medium Size Enterprises
SPO	State Planning Organization
SSK	Social Security Institution
TCDD	General Directorate of Turkish State Railways
TÇV	Turkish Environment Foundation
TEDA	Turkish Electricity Distribution Agency
TEK	Turkish Electricity Agency
TKB	Development Bank of Turkey
TMMOB	Turkish Union of Chambers of Engineers and Architecture
TOBB	Chambers of Commerce, Industry, Maritime Trade and Commodity Exchanges of Turkey
TODAİE	Institute of Public Admin. For Turkey and Middle East
TPHR/TNSA	Turkey Population and Health Research
TSE	Turkish Standards Institute
TÜBİTAK	Turkish Science and Technical Research Institution
TÜSİAD/ATIP	Association of Turkish Industrialist and Businessman Manufacturers

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1.0. TARGETS, STRATEGIES AND SCENARIOS

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Three target groups have been determined for EAP Master Plan:

Economic Targets;

a) To increase income per capita and narrow the gap between the Region and the national economy,
b) To increase employment, decrease outmigration from the Region and possibly stop it in the long run,
c) To expand economic variety in the areas in which there is potential,
d) To construct the necessary infrastructure so as to utilize the economic opportunities that might emerge eventually,
e) To accelerate the capital accumulation within the Region, support local entrepreneurship, and mobilize the economic potential of the Region,
f) To ensure that the Region will have a sustainable economic structure,
g) To integrate the Region economically with the other regions.

Social Targets;

a) To narrow the intra-regional income differences, and increase the level of social integration,
b) To decrease outmigration, and minimize the social damage caused by outmigration,
c) To eliminate the inequalities within the Region in terms of access to the various services,
d) To increase the level and quality of educational and health services as well as the urban infrastructure,
e) To raise the welfare level and the quality of life in urban and rural areas,
f) To increase the labor quality,
g) To decrease the size of unregistered life and increase the number of people covered by the social security system,
h) To improve the local democracy and solidarity,
i) To improve the social aid and protection systems,
j) To improve the status of the women and ensure their integration with the development process,
k) To improve the current social structure gradually,
l) To eliminate unhealthy urbanization.

Environmental Targets;

a) To improve the pastureland and prevent soil erosion in order to protect soil and water resources,
b) To protect and improve the forests,
c) To increase the quality of life in the settlements,
d) To protect biological variety,

1.1.2. General Strategies

The main target of the EAP Master Plan is to create the environment in which the potentials of the Region can be mobilized. **For this purpose, a planning strategy is adopted that does not go against the current development patterns but strengthens them by organizing these patterns.**

In this context, it is projected that the resources, especially in the early stages of development process, have to be directed primarily to those areas and locations in the Region, which have comparative advantage, and development should be expanded to others eventually from these pioneer sectors and areas.

The second main strategy is to give priority to those arrangements that would result in more efficient use of the current production and service capacities. Expansion of the organizational activities, better management and operation of the institutional structures, human resources and infrastructures so that their contribution to the economy would be increased is accepted to be the underlying approach in all sectors. In line with this objective, strategies toward improving inter-sectoral linkages and organizing different sectors so as to support one another become prevalent.

Another strategy considered by the EAP Master Plan is to ensure that the private sector, residents of the Region, and non-governmental organizations both in and outside of the Region would participate in various ways in providing, operating and improving the technical, economic, and social structures of the Region. For the development of the EAP Region, it is necessary to mobilize, in addition to the contribution of the public sector, the knowledge, experience, labor, and administrative as well as financial resources of all sections of the society. In principle the role assigned to the public sector is to provide technical and social infrastructure services such as transportation, communication, energy, education, health, and irrigation, which are the prerequisites for development, and to protect and improve the natural and cultural assets. However, this role should not be limited to the public sector. It is essential to prepare the environment in which other (non-public) sectors would assume effective roles in this process as well.

Public sector should not undertake industrial investments directly. However, it is indispensable for the public sector to support the private sector with various instruments in the Region in which capital, entrepreneurship culture, management skills, and competitive power are limited. The primary role of the public sector, in addition to providing infrastructure, should be to stimulate, entrepreneurship and participation with the incentives and the necessary legal and institutional arrangements.

The underlying principle in developing the sectoral strategies of the Master Plan is to strengthen the participation in the Region with different models. Some of the examples of these sectoral strategies are the following: transferring the irrigation units in agriculture to the irrigation unions; promoting construction and operation of the secondary roads by the village unions; participation of the villagers in afforesting, pastureland improvement, erosion control, and soil improvement efforts; transferring the right to benefit from the forests that are allowed to cut to the villagers; employing representatives from trade chambers and universities in the Improvement and Planning Supervision Commissions to

be formed to provide technical support to the municipalities in the process of evaluation and approval of the plans prepared to redirect the development in the urban centers; having representatives from different sections of the community in the Basin Board of Directors which will be in charge of environmental management; supporting voluntary organizations in organizing social, cultural, and technical training courses in education and health sectors; supporting the activities to improve the knowledge and qualifications of the members of producer and professional institutions; and promoting local administrations and non-governmental organizations to assume more active roles in the areas of social assistance and protection.

Furthermore, in addition to industrial investments, it is projected to promote opening private schools and hospitals, and get the private sector to participate more actively in the development of the Region and financing the development via the models such as Build-Operate-Transfer or Transfer of Operating Right in the context of improving the technical infrastructure.

The Plan gives priority to those activities to inform and educate the people in every aspect of social life in order to create an environment that facilitate participatory applications.

Supporting the regional economic and social activities of the non-governmental institutions organized at national level are essential in terms of bringing experiences gained in different regions and expanding project evaluation and application capacities of the local non-governmental organizations. Voluntary organizations can be active in the Region via sample projects. The activities of such voluntary organizations related to the Region should be supported.

One of the most important instruments of the Master Plan is the proposal for establishing an Economic Development Agency (EDA), which will be in charge of directing economic and social life of the Region. EDA is a participatory regional development instrument both in terms of its organizational structure (an institution that has the public authority in which the Chambers of Commerce and Industry are extensively represented), and its functions (developing the entrepreneurial culture in the Region and strengthening the contribution of the private sector to regional development process). The Plan further gives importance to active participation of the universities located in the Region in implementation of various projects related to the development of the Region. It is also very important that the State Planning Organization establishes a unit in the Region to ensure efficiency in implementations of the plan.

The Plan considers the Region's development in an integrated manner with its economic, social and environmental dimensions. Even though this is a priority in every planning activity, it becomes even more vital in the context of the Eastern Anatolia. In the Region where the development relies, first of all, on modernization of the agriculture, the environmental issues such as protection of soil and water resources, prevention of erosion, improvement of pastureland have to be considered first. On the other hand, one can argue that economic development accelerates social development. But the investments related to economic development alone cannot guarantee the improvement of the quality of life and expansion of the welfare. Therefore the EAP Master Plan also gives importance to social

strategies and programs such as improvement of human resources, elevation of the women's status, provision of social assistance and protection for the needy, organization and expansion of small scale income generating activities for the low income and poor people, and increasing the variety of the rural economy.

In the context of these general strategies summarized above, 7 priority intervention areas are determined in the EAP Master Plan. These are:

a) Improvement of Human Resources,
b) Expanding Organizational Activities,
c) Providing Infrastructure,
d) Pastureland Improvement and Management,
e) Improvement of Environmental Quality,
f) Fightining Against Poverty, and
g) Finance.

1.1.3. Intervention Areas

1.1.3.1. Improvement of Human Resources

In regards to human resources, strategies to increase qualifications and skills of the population and labor force, and keep the skilled human resources within the Region are important.

Increasing qualifications and skills of the population depend on increasing accessibility and quality of education and health services.

1.1.3.1.1. Improvement of Educational Services

a) The Law of Eight Year Continuous Compulsory Primary Education (Law No. 4306) enacted in 1997, including information technology in the educational programs, and giving priority to the EAP Region concerning on-the-job training programs for teachers and inspectors and especially social assistance projects for village schools are positive steps to increase the quality of the primary education. But certain difficulties are being faced in the transition period. The number of combined schools has been realized much above the Türkiye average and concentrations occurred at certain schools due to existence of too many small settlement units in the Region.

b) The problems of lack of building and equipment in the primary education should be solved. In particular, the number of Boarding Regional Primary Schools for girls should be increased. Preschool classes should be incorporated into the primary schools in the rural areas.

c) Existing secondary and higher education institutions should be directed to raising the members of those professions needed in the Region. Multi-program high schools and science high schools should be expanded.

d) Private sector's contribution should also be sought for expansion and improvement of education at all levels.

e) Extensive education should be given importance in the Region. Prevalence of problems such as lower literacy rate, high fertility, gender-related imbalances in school participation, low rates of preschool participation indicate the importance of adult education. For this purpose, Public Education Centers should be strengthened and the efforts of non-governmental organizations should be supported. Van Sub-region should be given priority concerning the public education activities.

f) Taking the fact that unemployment rate is high and the number of people working as unpaid family labor is high in the Region into account, training courses should be expanded. Priority should be given in terms of providing machinery-equipment, raw materials and credits to those persons who graduate from these training courses and would like to start their own business.

g) Apprenticeship education should be improved, Apprenticeship Education Centers should be established within Organized Industrial Zones, and by this way the relations between these centers and the industrial enterprises should be strengthened.

h) Agricultural publication services should be activated, and active participation of professional organizations and unions to expand technical knowledge and capacity of their members should be supported.

i) Cooperation mechanisms to facilitate the technical and scientific support of the universities located in the Region to all production sectors should be developed. Revolving funds and research funds of the universities should be increased, and their research and applied projects toward improving the regional economy and social structure should be supported. Eastern Anatolian Region Education and Research Centers, which would carry out research projects to improve the quality of region-wide education, should be established.

j) In-service training should be given importance to increase institutional capacities. In-service Training Institute should be established in the Malatya-Elazığ Sub-region.

1.1.3.1.2. Improvement of Health Services

a) As far as the medical services are concerned, priority should be given to improve family planning and protective health services, and basic and first-degree health services. Family planning services should be concentrated especially in Van Sub-region (all provinces), Erzurum Sub-region (Ağrı, Iğdır, Muş, Ardahan), and Bingöl of Malatya-Elazığ Sub-region. In all settlement locations provision of purified drinking water should be improved, and technical infrastructure services such as regular solid waste storage and

disposal systems, and sewer systems should be improved in urban areas by giving priority to those cities specified as regional development centers.

b) What is more important in the Region is not lack of enough institutions providing medical services in terms of number, but insufficiency of personnel and equipment. The problem of insufficient personnel and equipment should be solved immediately, by giving priority to health centers and Mother Child Health Centers that are closed as of today because of these problems mentioned, and District State Hospitals operating with low bed occupancy capacities.

c) In order to increase the ratio of benefiting from health services and in particular among the measures deemed necessary are strengthening mobile health service personnel and equipment, expansion of social security system and green card application in the Region. Activities toward educating the public on this subject is extremely important in order to increase the level of participation and benefit from these services.

d) Effective coordination and division of labor between the institutions and associations providing medical services in the Region should be ensured.

e) For the purpose of increasing the level of public awareness in the Region health education should be expanded by using written, audio-visual and other methods.

1.1.3.1.3. Keeping the Qualified Personnel in the Region

Among the main reasons for the failure of the public services in the EAP Region efficiently is the difficulties faced in getting the qualified personnel. In order to solve this problem, which lowers the service quality and leads to idle capacities in the sector, it is considered compulsory to introduce the "permanent staff" system that will ensure the public personnel to stay in the region for long. The priority should be given to medical staff, university faculties and agricultural publication personnel. This system, which would be supported by financial incentives, subsidized housing, construction of social and cultural facilities, and improvement of the working conditions of the institutions will increase the chance of the qualified personnel to stay in the Region.

Taking into account the fact that people of the Region are more likely to stay in the Region, special efforts should be made to increase the quality of the education and capacities of the universities in the Region.

1.1.3.2. Expanding Organizational Activities

The need for getting organized in the Region is felt in every sector at all levels.

a) An organization should be formed, which will assume the task of coordinating and pioneering for the projects needed for the implementation of the EAP Master Plan, introduce the Region to domestic and foreign investors, and

provide consulting services to local administrations, companies, cooperatives, and persons on technology, business management, and marketing. In addition to providing consulting services, this organization, which could be viewed as Development Agency is proposed to take an active role in directing and accelerating the investments by providing venture capital services and contributing to the education of the labor force.

b) The prerequisite for improving agriculture and animal husbandry in the Region is to establish an active publication organization. The success of the publication organization will largely depend on the field studies in cooperation with farmers, the extent to which the publication personnel is acquainted with the area as well as his knowledge and experience about the current and possible products in that area. For this reason, attention has to be paid to make sure that each publication organization in every province and district is self-sufficient in terms of tool-equipment and that area of specialization condition is definitely satisfied by the personnel to be appointed. Appointment conditions should be determined in such a way that the personnel stay in the area at least for a certain minimum amount of time and "permanent staff" system should be introduced. Under the Region's circumstances, a meadow-pastureland expert and veterinarian should also be hired in publication organization in addition to the experts of the related crops. Regardless of the area of specialization, special publication education should be given to the publication personnel.

c) It will be useful for some public institutions such as Ministry of Environment, Ministry of Energy (Mining Affairs General Directorate), and Ziraat Bank to open local branches or strengthen the existing ones in order to evaluate the local conditions better, and provide direction, coordination, and supervision more efficiently.

d) Real Estate Investment Partnership should be formed in the Region in the context of Capital Market Law in order to direct small savings to investment.

e) Municipalities should be supported to form service unions and carry out common work in order to improve efficiency in providing urban services in the Region. In the rural areas, Kaimakamships and Governorships should be the initiator in forming village unions for the construction and maintenance of secondary roads, which are not assumed by the Village Services General Directorate.

f) The fact that business scales are small in almost all sectors and the presence of marketing problems makes it necessary to promote the enterprises to form unions among themselves in the EAP Region. It should be expected for the time being that it is difficult for agricultural producers to be organized in the form of cooperatives and cooperative unions in the rural areas where transportation possibilities are more limited, settlements are more scattered, and socio-cultural differences are more intense. For this reason, initiating the producer organizations in the short and medium run from the neighborhood of the big cities will increase the chance for success. Priority should be given to

organization members in crediting to promote the establishment of such organizations.

Cooperatives and unions in other sectors such as trade, mining, handicrafts, and tourism should also be encouraged. Especially export-oriented organizations should be promoted.

g) Contractual production model, which integrates provision of inputs and organization of production and marketing, and labor training, should be encouraged in the agriculture and various other sectors (e.g. handicrafts).

1.1.3.3. Providing Infrastructure

One of the prerequisites for creating an atmosphere of economic and social development is to improve transportation and communication infrastructure and services, which would strengthen intra-regional integration and minimize the deficiency resulting from the fact that the Region is far from the focal point of the population and markets of the country. Another important issue is to provide reliable power supply to production units.

On the other hand, priority should be given to develop appropriate infrastructure for the settlements that would fit to their projected functions, starting from those cities chosen to be the development centers.

1.1.3.3.1. Transportation

The infrastructures of all transportation types in the Region are lower both with respect to national average as well as generally accepted standards. Topographic characteristics give rise to higher transportation infrastructure costs, and climatic conditions make it difficult to provide transportation services at the same level in all seasons. The fact that the market-oriented portion of especially agricultural production is limited, income is low, and the settlements are small and scattered around in the Region, lead to small and scattered demand for transportation as well. Since scattered and small demand for transportation inclined towards overland route transportation which better fits to this type of demand, railways lost importance in passenger and cargo transportation and overland roads superstructure get damaged before the expected lifespan.

Improving the railroad and land road connections of the Region with Trabzon in the north and İskenderun in the south will facilitate opening up to foreign markets via sea transportation and provide low-cost inputs for some industries to be emerged in the Region. Similarly, improving transportation connections with the GAP Region and the western regions will contribute to the development and integration of the regional economy with other regions.

On the other hand, transportation connections in the EAP Region would assume an important role for the possible relations expected to be developed in the future between the Western countries and the countries to the east and northeast of Türkiye. For this reason,

transportation infrastructure, services and organizations in the EAP provinces have to be prepared so as to accommodate the needs of this new transit transportation.

Even though the Region's airway infrastructure is adequate in general, cargo services will need to be improved in Erzurum, Malatya and Van airports for the possible future cargo transportation.

Given the presence of idle capacities in all transportation types at various levels, the transportation strategy determined for the Region is to use the current infrastructure efficiently supported by operating, repair and maintenance measures, to give priority to ensure continuity in capacity utilization with limited scope and minimum investments in the bottleneck areas, and to make new investments in parallel to the developments that would emerge in the regional economy and demand level.

Importance should be given to organizational structure, equipment and personnel training in order to ensure efficiency and continuity of transportation services in the winter season. Secure and continuous transportation has to be ensured in the main roads in all seasons, and priority should be given to keep the important village roads open in all seasons in the rural areas. For this purpose, strategic winter operation plans should be prepared for each province, and the degree to which transportation connections can be kept open under winter conditions should be determined.

Importance should be given to prepare transportation studies that will determine the transportation infrastructure and services required by the future economic and social change for the urban settlements including the rural settlements in their vicinity. Accordingly, improvement of transportation within city and the connections of cities with their vicinities are also important. On the other hand, development of large-scale service enterprises and multi-partner transportation companies should be promoted in the Region.

1.1.3.3.2. Communication

Communication and information infrastructure in the EAP Region should be improved by taking technological advances into account. It is critical for social and economic development of the Region not to be left out of global and national information network. In this regard;

a) Mobile communication technology should be expanded in the Region. Variety of the Internet accessibility in the provinces of the Region should be ensured.

b) Telephone exchange capacities should be increased in parallel to demand. Instead of increasing telephone exchange capacities in Erzurum, Elazığ, Malatya and Van, communication systems using the same line for both internet and telephone purposes should be installed.

c) Communication and information infrastructure should be isolated from weather conditions; for this purpose the current Radio/Link and over land aerial Fiber/Optic transmission lines connecting the Region to Ankara should be put to underground.

d) Necessary steps should be taken to ensure State TV's can broadcast efficiently to the rural areas in the Region, and local TV's should be supported.

e) Priority should be given to local providers in providing all kinds of information services in the EAP Region.

1.1.3.3.3. Energy

The primary targets in the energy sector are to increase per capita energy consumption in the Region, which is lower than Türkiye average but to make sure that it is used efficiently in consumption, provide various kinds of energy to consumers with low cost, and improve energy infrastructure and provide high quality energy.

One of the most important problems encountered in the Region is the high rate of network losses in electrical energy distribution system. These losses generally result from illegal use in the houses and reach up to 50 % in some provinces. This leads to frequent fluctuations in the voltage and interruptions, hence causing important problems for industrial enterprises. In this regard, it is not sufficient to increase production capacity to provide reliable electrical energy to the cities that are projected to be developed as the industrial centers. At the same time distribution systems should be modernized so as to eliminate illegal use and provide reliable and uninterrupted energy.

Another target in the energy sector is to substitute modern energy sources for the dried cow dung used as fuel in the rural areas and switch to natural gas in the cities that have air pollution problem. In light of these targets, the following strategies are projected in the energy sector:

a) Electrical energy distribution systems should be privatized so as to eliminate illegal use and increase efficiency in consumption.

b) Investments to increase energy production in the Region should be oriented toward utilizing the hydraulic potential of the Region. Funding for large capacity hydroelectric power plants should be provided by foreign sources and the State Hydraulic Works General Directorate and these plants should be privatized later on. Small and medium sized hydroelectric power plants, on the other hand, should be considered to be constructed by the private sector. Private sector should be provided with the incentives to construct such plants having high unit costs.

c) BOTAŞ, in order to make possible the use of natural gas in the big cities such as Erzurum, Elazığ, Malatya, and Van for heating and household needs, should realize two private distribution line; one in the destination of Iğdır-Kars-Erzurum-Erzincan-Gümüşhane, and the other in the destination of Van-Bitlis-Muş-Bingöl-Elazığ.

d) Geothermal energy that the Region has, should be used at homes, and greenhouses and sheds for heating. For this purpose incentives should be given to private sector in the form of tax reductions and credits in constructing power plants.

e) Existing lignite reserves in the Region should be utilized, and new reserves should be searched.

1.1.3.3.4. Agricultural Infrastructure

a) Irrigation facilities should be given importance in the Region especially for increasing market oriented products and product variety.

   Currently 625,410 hectares are being irrigated out of 1,218,981 hectares of total economically irrigetable land in the Region. As of today an area of 8,625 hectares of land are opened to irrigation annually. EAP Master Plan projects that all of the irrigetable land be opened to irrigation within 20 years. This implies an average area of 30,000 hectares to be opened to irrigation annually. Alpaslan II Dam currently under preliminary study and Muş irrigation project should be given priority and it should be completed before the year 2010.

b) The drainage problem that comes into question in the irrigation areas of the Region available for intensive agriculture impedes productive agricultural production in a large portion of these areas. Both underground and overland drainage systems in such areas have to be finished; starting from Iğdır, Muş and Erzincan first, and then Ağrı, Bitlis, Elazığ, Erzurum, Gümüşhane, Bayburt, Hakkari and Van.

c) 5.6 % of cultivated agricultural areas and 39.2 % of the areas not available for cultivated agriculture in the Region are stony. This problem, which prevents efficient operation of agricultural machinery, has to be overcome by getting the participation of the farmers, and starting from the first category of the areas.

d) Multi-piece land ownership is one of the most important factors limiting the agricultural productivity in the Region. For this purpose, land aggregation (combining small pieces of land to generate larger ones) operations should be taken seriously.

e) Priority should be given to central villages in taking physical and social infrastructure to the rural areas. To ensure integration of rural areas with the market, central villages-to-cities and village-to-village transportation connections should be strengthened.

1.1.3.4. Pastureland Improvement and Management

One of the prerequisites for improving animal husbandry in the Region is to improve the pastureland and increase feed crops production. Efficiency of the race improvement efforts required for productivity increase in animal husbandry will largely depend on the degree of success on these two factors.

Meadow and pasturelands covers 39 % of the total agricultural land in the Eastern Anatolian Region. The fact that feed crops production is low has generally caused animal husbandry to incline more towards pastureland type of animal husbandry in the Region.

The use of pastureland without a particular rule (carrying capacity, timing, homogeneous use, rotational use) leads to destruction of the pastureland and increased erosion.

"Pastureland Law" (Law no. 4342) should be applied in the Region immediately, and necessary arrangements for putting animals out to pastureland according to their carrying capacity, time limitations, and rotational use should be completed. Besides Pastureland Code should be revised so as to be strengthened in terms of supervision mechanisms and sanctions.

In order to carry out pastureland improvement work, cadastral survey, determination and limitation works have to be completed immediately by purchasing supplementary services from the private sector if necessary.

The work of pastureland improvement should be started from the vicinity of the big cities and the provinces such as Kars and Ardahan whose agricultural economy relies largely on livestock, and participation of the farmers should be ensured. Pastureland improvement work has to be carried out together with an intensive education program. Educational programs should cover publication organization personnel as well as farmers. Furthermore, close follow up and supervision of the applications are important for the success of the work. It will be useful to start the improvement work from those places where publication organization is relatively stronger, university and research institutes are found and supervision is easier. Given the fact that it satisfies these criteria better and has very low pastureland productivity, Erzurum province would be the most appropriate place to give priority to start the pastureland improvement work.

Besides, cereal plant production with very low productivity in class VI and VII type of land in Elazığ, Erzincan, Erzurum, Gümüşhane, Bayburt and Tunceli provinces, which are not available for cultivated agriculture leads to seriously increased erosion in these areas. Cereal grains production in these areas should be stopped by providing income assistance to farmers and these areas should be converted to artificial pastureland.

On the other hand, in order to reduce the pressure on pastureland and provide coarse feed need of the animals, planting of feed crops should be expanded and product variety should be ensured in feed grains, which currently consist of clover, sainfoin, and common vetch. The EAP Master Plan projects to increase feed crops areas from its current level of 7.7 % to 55 %, and amount of production from its current level of 6 million tons to 18 million tons, and including such feed crops as weapon-belt corn, Sudan weed and leguminous crops in the produce pattern. This can be achieved in the Region by narrowing down the areas allocated to cereal grains, reducing the size of fallowing land in the high precipitation areas, and including feed crops as well to the rotational sowing system used for crops such as sugar beet, barley, and wheat. Priority should be given in sowing feed crops to Ağrı, Erzurum, Elazığ, Malatya, Erzincan, and Van.

1.1.3.5. Improvement of Environmental Quality

Protection, improvement and development of agricultural land, pastureland-meadows and water resources, which are vital resources for the Region's economy, are prerequisites for the regional development and its sustainability.

Improving urban infrastructure and services in the Region, increasing recreational areas in the urban areas and their neighborhood, protecting biological variety, and preventing air pollution in the cities are the factors to improve the quality of life and environment, hence increasing the attraction of the Region.

First of all, Ministry of Environment has to complete its organization at provincial level in the EAP Region with enough personnel and equipment for an efficient environmental protection and management. On the other hand, municipalities as the real executive institutions about environmental protection have to be strengthened in terms of personnel and equipment.

1.1.3.5.1. Soil and Water Pollution

a) The most important problem in the Region leading to soil and water pollution is erosion. Erosion caused by such reasons as destruction of the forests and excessive use of meadow-pastureland, reduces further the productivity of meadow-pastureland, and shorten the economic lifespan of both natural and dam lakes. In order to prevent erosion it is necessary to improve meadow and pastureland, control putting animals out to pastureland, protect the existing forests, plant new trees, and erosion control methods should be implemented in the agricultural areas.

   Green zone should be formed around dams in the Region, giving priority to the Keban Dam for which erosion threat has reached to 91 % due to sediments carried by Murat River, Munzur and Perisuyu, and neighborhood of the rivers and streams as the real source of sediments should be controlled by physical and vegetal measures.

b) Among other important sources of soil and water pollution are releasing the waste water from home or industrial use to receiving environments without purification and leakage waters resulting from irregular storage of the waste.

   Waste water coming out of slaughterhouse and integrated meat facilities in the Region, milk industry, sugar industry and leather industry have much higher pollution load than discharge standards. Industrial enterprises should be inspected closely to make sure they comply with waste water discharge standards, intra-facility measures should be taken to reduce the pollution at source in the facilities that do not comply with the standards, it should be made obligatory to install preliminary purification and waste water purification units. Cheap electric energy should be provided to operate wastewater purification units.

   Waste management plans should be prepared in the Organized Industrial Zones for the liquid, gas and solid wastes. Purification units have to be completed in the Organized Industrial Zones, giving priority to Malatya Organized Industrial Zone. When allocating land to industrial enterprises in the Organized Industrial Zones attention should be paid to clustering similar enterprises so as to facilitate

installing common purification units, specialized Organized Industrial Zones should be established.

c) Priority should be given to completion of Malatya and Erzurum home waste water purification units immediately, and construction of Elazığ and Van section 2 wastewater purification units. The problem of not being able to operate purification units efficiently especially in Van due to limited power supply has to be solved immediately. Sewer system should be constructed in the settlements in the Region, which do not have the sewer system network. Priority in this regard should be given to settlements in the vicinity of Lake Van, Keban and Karakaya Dam Lakes.

d) Erzurum should be given priority in developing regular solid waste storage and disposal systems in the settlements. Activities should be accelerated in Erzincan, Malatya and Elazığ that are currently under projection stage, and in Van, which is currently under the stage of locational choice.

e) Protection bands should be formed to protect underground waters, and they should be inspected efficiently. Educating farmers on how to protect water resources from agricultural activities should not be neglected.

f) People should be made conscious of regular storage and recycling the solid waste.

g) In order to achieve efficient protection of the water basins in the Region it is necessary to be organized at basin level. Basin Board of Directors should be formed under the coordination of the Ministry of Environment with participation of local administrations, and chambers of industry and voluntary organizations in addition to the related public institutions. Protection programs must be developed and enacted immediately, giving priority for Lake Van, the Caspian Sea, and Keban and Karakaya Dam Lakes. Active participation of the local residents should be ensured in afforesting, protection, supervision and inspection of the implementations.

h) The standards required for the polluting sources must be defined on the basis of basin, taking the unique characteristics of each basin into account. Evaluation of Environmental Effects studies must be conducted for all kinds of activities and investments in the water basins.

1.1.3.5.2. Air Pollution

Bowl-shaped topographic structure of the many provinces in the Region leads to increased air pollution. Speed of winds in the Region to reduce air pollution in the winter season is low. The province where the heaviest air pollution is observed in the Region is Erzurum. Air quality measurements are not being conducted yet in Ardahan, Gümüşhane and Iğdır. In all other provinces air pollution exists at certain levels.

a) The most important reason for air pollution is using low-quality coal and fuels in the residences for heating. For this reason, starting from Erzurum, the use of natural gas should be replaced in the provinces where air pollution is intense and the price should be kept low in order to promote its extensive use in these provinces. For heat insulation in the buildings the use of perlit produced in the Region should be promoted to be used in the constructions. Utilization from the clean energy sources such as geothermal energy and sun energy should be considered important.

b) Other than residential heating, starting from cement, sugar, stone-soil, textile, rubber and mining industries, chimney gas emissions of all public and private air polluting industrial units should be inspected continuously and those units found to be above the standards should be forced to install purification systems.

c) In order to prevent the air pollution that will be caused by the motor vehicles as urbanization becomes more visible, public transportation systems need to be improved in the cities, especially in Erzurum, Malatya, Elazığ, and Van.

1.1.3.5.3. Biological Diversity and Recreational Activities

a) For protection and efficient management of the forests in the Region forest cadastral surveys need to be finished and forest "amenajman" plans need to be renewed. It will be appropriate to purchase some of the services from the private sector, given that public personnel is insufficient, to carry out the forest cadastral surveys rapidly.

b) In the forest villages projects toward increasing the variety of economic activities should be promoted, and priority should be given to forest villagers in hiring workers for the forest related work.

c) Research should be conducted to determine the forest products in detail and their economic values in the Region. Credits should be provided for culture production of those products found to be economically promising. Possibilities for producing and marketing processed products instead of raw drog should be searched.

d) Rare plants found especially in the areas covered by waters due to construction of dams in the Region should be collected and grown in other appropriate places. This will be useful especially from the point of view of protecting genetic diversity. Priority should be given, in this regard, to Mount Munzur, which is very rich especially for endemic plants, Van-Hakkari-Bitlis neighborhood, and Erzincan Province.

e) Necessary steps should be taken to take the watery areas under protection in the Region, which currently do not have protection status and rated "B class" by the international criteria. Doğu Beyazıt Reeds (Ağrı), Lake Arın (Bitlis), Çaldıran Reeds (Van) should be evaluated with priority in this regard.

f) Number of rest areas and related units in the forests in the neighborhood of the cities should be increased, giving priority to Erzurum, Malatya, and Van.

g) Touristic and recreational arrangements should be made around natural and artificial lakes in the Region, starting from Lake Van, the Caspian Sea, Keban and Karakaya Dam Lakes; water resources to be opened for hunting, amount of fish available for fishing in these waters, appropriate fishing techniques and fishing seasons should be determined.

h) Detailed research should be conducted about the potential areas such as National Park, Natural Park, Area of Natural Protection, Special Environment Protection Area. Especially Lake Nazik around Lake Van (Bitlis-Ahlat), Mount Nemrut and crater lakes (Bitlis-Tatvan), Lake Aygır, Mount Süphan (Bitlis-Adilcevaz), Bendimahir Falls (Van-Muradiye), Beyazçeşme Falls (Van-Gevaş), Lake Çıldır (Ardahan), and Floating Islands in Bingöl are some of the areas that could be considered in this regard. National Park status should be granted to the Mount Ararat (Ağrı).

1.1.3.6. Struggle with the Poverty

1.1.3.6.1. Poverty Indicators in the Region

Unequal distribution of welfare and the poverty, as being an important problem in the country in general as well, reduces the productivity of the human resources and most of the time acts as an obstacle before the new attempts for economic development. Poverty is one of the main factors leading to migration from the Region.

Regional Gini coefficients calculated by the State Planning Organization, which are important indicators of the degree of inequality in income distribution, indicate that income inequality increased in the Marmara and the Aegean Regions between 1987-1994 while they fell in the Eastern and the Southeastern Anatolian Regions. This can be thought as a positive development for the Eastern Anatolian Region at a first glance. However, one can also interpret this as an expansion of poverty in the Region when evaluated together with the other indicators.

When the regions are ranked with respect to average value added growth rate, the Eastern Anatolian Region ranks last in 1987-1997 period, with its growth rate lower than 50 % of the Türkiye average. Per capita income of the Region, in constant prices, fell to 36.7 % of the Türkiye average in 1997 from its 48 % level in 1987. These statistics indicate that development gap between the Region and Türkiye and other regions are widening gradually.

In the EAP Region, labor force employed in agriculture has a share of 70 % as of 1997. A considerable portion of the people working in agriculture work either for themselves or as free labor working for their families, with very low productivity.

Between 1990-1997 population grew rapidly in those locations having population over 50.000 in the Region, due to migration from the rural areas. However, it is not

possible to say that possibilities for finding jobs in these cities increased by the same rate. This situation indicates that unemployment and unregistered employment increased in the cities of the Region.

Literacy rate is low in the Region. It is even lower for the female population. There is an imbalance against girls in terms of school participation rates. According to 1998 Population and Health Survey results conducted by Hacettepe University Population Research Institute, total fertility rate in the Region is 60 % higher than the Türkiye average. While unsatisfied family planning need in the overall country is 12 %, this jumps to 29 % in the Region. The same negative picture applies to infant mortality rates (61.5 per thousand in the Region, versus 42.7 per thousand in Türkiye) and vaccination rates (46 % in the Region, versus 68 % in Türkiye). Roughly half of the deliveries are done without presence of any health personnel. Marriages with 1st and 2nd degree relatives, which are risky for healthy deliveries, constitute one third of total marriages (UNICEF, 1996).

The ratio of people who have the green card to total population in the Region is above the Türkiye average. In addition, the ratio of people who do not have social insurance (51.8 %) is also above the Türkiye average (35.5 %) (SSK Statistical Yearbook, 1997).

These figures mentioned above indicate that poverty reached remarkable levels in the Region. The EAP Master Plan assigns importance to the following strategies in order to be able to expand welfare and fight against the poverty in the Region:

a) Increasing income and employment possibilities for the poor groups, improving their housing and environmental conditions, expanding accessibility to such services as education, health and transportation, and financial resources,

b) Providing effective social assistance and protection for the needy,

1.1.3.6.2. Increasing Income and Employment Possibilities

a) Productivity increases in agriculture and industrial development in the Region should be supported in the context of the strategies spelled out in Section 1.1.5.1. and 1.1.5.2.

b) Sub-regional/provincial surveys should be conducted to determine the possible non-agricultural activities in the rural areas. Priority should be given to forest villages in increasing the economic variety in the countryside.

c) Income generating activities such as handicrafts should be supported. Shopping centers should be opened to sell handicraft products in the big cities. Handicraft producers should be encouraged to get organized in the form of cooperatives, corporations, and contractual production models.

d) In order to increase female participation in the labor force;

- In addition to formal and informal education, written and visual communication tools should also be utilized to reduce the influence of prejudices blocking women to participate in economic life. Activities of public institutions and non-governmental organization in this realm should be intensified.
- The number of kindergartens and day care centers should be increased.
- The proposed Economic Development Agency (or an alternative organization) should give priority to female entrepreneurs in providing consulting services to entrepreneurs, and provide financial support for the activities to educate the female labor force.
- Halk Bank credits for the female entrepreneurs should be expanded.
- Micro credit systems outside of commercial banks' resources should be developed, as explained in Section 1.1.3.7, and priority should be given to the women in allocating this resource.

e) Implementation of the Statutory Decree No. 572 and Law No. 4832, which amend the Code of Business (Law no. 1475) with regard to increasing employment of the handicapped should be audited effectively in the Region. The handicapped of the EAP Region should be given priority in allocation of the resources in the fund formed by Law no. 4832 for which the resources come from the fines collected from those businesses who do not hire the handicapped and projected to be distributed for such projects as professional education and rehabilitation of the handicapped, helping them start their own business or getting them find a job.

1.1.3.6.3. Improvement of Housing and Environmental Conditions

a) Local administrations in the cities of the Region with rapidly growing population should produce building sites and nucleus building projects for the new migrants, and implement these projects.

b) Unhealthy construction in the current "gecekondu" areas should be stopped by the local administrations, and better projects should be produced with the participation of the residents of these areas.

c) Priority should be given to the Region in public housing credits.

d) Research should be conducted on building types and construction systems appropriate for the climatic and earthquake conditions of the Region in which locally produced construction materials would be used.

e) Technical assistance and credits should be made available to the villagers to construct earthquake-resistant and healthy rural houses in the context of "Assistance to Self Builders of Their Own Home" programs.

f) Necessary works should be done to determine the need to renew or strengthening of the existing buildings in terms of resistance to earthquake in coordination with Governorships, Regional universities and Ministry of Public Works and Housing.

g) With giving priority to the regional metropolitan cities, projects related to the renewal of the drinking water systems compatible with the growing population, the sewer systems, and storage and disposal of the solid waste have to be considered.

h) All rural settlements in the Region should have the drinking water in the medium term, and the villages with insufficient water should have the network systems in the long term.

1.1.3.6.4. Increasing Accessibility to Education, Health and Transportation Services

The strategies to increase the accessibility and quality of the education and health services in the Region are explained in Section 1.1.3.1. These strategies are closely related to solving those problems, which are essentially the causes of the poverty in the Region. Among these problems are having too many children, having only a small portion of the population covered by the social security system in terms of medical services, giving less importance to girls' education by the families, polygamy, and generally low level of education and social awareness.

In addition to these, other strategies geared toward some special groups are mentioned below:

a) Activities toward increasing consciousness on family planning should be expanded such that each family can be reached especially in the rural areas and gecekondu regions of the cities.

b) The primary condition for raising healthy children is to have an educated and conscious family. Therefore, special importance should be given to adult education on child growth, nourishment, health and children's rights.

c) In order to increase school participation by the girls, certain quotas should be allocated to the girls in Boarding Primary Education Regional Schools, the number of multi-program high schools should be increased, and scholarship should be provided for the female students at higher education level.

d) Multi-Purpose Community Centers (MPCC), which organize education and health services and production activities geared especially toward women and youth in the areas they are located should be established and expanded in the Region. These centers can be established and managed under the coordination of the local administrations with the participation of non-governmental organizations, or they can be formed as part of the Social Services and Child Protection Organization (SSCPO).

e) Mobile libraries should be expanded in the Region.

f) Youth camps should be organized in the Region. Facilities in the ski centers should be made available to be used for educational activities for the youth in the summers.

g) Education of the handicapped should be considered important. In order to satisfy the need for specialized teachers on this subject, it should be considered to open "Certificate Programs for Handicapped Education" in education schools. Furthermore, with participation of non-governmental organization and cooperation of the related public institutions, professional and training courses geared toward different handicapped groups should be organized.

h) In the Region, regular health inspections should be conducted in the rural areas, squatter's housing sections of the cities, and schools. In this context, periodical health controls of the working children should be effectively inspected as required by the Code of Apprenticeship and Professional Education.

i) Vaccination campaigns should be accelerated.

j) With the help of mass communication tools, the society should be made aware of the risks and negative effects of such issues as inter-relative marriages common in the Region, giving birth at early ages, frequent deliveries, lack of enough health controls during pregnancy, and delivering without presence of any health personnel on the mother's and the child's health.

k) Public transportation systems in the metropolitan cities should be supported.

1.1.3.6.5. Social Assistance and Protection Services

a) Social assistance and services provided to alleviate the problems of the poor and the needy in our country are carried out by different institutions, according to different criteria, which are not clearly defined most of the time. For the success of the fight against the poverty, in addition to ensure an effective coordination between the institutions and organizations working in this area, it is especially necessary to determine the criteria for the limits of being needy to be eligible for the assistance.

b) Legal arrangements related to the protection of working children are addressed by different laws. But these laws do not address the protection of children working in agriculture. All the arrangements related to the protection of working children should be brought together in a single law and the shortcomings should be eliminated.

c) In order to ensure to take social assistance and services to the poor and the needy more effectively, more active participation of the local administrations, private sector and non-governmental organizations in these activities, in cooperation with the central government, have to be ensured.
d) Detailed studies are needed to determine the number and the problems of the people in the Region who need help. These studies should take priority, and

conducted in cooperation with the related public institutions, Regional universities and non-governmental organizations. Priority should be given to the research projects on the problems of working children.

e) "Green card" application should be expanded in the Region. "Handicapped identity card" distribution to the handicapped, which provides certain conveniences for them, should be accelerated.

f) It is essential to take care of and protect the children, youth and the elderly including the handicapped at home, together with their families. The poor families should be provided in kind and monetary assistance and consulting services for this purpose.

g) Projects should be produced to solve the nourishment and housing problems of the children working and living in the streets, and provide them with some skills to get them out of the streets.

1.1.3.7. Finance

1.1.3.7.1. Credits

The use of credits in the Region stays at very low levels. Even worse, in some provinces such as Hakkari and Ağrı, this ratio falls down to 20-25 % of the already low regional average (Banks Association of Türkiye, 1997).

Private banks avoid extending credits to the enterprises in the EAP Region for various reasons such as the fact that the size of the credits requested is too low to be economically good from the bank's perspective, that guarantee and mortgages cannot be provided, or the difficulties faced in cashing the mortgages. It will be useful to form a credit guaranty system to overcome this problem. Another alternative would be to strengthen the Credit Guarantee Fund and have it serve for the Region.

Agricultural credits should be provided by the Ziraat Bank in the form of Controlled Credit Applications. In this regard, credits should be extended together with an effective publication and educational support.

On the other hand, it will be useful to develop a new finance system outside of the sources of commercial banks, geared more toward small size income generating activities conducted in the rural areas and the relatively poorer sections of the urban areas. This organization, which could be structured as a non-for-profit organization or a foundation should provide credits and in-kind support based on continuous guarantee to small groups organized formally or informally. Participation of public and private banks and local institutions should be ensured in this organization, which could be formed as an affiliation of Economic Development Agency or local administrations. Non-governmental organizations and volunteers from among the local residents should be able to take part in management, supervision and audit of the system.

1.1.3.7.2. Real Estate Capital Partnership

Real Estate Capital Partnerships established under Capital Market Code and Turkish Commercial Code could play an important role in financing development by directing the small savings toward investments.

A real estate investment company, which could be formed as a partnership between Businessmen in the Region, province special administrations, and small savers under the guidance of the Economic Development Agency, can construct factory buildings and other facilities and lease them to the investors to reduce the fixed investment costs.

1.1.3.7.3. Other Resources

In case Türkiye joins the European Union, it can be expected that Türkiye would get a considerable share from the Union's regional development funds. This source could accelerate sharply the development process in the EAP Region as having the biggest priority among all regions in terms of the criteria to benefit from such funds.

1.1.4. Attraction Centers Strategy

1.1.4.1. Sub-regions and Development Patterns

Three sub-regions with different resources and potentials are defined in the context of the EAP Master Plan by utilizing the study "Türkiye'de Yerleşme Merkezlerinin Kademelenmesi" (Stratification of the Settlement Centers in Türkiye) conducted by State Planning Organization (SPO, 1982) and by investigating the developments in the last 10 years (**Figure 1.1.1**):

- Erzurum Sub-region: Ağrı, Erzincan, Erzurum, Gümüşhane, Kars, Muş, Ardahan, Bayburt and Iğdır Provinces,
- Malatya-Elazığ Sub-region: Bingöl, Elazığ, Malatya and Tunceli Provinces,
- Van Sub-region: Bitlis, Hakkari and Van Provinces.

As of 1997 Erzurum Sub-region had approximately half of the EAP Region's total population (49.3 %), while Malatya-Elazığ Sub-region had 28.2 %, and Van Sub-region had 22.5 %. In terms of the shares of sub-regions in GDP, these rates are 42.4 %, 40.2 %, and 17.4 %, respectively.

Even though the share of agriculture in GDP has a declining pattern over the years for all sub-regions, Erzurum and Van Sub-regions have an economic structure where agricultural production, especially the animal husbandry has a considerable share. In 1997, 52.2 % of total agricultural production in the EAP Region was produced by the Erzurum Sub-region.

The share of agriculture is above the national average in the Malatya-Elazığ Sub-region as well. However, this share is relatively smaller compared to other sub-regions, and moreover, the share of animal husbandry within agriculture is relatively smaller, too.

Nevertheless, Malatya-Elazığ Sub-region comes ahead of the other sub-regions in terms of per capita agricultural value added.

On the other hand, Malatya-Elazığ Sub-region produced 73.1 % of the total manufacturing industry value added created in the EAP Region in 1997. Only Malatya Province's contribution reached to 54.6 %.

Between 1987-1997, contribution of Erzurum Sub-region to the EAP Region's manufacturing industry value added declined from 26.1 % to 19.1 %. In this sub-region the only provinces whose existence are a bit visible in the manufacturing industry are Erzurum and Erzincan. 50.8 % and 22.5 % of the value added created by the manufacturing industry in this sub-region came from Erzurum and Erzincan, respectively, in 1997. However, Erzurum produced only half of the value added created by Elazığ in 1997, whereas it was able to produce almost the same level of value added with Elazığ in 1987. Nevertheless, Erzurum has a diversified industrial structure to a certain level in the Region, following Elazığ and Malatya.

The fastest growth in the Region in the period of 1987-1997 took place in the Van Sub-region. In this region, annual average growth rate was recorded to be 1.6 % in the Erzurum Sub-region, 2.2 % in the Malatya-Elazığ Sub-region, and 5.1 % in the Van Sub-region. Manufacturing industry value added almost doubled in the Van Province in this period. However, the value added created in Van equals roughly one tenth of the value added created by Malatya in absolute value terms.

1.1.4.2. Attraction Centers: Their Place in the Country's Settlement Stratification and Socio-Economic Development Levels

The study by the State Planning Organization "Türkiye'de Yerleşme Merkezlerinin Kademelenmesi" (Stratification of Settlement Centers in Türkiye) conducted in 1982 determines the stratification of settlement units throughout the country and their influence areas. The study is based on the information on the one-way focal relations defined by the flow of goods, services, human beings and communication, and on the central functions defined by physical and social equipment in the settlement units, diversity of facilities, and the number of workers in these facilities. The study concluded that the space that the country has is organized in the form of seven different strata. In this regard, the first layer constitutes the villages, which cannot affect any settlement unit in the rural areas. At the seventh layer, on the other hand, there is only one center: Istanbul. Istanbul's influence area covers the whole country. Between these two layers situated in the lowest and the highest levels the following layers: the 2nd layer is composed of the sub-districts and villages in the rural areas not included in the 1st layer, which provide certain trade and service functions to the villages in the neighborhood; the 3rd layer is composed of district centers in general; the 4th layer is composed of the province and some district centers, which can be defined as "Sub-regional Center" because they can affect a big population in a large area and there exist urban centers in this area of influence; the 5th layer is composed of the "Regional Centers," which handle distribution of goods and services at the regional level; and lastly the 6th layer is composed of the big cities, other than Istanbul, that have the characteristics of metropolitan centers.

According to the State Planning Organization's study mentioned above, Erzurum, Elazığ and Malatya are 5th layer, in other words, regional centers. On the other hand, Erzincan, Van, Ağrı, Kars and Bingöl provinces are sub-regional centers included in the 4th layer. However, Bingöl and Kars influence their provinces but only by sharing them with other provinces, and Ağrı has its influence area limited with its own provincial territory. On the other hand, even though it is not a province center, Tatvan district of Bitlis Province has the 4th layer functions and influence Adilcevaz and Ahlat districts of Bitlis, which belong to the 3rd layer. Bitlis and Hakkari belong to the 3rd layer, even though they are province centers.

In the mentioned study, the whole Van Province is included in the influence area of Diyarbakır, which belongs to the 5th layer. Since 1982, the year in which the said study was done, Van widened its area of influence so as to include Tatvan that belonged to the 4th layer. Van is projected to be planned as a regional center in the EAP Master Plan because it has a 4th layer center in its area of influence.

Another study by the State Planning Organization (İllerin Sosyo Ekonomik Gelişmişlik Sıralaması Araştırması, 1996) (A Survey for Ranking the Provinces With Respect to Socio-Economic Development) classifies the provinces into five development levels. The study defines the concept of "development" as a whole together with the social variables related to structural and human development in addition to the variables related to economic growth. For this purpose, 58 indicators are used in total including both "social indicators" i.e. demographic, employment, education, health and other welfare indicators, and "economic indicators" i.e. manufacturing industry, construction, agriculture, and financial indicators. Most of these indicators are expressed in "per capita values." Ranking of the provinces with respect to socio-economic development is done according to the index values calculated as the compound value of the 58 variables. At the second stage of the study, homogenous province groups throughout the country in terms of development are determined and analyzed. All provinces in this context are categorized into five, starting from the first group, which includes those provinces that have the highest socio-economic development index values, to the fifth group including the provinces with the lowest index values.

According to the study "A Survey for Ranking the Provinces With Respect to Socio-Economic Development" mentioned above, only Malatya and Elazığ are included in the Third Degree Developed Provinces category, which is defined to comprise the moderately developed provinces. This category includes those provinces that have a high development potential in general, having industrial units producing for the province or the region although the agriculture is the main economic activity, and that have socio-economic indicators close to the national averages. Those provinces that have taken a pioneering role in expanding the industry nationwide in recent years are mostly included in this group.

Erzurum and Erzincan are included in the Fourth; other EAP provinces are included in the Fifth Degree Developed Provinces categories. For the fourth group, all socio-economic indicators are below the national averages. Although the economy in these provinces is based on agriculture, some provinces in the Central and Southeastern Anatolian Regions where industrial development gained a momentum (e.g. Çorum,

Kahramanmaraş, Tokat, Şanlıurfa, Çankırı) are included in this group. Fourth degree developed provinces are defined to be "on the edge of development."

5th Degree Developed Provinces category includes 17 provinces located only in the EAP and South-East Anatolian Project (SAP) Regions. The primary economic activity in these provinces is animal husbandry. Industrial and services sectors are not developed yet, hence an intense migration from this group to the provinces in the other groups is observed. It is interesting to see that Van, which has displayed an important dynamism in terms of population and economic growth rates in recent years, is included in the 5th group, instead of the 4th group, which indicates a higher level of development. The fact that the variables do not reflect the picture for a period, but a certain year (mostly 1990, the rest 1994-1995) could explain this, in addition to the unfavorable picture Van displays in terms of many of the social indicators used in the study.

It is clear that certain attraction centers have started to emerge in the region with their population size, transportation possibilities and economic activity levels. Erzurum had been the largest city in the Region until 1990. 1990 census results showed that Malatya replaced Erzurum to rank number one. According to provisional results of 1997 census there are 5 cities in the Region that have a population of more than 100,000, i.e. Malatya (400.248 persons), Erzurum (298.795 persons), Elazığ (250.543 persons), Van (229.965 persons) and Erzincan (102.304 persons). The fastest growing population between 1990-1997 was observed in Van. All these cities have certain common characteristics: located at important cross-roads, close to fertile plains that are rich in terms of water and soil resources, and they are all university cities, except for Erzincan (even in Erzincan there are schools and Vocational High Schools affiliated with Atatürk University).

The fact that self-employed professions and services that could be viewed as producer services and liveliness in transportation-communication sectors go hand in hand in Malatya with the industrial development which has been getting more and more diverse in recent years indicate that economic concentration has developed in the city. For this reason, it is proposed that industries should be concentrated in Malatya and Malatya-Elazığ axis in the Region by giving priority to the necessary public investments and incentives.

Secondary potential industry locations in the Region are Erzurum, Van and to some degree, Erzincan. It is necessary to give priority to these cities, in addition to Malatya and Elazığ, in providing infrastructure and Government assistance. This is needed to strengthen the spatial concentrations that started to emerge in the Region and help the regional industry to gain competitive power by creating external economies.

These cities mentioned above are also the areas where trade and other services will be intensified in the Region.

1.1.5. Sectoral Bottlenecks, Potentials and Development Strategies

1.1.5.1. Agriculture

Regional economy is largely based on agriculture. As of 1997 the share of agriculture in GDP is 24 % and in total employment is 70 %. But productivity in agriculture is low. General problems in the sector (vegetative production, animal husbandry, water products) are summarized below:

a) Most of the agricultural enterprises in the Region did shrink due to population pressure and inheritance, hence displaying a multi-piece land tenure structure. This leads to lower productivity, and indirectly to expansion of subsistence production.

b) Cooperatives and cooperative unions and other producer organizations could not become widespread. For this reason getting the modern technology adapted by agriculture and overcoming the marketing problems become difficult to handle.

c) Unfavorable climatic conditions and topography make it difficult to provide continuous transportation services in the winter season. This, in turn, prevents rural areas from integrating with the market economy.

d) Agricultural publication services cannot be provided effectively, due to insufficient personnel, and tools and equipment.

e) Agricultural sector could not be integrated with the other sectors such as manufacturing industry and trade. The fact that the services such as cold chain, storage and packing could not be developed prevents agricultural products from being economically utilized.

In addition to these general problems, bottlenecks, potentials and strategies from the perspective of sub-sectors are summarized below.

1.1.5.1.1. Vegetative Production

Bottlenecks and Potentials:

The use of agricultural inputs in the Region stays at low levels. Local varieties with low productivity are commonly used and traditional agricultural techniques are implemented.

Using the land that is not available for cultivated agriculture for agricultural purposes leads to low productivity and erosion. Letting the land lie fallow is quite common in the Region. In addition to the fact that the irrigetable land is relatively smaller, climatic and topographic conditions also limit the quantity, variety and yield of production. Besides, water and irrigated land are not used appropriately due to the problems faced in water management and lack of farmers' education.

Even though it is not possible to eliminate the constraints related to the natural conditions in the Region, but it is possible to increase vegetative production by improving agricultural infrastructure and organizations to facilitate agricultural applications. On the other hand, although climatic and topographic structure of the Region is not very suitable for vegetative production, the same topographic structure created microclimate areas in many provinces. In addition to low-altitude plains, which have moderate climatic conditions in the Region, microclimate areas also create opportunities for increasing the variety of the produce (**Figure 1.1.2)**.

Strategies:

The strategies for improving agricultural infrastructure and organization are discussed in Section 1.1.3.2 and 1.1.3.3.4; hence they are not going to be repeated here.

The EAP Master Plan projects to increase the production of feed crops, which are among the primary inputs for productive animal husbandry. Besides, production of potato, sunflower and dry beans are targeted to be increased considerably. Among other targets are expanding the production of fruits and vegetables as well as undercover vegetable production, and diversifying the product patterns by giving priority to Elazığ, Malatya, Erzincan and Iğdır, which have moderate climatic conditions in the Region and micro-climate areas that are located in the vicinity of important consumption centers.

1.1.5.1.2. Animal Husbandry

Bottlenecks and Potentials

Natural conditions of the Region made animal husbandry to be the primary economic activity in a large portion of the Region. Even though the amount of livestock has declined remarkably in many provinces recently because of terror and migration, the Region still has a considerable portion of sheep and cattle stocks of the country.

Animal husbandry has been based on meadow and pastureland in the Region. Although 39 % of the land the Region has is covered by meadow and pastureland from which raw feed for the animals is produced, they became unproductive due to lack of fertilization, seeding and pesticide.

Most of the livestock are non-improved, domestic races, which have low productivity in terms of milk and meat yield. Artificial insemination, vaccination and fighting against diseases programs, which are extremely important for the improvement work, are not being carried out effectively. Another obstacle before healthy and productive animal husbandry is the lack of modern stables and shelters.

Given the natural conditions and the current animal wealth in the Region, milking cattle comes out as an important potential in Malatya, Elazığ, Erzincan, Kars, Ardahan, Muş and Van provinces, while fattening cattle is more important in Erzurum, Erzincan, Kars, Elazığ, Malatya, Van and Ağrı, and sheep raising is more prevalent in Ağrı, Van, Muş, Erzurum, Kars, Erzincan and Bingöl.

On the other hand, the flora of the Region is quite convenient for the beekeeping. However, this activity has not flourished enough due to the fact that the beekeeping has been common throughout the whole country, hence the market is saturated in terms of demand for honey.

Broiler production is limited to a few provinces in the Region. It is impossible to expand winged production much in the Region because of the climatic conditions. Nevertheless, it will be desirable to develop meat and egg chicken farming geared toward regional consumption in the short and the medium run. Besides, Ardahan, Kars and Muş have potential for Turkey and goose production.

Strategies:

In order to be able to improve animal husbandry and increase productivity in the Region;

a) Feed crops production should be increased to eliminate the raw feed deficit for animals; importance should be given to pastureland improvement, management and artificial pasture production.

b) Culture hybrids and culture races should be substituted for the present domestic races. Improvement work for the betterment of animal races as well as the animal shelters should be carried on as an integrated work with the improvement of pastureland.

c) Artificial insemination and vaccination activities, which cannot be carried out effectively in the Region should be privatized. In this context, credits should be extended to private hospitals and clinics providing veterinary services to purchase the necessary equipment for artificial insemination and vaccination.

d) Producer-industrialist integration should be achieved in the Region for both economic utilization of the products produced by the producers, and economic operation of combined meat processing units, milk and feed factories. For this purpose, contractual animal husbandry model should be expanded and incentives should be offered to participating industrial and agricultural enterprises.

e) Producers should be promoted to be organized in the form of unions.

f) In the short run, attention should be paid to get small family enterprises included in the contractual animal husbandry model, but in the medium and long the long run credits and incentives should be geared more toward medium and large size enterprises in the Region.

1.1.5.1.3. Aqua Culture

Bottlenecks and Potentials

The EAP Region displays a rich potential in terms of aqua culture due to the fact that the Region has many important water resources.

There are six river basins located either completely or partially in the Region.

a) Euphrates Basin covers Ağrı, Erzurum, Elazığ, Muş, Bingöl, Erzincan, Tunceli and Malatya provinces,
b) Tigris Basin covers Hakkari province completely, Bitlis province partially, and Başkale, Çatak and Bahçesaray districts of Van,
c) Kura-Aras Basin includes Erzurum, Kars, Ağrı, Iğdır, and Ardahan,
d) Lake Van Closed Basin covers Bitlis and Van,
e) Çoruh Basin includes Bayburt province and the northern districts of Erzurum, and
f) Yeşilırmak Basin includes Gümüşhane province.

In these basins in the Region, people are engaged in both natural production via fishing and artificial production via raising activities. However, one can argue that the potential is not being utilized fully given the size of the resources.

Haphazard applications in raising fish and hunting in the resources reduces the productivity and threatens sustainability. Furthermore, in many water resources basic limnological research and inventory determination has not been done yet.

As it was the case for other branches of the agricultural sector, in aqua culture sector too, problems related to input supply (breeding, young fish, feed), processing, storage, marketing, finance, organization and education are obstructing the sector from flourishing.

Strategies:

a) Limnological research and stock determination in the water resources should be conducted immediately, and the appropriate resources should be enriched with new kinds of fish. The amount of fish allowed for fishing, appropriate fishing techniques, tools and fishing seasons should be determined, and then suitable areas should be opened for fishing, provided that the fishermen are educated on these topics.

b) In the stagnant water resources (natural and dam lakes) cage fishing should be developed. It is projected to develop cage fishing in Fırat River basin (Malatya-Elazığ) first, and establishing some of the facilities in Kura-Aras and Dicle basin.

c) Pool fishing should be developed in Fırat and Dicle basins, which are rich in terms of stream water resources, and some of the facilities should be located in Çoruh and Lake Van basins.

d) The most important issue in cage and pool fishing is to satisfy the need for young fish and feed. The need for young fish could be satisfied by promoting the present enterprises to establish additional facilities. New enterprises are proposed to be established in Elazığ, Erzurum and Van. It will also be useful to promote feed producing factories in the Region to produce feed for fish. Feed variety should be increased.

e) Aqua culture processing industry should be established in Elazığ (carp), Erzurum (trout) and Van (striped mullet).

f) It is necessary to expand cooperatives in the Region to develop aqua culture industry. In addition, cold storage facilities should also be developed.

g) Labor force and hunters' education should be taken seriously.

1.1.5.2. Manufacturing Industry

Bottlenecks and Potentials

Among the primary factors limiting the development of manufacturing industry in the Region are the following: insufficient capital accumulation and low purchasing power, high cost of transportation, problems in providing transportation services, inadequacies of technical and social infrastructure, and insufficiencies in human resource capacity in terms of both entrepreneurship and management skills and labor qualities, and financial problems. These factors, while discouraging the establishment of new industries in the Region on one hand, also limit the competitive power of the existing industrial enterprises.

Despite these bottlenecks, industrial sector has developed up to a certain level in Elazığ, Malatya, Erzurum, Van and Erzincan, as mentioned in Section 1.1.4. The first three of these provinces have also achieved to diversify their industrial structures to a certain extent. Especially in Malatya-Elazığ axis the industry has developed remarkably in recent years and started to stimulate the development of backward-linked sectors as well.

The industry should be supported in the Region with appropriate strategies. In this process, the following factors can be viewed as an advantage for the Region.

- All the provinces in the Region are included in Regions Having Priority in Development. Besides, additional Government assistance was granted for the investments to be made in some of the provinces by "Law of Promoting Investments and Increasing Employment in the Regions Having Priority in Development and Extraordinary Situation Region, and Amending No.193 Income Tax Code" (dated 21.1.1998, No. 4325). After including some other provinces determined by the Council of Ministers' decision no. 98/10551, currently all provinces in the Region, except Elazığ, Malatya and Erzincan,

became eligible to benefit from the additional Government assistance granted by the Law no. 4325 for a certain period of time.
- The Region has cheap labor stocks.
- The Region has urban centers that reached considerable population size.
- In certain manufacturing industry branches such as food processing and textile, a traditional accumulation of knowledge and specialization have been achieved.

Strategies:

The strategies for industrialization in the Region, although they have overlapping points, can be investigated under two titles.

a) Strategies for potential investors:

- The system of Government assistance in investments should be changed so as to affect the investment decisions in favor of the Region. Government assistance should include such items as leasing or donating readily built factory building, subsidizing interests and credit guarantee system.
- Technical (transportation, communication, and energy) and social infrastructure (education, health, cultural and recreational services) should be completed in the attraction centers to which investments are to be directed.
- The Region should be introduced to potential local and foreign investors effectively.
- Educational activities to improve the labor force skills should be taken seriously.

b) Strategies for increasing competitive power of the industry in the Region:

- Industry should be directed to the "attraction centers" in the Region.
- Government aid should be selective and given to those investments that could affect the economic and social transformation process in the Region or investments in such locations, and they have to be supervised effectively to make sure whether they are used in accordance with the purpose.
- Consulting services should be provided to entrepreneurs on appropriate investment areas, technology, business management and marketing.
- Productivity and variety should be increased in agriculture in order to make possible to provide inputs from within the Region at a lower cost. Mining reserves that could be operated technically and economically, should be operated.
- R&D activities should be given importance.
- Transportation infrastructure and transportation services should be improved in order to facilitate input supply from outside of the Region and market accessibility, and reduce raw material storage costs.
- Industrial enterprises should be directed to the Organized Industrial Zones so that they could benefit from external economies created by having been concentrated in the same location.

The EAP Master Plan proposes to establish Economic Development Agency or an alternative institution to direct and support industrial development in the Region.

1.1.5.3. Mining Sector

Bottlenecks and Potentials:

Even though the EAP Region is rich in terms mining reserves, the share of mining sector in the sub-regional economies rose slightly only in Erzurum Sub-region between 1987-1997, while declining in the other sub-regions. Especially since the 1990s mining production decreased sharply because of the terror.

In the Region, there are rich perlit (Erzincan, Erzurum, Kars, Van), pumice stone (Bitlis, Van, Ağrı, Iğdır, Kars), marble and travertine (Elazığ) reserves. Perlit, which is used to produce light construction materials that have high quality heat and noise insulation features, is currently produced in Erzincan. Production of pumice stone in Bitlis and Kars, which is used to produce soap, detergent and portland cement that is further used in dam construction stays at low levels presently. On the other hand, marble production, which has started to develop in Elazığ in recent years, has an important export potential.

The Region has also important reserves in brick-clay roofing tile raw materials, sand-pebble, basalt stone and building stone, and they are being produced currently as well. There are kaolin reserves around Lake Van, which could be utilized in ceramic industry. Profillit used in paint and ceramic industries is produced in Türkiye only in Malatya.

Several rocky spots in the Region have potential to develop chromium, nickel, platinum, meerschaum and sulfuret (copper, lead, zinc). According to SIS data for 1996, 35.1 % of Türkiye's chromium production are accounted for by Elazığ, Erzincan and Malatya, 10.7 % of copper production is accounted for by Elazığ, and 44.2 % of zinc production is accounted for by Gümüşhane.

Strategies:

a) Research would be useful in the fresh water areas in the Region that would contain low smoked lignite coal formations as potential reserve areas. Lignite would be used as fuel in the thermic power plants. It would also be substituted for dried cow dung, which is used for heating purposes in the rural areas and some cities in the Region, hence preventing it from being used as natural fertilizer in agriculture.

b) The untidiness observed in the mining legislation should be eliminated and legislation related to stone quarries and salt production should also be included in the "Code of Mine" (Law no. 3213).

c) In order for an effective inspection of the licensed areas, Mining Affairs General Directorate should form their regional organizations in Elazığ and Erzurum. Establishment of regional mining organizations is required by law anyway.

d) In the mining sector, mine owners should be encouraged to be organized in unions to enhance marketing possibilities and reduce marketing costs. Establishment of sectoral Foreign Trade Companies should be investigated to enhance the export possibilities for some minerals such as marble.

e) Secondary and high education institutions should be directed to raise intermediate level skilled labor force needed by the mining sector.

f) On the other hand, possible unfavorable effects of mining on the environment should not be neglected and Environmental Effect Evaluation studies should be considered seriously.

1.1.5.4. Tourism Sector

Bottlenecks and Potentials:

A potential sector in the Region not developed yet is tourism. Even though the Eastern Anatolian Region has a rich tourism potential thanks to the variety brought by its topographic structure, water resources, and geothermal resources, it has not been able to utilize these resources, except for winter sports to some extent, sufficiently due to transportation difficulties, marketing problems, quality constraints in tourism infrastructure, and lack of qualified personnel. In the Province Tourism Inventory and Tourism Development Plan prepared by the Ministry of Tourism, the EAP provinces are characterized as the potential areas where a variety of tourism branches could be developed such as winter tourism, culture and faith tourism, thermal tourism, ecological tourism (high plateau—i.e.yayla tourism, bird watch, botanic tourism, etc.), water sports (canoeing, rafting, underwater diving, surf, sailing), mountain and nature tourism, hunting tourism, and fishing.

Strategies:

The main strategies adapted to develop tourism in the Region are the following:

a) Types and forms of tourism to be provided should have the variety to spread the tourism activities throughout the year, and not concentrated in a particular season.

b) Tourism activities should especially be taken into consideration in the context of improving water resources in the Region.

c) Protection and restoration of the historical and cultural riches should be considered important, Regional Museums should be opened to display the items found in archeological excavations. These museums can also serve as scientific research, documentation and convention centers.

d) Diversity should be ensured in accommodation facilities. Arrangements must be done especially so as to make possible summer use of the accommodation facilities in the winter sports centers.

e) Activities should be arranged to advertise the Region in terms of tourism (for example, Winter Olympics), and well-known themes such as Mount Ararat Legend (Ağrı Dağı Efsanesi) should be used in the advertisement. Economic Development Agency should assume an effective role in introducing the Region to the foreign investors.

f) Raising qualified labor at all levels should be considered important for providing quality service.

In the context of the EAP Master Plan tourism movements in the Region are projected to be directed especially to use airway tours on the basis of three sub-regions concentrated around Erzurum, Van and Malatya. These tours should be differentiated in terms of types of tourism they offer, but diversified within themselves.

The provinces in the Erzurum sub-region are the ones in which winter sports are concentrated. Important centers in this region are Erzurum-Palandöken, Kars-Sarıkamış, Erzincan-Sakaltutan, Gümüşhane-Zigana, and Bayburt-Kopdağı ski centers.

It is proposed that the Region be supported in the summer seasons with the tours of high plateau ("yayla") tourism, health tourism, mountain and water sports, and the use of facilities in the ski centers in the summer for educational purposes be encouraged.

The second sub-region, Lake Van and its vicinity, has also an important tourism potential. The two highest mountains of Türkiye, Mount Ararat (Ağrı) and Mount Süphan (Bitlis) are located in this Region. Nemrut Crater Lake, Lake Aygır and Lake Nazik (Bitlis), Bendimahir and Beyazçeşme Falls (Van) are the other attraction centers in the vicinity of Lake Van.

It is proposed that Lake Van and vicinity be declared as "Tourism Region", and Mount Ararat be declared as "National Park." Water sports, camping and recreational activities are considered to be intensified in the Region. Lake Van and vicinity should be planned as a whole from the perspective of urban development.

For the Malatya-Elazığ Sub-region the focal points for tourism development are Dam Lakes, Munzur Valley, Mount Nemrut and Harput (The Old Elazığ) historical city. It is projected to organize youth camps for sports and educational purposes in the neighborhood of dam lakes.

Another issue to think about from the point of view of tourism in the Region is to develop rest areas and facilities on the road for the transit tourists passing through the Region by entering and exiting from the Gürbulak (Ağrı) and the Dilucu (Iğdır) border gates. It should be supported to develop these resting centers as local commercial centers, in addition to having facilities toward accommodation and recreational facilities.

It is true that the Region has an important tourism potential in terms of resources. However, the sectors' contribution to the regional economy would only be possible by a process of intensified advertisement and rapid investment. Currently the sector cannot contribute to the regional economy considerably due to deficiencies in infrastructure as well as superstructure.

MAP

MAP

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1.2. SENARIOS, PLAN AND GENERAL INVESTIGATIONS ON IMPLEMENTATION

1.2. SCENARIOS, PLAN AND GENERAL EVALUATIONS ON IMPLEMENTATION

1.2.1. Five Year Development Plan VIII and the EAP Master Plan

One of the primary objectives of this Plan is to draw EAP Region's per capita income near Turkish average in the long run. In order to make a plan for this target, one need to know the estimated long run growth rates for Turkey.

The annual average growth rate for the country is projected to be around 7 % in the Eighth Five Year Development Plan (FYDP VIII) Strategy in 2001-2023 period. In the perspective study conducted by the State Planning Organization (SPO) as a preparation for the Plan, however, Gross Domestic Project (GDP) is estimated to grow annually, with an optimist view, 5.7 % in 2001-2005, 6.0 % in 2006-2010, 6.4 % in 2011-2015, and 6.6 % in 2016-2020. Pessimistic estimations, on the other hand, are such that the growth rates in the same periods will be 3.7 %, 4.0 %, 4.5 %, and 5.1 %, respectively. Another study conducted by OECD, growth rate will be, at a maximum, 6.6 % in 2001-2010 and 6.5 % in 2011-2020. By the same study the growth rates, at a minimum, will be 4.3 % and 4.0 %, respectively (OECD, 1997). According to IBRD, on the other hand, Turkey will be able to grow in 2001-2020 at a rate of 5.6 % by a moderate estimation (IBRD, 1997). The conclusion one can draw from these estimations conducted by different institutions is that the country will grow between 4.0 % and 6.6 % in the coming twenty years, even though there might be differences between periods. In the study conducted for this plan, which takes the growth pattern in the last ten years, it is estimated that the country will grow 5.2 % in 2001-2005, 5.3 % in 2006-2010, and 5.4 % in 2011-2020. This estimation is very close to that of the IBRD, and stays in between the high and low estimations of OECD and SPO.

In order for the income per capita in the EAP Region to come reasonably close to Turkish averages at the end of the Plan period, i.e. within the next 20 years, the Region's growth rate has to be much faster than that of the country. When we consider the population growth in the Region, which is faster than that of the country and is highly likely to continue to be faster within the Plan period despite its declining pattern, the Region has to grow relatively faster in order to reach the Plan targets.

FYDP VIII projects to change the composition of gross national product such that agriculture, industry and services have a share of, respectively, 5 %, 30 % and 65 % in the total value added in the year 2023. Employment in agriculture is also expected to go down to 10 % at the end of the period. It will be necessary that this general change for the overall country be reflected in the Region, so both the contribution of agriculture to the regional product and its share in employment will have to decline so that both targets of adjustment to the country strategy and higher income levels could be achieved. The strategy, scenarios and plan developed for the Region are in this direction.

FYDP VIII and its strategy redefine the role of government in different sectors. The government will pull off the manufacturing industry to a great extent, and more weight will be given to energy, transportation-communication, education and health sectors. For example, taking FYDP VII expenditures as base, public sector expenditures will increase by 2.4 times on education, 1.8 times on health, and energy investments will increase by 2.4 times in FYDP VIII period. On the contrary, public investments in the manufacturing industry will increase

only by 16 %. EAP Master Plan, too, is prepared so as to be compatible with the role designated to the public sector in FYDP VIII and its strategy. In the Plan, manufacturing industry investments are projected to be handled by the private sector supported by the public sector. The Public sector will not act as an industrial entrepreneur, even though it will assume an essential role in energy and transportation as well as expansion and improvement of education and health services. Nevertheless, this does not mean that the public sector will completely pull off the industry in the Region.

Future expectations about the Region in the scenarios formed for the Region in the context of FYDP VIII and its 2023 perspective can be enumerated as the following:

- Entrance by the Region into a fast, stable and sustainable growth process,
- Getting the Region's income per capita near to the country average as a result of this growth,
- Having the Region's population, which has been growing faster than the country average though declining, find more and more jobs within the Region, hence getting the outmigration fall gradually,
- Changing the structure of employment and income, increasing productivity in agriculture and moving agricultural labor surplus to industry and services,
- Raising the labor quality in the Region via improved education and health,
- Transforming the savings created in the Region into investments within the Region, attracting investments from outside regions by improving physical and social infrastructure and effective organization,
- Increasing animal products supply, hence contributing more to satisfy the rising national demand for animal products by improving the meadow-pastures and operating them efficiently, and improving the livestock,
- Getting those industries and enterprises in the Region that rely on low-wage labor gain competitive power by providing them with qualified labor and infrastructure, which face difficulties because of the increased competition due to the Customs Union and globalization,
- Protecting the environment as a prerequisite for sustainability,
- Attracting a considerable amount of tourists to the Region and increasing employment possibilities in the tourism sector by publicizing the Region domestically and abroad,
- Satisfying from the Region the ever-increasing portions, if not all, of the import demand of the Caucasus and Central Asian countries, whose income per capita, total economic activity and import volume are low as of today, but who have the potential to show a rapid growth performance in the future via utilizing their natural resources,
- Getting civil society organizations as well as voluntary organizations assume ever-growing roles in improving the economic and social life of the Region,
- Getting the enterprises in the Region gain competitive power via organizing economic activities on more and more institutionalized basis, providing cheap input and effective marketing in both urban and rural areas by forming producer unions.

In order for the Region to achieve all of the above, a considerable amount of investments as well as new organizations are needed. The issue of investments is discussed below. Organization related issues are investigated in the related sectors.

1.2.2. Scenarios and the Required Investments

Three different scenarios are produced for each sub-region of the EAP Region, which is divided into three sub-regions by taking economic and geographical characteristics into account. In these scenarios, rural-urban distinction, development potential for each of the sub-region in the short, medium and long run, past growth performance of the country and future growth potential are considered, and for each sub-region income per capita targets relative to country average are determined, and the necessary growth rates, sectoral employment levels and investments to achieve these targets are analyzed.

Table 1.2.1. shows growth rates for gross domestic product for each sub-region and overall Turkey in 1987-1997 period and the projected growth rates for the Plan period. Although Turkey grew at an annual average rate of 4.1 % in 1987-1997 period, all of the three sub-regions showed a growth performance much below the country average. In case these rates remain the same in the future the income per capita difference between the EAP Region and the rest of the regions of the country will get wider. Therefore, in order to get this gap narrowed, a faster growth rate for the Region than the country is projected.

Three different scenarios are developed for each sub-region. The modest scenario is Scenario A1. According to A1's projections the EAP Region will grow at an annual average rate of 5.3 % in 2001-2005, 6.6 % in 2006-2010, 6.9 % in 2001-2020. The Region's income per capita, by the same scenario will reach 46 % of the country average by the year 2005, 49.3 % of the country average by 2010, and 57.7 % of the national average by the year 2020. By Scenario A3, which is the most optimistic one, income per capita in the same periods will reach 50.1 %, 59.8 % and 86.2 % of the country average, respectively. Income per capita in the year 2020 in the Malatya-Elazığ sub-region, which is relatively the best among the sub-regions, will reach 75 % of the country average according to Scenario A1, 90 % according to Scenario A2, and 100 % according to Scenario A3 **(Table 1.2.2)**.

Table 1.2.1: Annual Average Growth Rates of Gross Domestic Product (%)

SECTORS	A1			A2			A3			1987-1997
	2001-2005	2006-2010	2011-2020	2001-2005	2006-2010	2011-2020	2001-2005	2006-2010	2011-2020	
ERZURUM SUB-REGION	**5.0**	**6.5**	**7.1**	**6.0**	**8.2**	**8.4**	**6.6**	**9.3**	**9.6**	**1.6**
1. Agriculture	3.8	4.4	4.8	4.4	5.9	5.7	4.6	6.0	5.6	
2. Industry	10.3	11.4	9.5	11.6	12.3	12.2	13.3	14.3	13.4	
Manufacturing Industry	12.1	11.8	11.0	13.1	12.7	13.7	14.6	15.2	15.2	
3. Services	4.8	6.4	7.4	5.9	8.3	8.3	6.4	9.5	9.8	
Public Services	1.1	2.8	2.9	1.1	2.7	3.6	1.5	3.1	6.0	
MALATYA-ELAZIĞ SUB-REGION	**5.6**	**6.5**	**6.5**	**6.6**	**7.5**	**7.4**	**7.4**	**8.0**	**7.8**	**2.2**
1. Agriculture	4.3	5.3	5.5	5.2	5.4	5.4	5.5	5.3	5.4	
2. Industry	5.8	7.6	7.2	7.2	9.2	8.4	8.7	9.0	8.1	
Manufacturing Industry	5.5	7.6	7.4	7.2	9.6	8.7	8.8	9.2	8.3	
3. Services	6.0	6.4	6.4	6.8	7.3	7.3	7.5	8.3	8.2	
Public Services	4.2	3.4	3.3	4.3	3.5	3.3	4.3	3.5	3.3	
VAN SUB-REGION	**5.4**	**7.0**	**7.1**	**6.2**	**8.3**	**8.7**	**7.3**	**9.2**	**9.7**	**2.6**
1. Agriculture	3.2	6.2	6.6	4.2	6.2	6.1	5.1	6.9	7.2	
2. Industry	9.8	12.0	12.0	15.4	15.9	13.9	17.5	16.7	15.7	
Manufacturing Industry	10.3	12.1	11.8	15.8	15.7	13.6	17.3	16.5	16.0	
3. Services	5.6	6.7	6.4	5.8	7.7	7.9	6.9	8.6	8.6	
Public Services	4.6	4.9	4.6	4.6	4.9	4.6	4.6	4.9	4.6	
DAP BÖLGESİ	**5.3**	**6.6**	**6.9**	**6.3**	**7.9**	**8.0**	**5.1**	**8.7**	**8.9**	
1. Agriculture	3.9	5.0	5.4	4.6	5.8	5.7	5.0	5.9	5.9	
2. Industry	7.2	9.0	8.5	9.0	10.8	10.4	10.6	11.4	11.2	
Manufacturing Industry	7.3	9.2	9.1	9.3	11.2	11.0	10.9	11.7	12.0	
3. Services	5.4	6.5	6.8	6.2	7.8	7.9	6.9	8.9	9.0	
Public Services	3.2	3.6	3.6	3.2	3.6	3.8	3.3	3.8	4.7	
TURKEY	**5.2**	**5.3**	**5.4**	**5.2**	**5.3**	**5.4**	**5.2**	**5.3**	**5.4**	**4.1**

Source: EAP Master Plan, Strategy and Restructuring Scenarios

Table 1.2.2: Income and Population in the EAP Region

YEARS	Income per capita		Population	
	Amount * (Million TL.)	Region/Turkey (%)	Total (000)	City/Total (%)
I. EAP REGION				
1) A1 SCENARIO				
1997	204.8	44.6	5,868	40.0
2005	265	46.0	6,297	53.5
2010	349	49.3	6,646	59.9
2020	632	57.7	9,291	71.2
2) A2 SCENARIO				
1997	204.8	44.6	5,868	40.0
2005	278	48.2	6,297	53.5
2010	391	55.3	6,646	59.9
2020	797	72.8	9,291	71.2
A3 SCENARIO				
1997	204.8	44.6	5,868	40.0
2005	289	50.1	6,297	53.5
2010	423	59.8	6,646	59.9
2020	944	86.2	9,291	71.2

* 1997 Prices.

In order to be able to realize the income targets and relative improvements with respect to Turkish averages given in **Table 1.2.2** each sub-region will have to grow quite rapidly. To achieve the income targets projected even in the modest scenario, the required seasonal growth rates are higher than the growth rates Turkey has achieved in the five-year periods in the past. For example, Scenario A1's average annual growth rate for the Region as a whole for 2001-2020 period is 60 % higher than the Turkish average growth rate for the period 1987-1997. By the same comparison, this is more than twice according to Scenario A3 **(Table 1.2.1).**

Realization of the growth rates projected for the Region and the sub-regions depends on the fact that the sectors need to grow at various rates. In particular, industrial sector will have to grow at a high rate. For instance, in the Erzurum sub-region, according to Scenario A1 while agriculture grows at an annual average rate of 5 % in 2001-2005, 6.5 % in 2006-2010, and 7.1 % in 2011-2020, industry will have to grow in the same periods by 10.3 %, 11.4 % and 9.5 %, respectively. As the income per capita targets relative to Turkish averages go up, corresponding growth rates for industry rise as well **(Table 1.2.1**).

Each one of the three scenarios projects the employment structure in the Region to change radically. The share of agriculture in total employment goes down to 38 % in 2020 from 70 % at the end of the 1990s. On the other hand the share of industry goes up from 4.4 % to around 14 %, and that of services increases from 25.5 % to around 46 % **(Table 1.2.3)**. In 2020, services gain importance and provide almost half of the employment as has been observed in every modernizing and developing economy.

However, sectoral shares in employment, like today, will show differences at the end of the plan period as well. This results from the strategies, which take sub-regional characteristics and development potentials into account. In Erzurum Sub-region where

industrial development potential is relatively lower, though they show marginal differences from one scenario to the other, the share of agriculture falls from 70 % to around 41-44 %, and it declines to about 32-39 % in Van sub-region. In both regions the share of industry at the end of the period goes up to around 14-17 % **(Table 1.2.3)**. On the other hand, in Malatya-Elazığ Sub-region where industrial development potential is the highest, the share of agriculture falls from 67 % in 1997 to around 24-27 % at the end of the period by different scenarios. By the same comparison the share of industry increases from 6 % to approximately 20 %. Parallel to the industrial development in this sub-region, the share of services doubles compared to its current level and reaches to roughly 55 %.

Employment will decrease in agriculture whereas it will increase in industry and services in absolute value. For example according to Scenario A1 agricultural employment will decline by 385 thousand, whereas industrial and services employment will increase by 303 thousand and 618 thousand, respectively, throughout the Region in 2001-2010 period (**Table 1.2.12**). Net employment increase will be 536 thousand. During the period, the underemployed population who seems to be employed in agriculture but actually works only a few months in a year will be transferred from agriculture to industry and services.

A remarkable amount of investments will be necessary to be made in the Region in order to realize the transformation described by the above numbers. During 2001-2020 period the required amount of investments will be $80.3 billion in Scenario A1, $94.1 billion in Scenario A2, and $106.9 billion in Scenario A3 **(Table 1.2.4)**. While agriculture and industry take approximately equal share form total investments in the early years in all three scenarios, the share of industry increases in 2006-2010 period, and reaches to 2.5-3 times that of agriculture in the last period (2011-2020) according to Scenarios A2 and A3 **(Table 1.2.12).** In all three scenarios, services have the largest share. It is natural that the services sector gets the largest share, since it is absolutely necessary to improve the physical infrastructure such as highways, energy, and communication, and the social infrastructure such as education and health for increasing productivity and ensuring an efficiently working regional economy. The share of services, though decelerating gradually, gets larger in absolute value in all scenarios.

Table 1.2.3: Sub-regions, Scenarios and Sectoral Employment by Year

SECTORS	Employment 1997 (1,000) Persons	Employment share (%) in 1997	EMPLOYMENT (1,000 Persons)				Employment share (%) in 2020	2000-2020 Annual Average Growth (%)
			2000	2005	2010	2020		
ERZURUM SUB-REGION								
SCENARIO A1								
Agriculture	773	70.6	710	672	630	563	44.3	-1.2
Industry	42	3.8	49	67	104	177	14.9	6.4
Services	279	25.6	297	334	390	530	41.7	2.9
Total	1,094	100.0	1,056	1,073	1,124	1,270	100.0	0.9
SCENARIO A2								
Agriculture	773	70.6	710	667	626	558	42.9	-1.2
Industry	42	3.8	49	71	112	187	14.4	6.7
Services	279	25.6	297	350	413	557	42.8	3.2
Total	1,094	100.0	1,056	1,088	1,151	1,302	100.0	1.0
SCENARIO A3								
Agriculture	773	70.6	710	663	621	549	41.2	-1.3
Industry	42	3.8	49	76	119	198	14.9	7.0
Services	279	25.6	297	367	430	584	43.9	3.4
Total	1,094	100.0	1,056	1,106	1,170	1,331	100.0	1.2
MALATYA-ELAZIĞ SUB-REGION								
SCENARIO A1								
Agriculture	423	67.2	387	325	282	217	27.0	-2.9
Industry	37	5.9	52	76	95	160	19.9	5.6
Services	166	26.9	192	242	309	428	53.2	4.0
Total	625	100.0	631	643	686	805	100.0	1.2
SCENARIO A2								
Agriculture	423	67.2	387	320	279	214	25.3	-3.0
Industry	37	5.9	52	82	104	172	20.3	6.0
Services	166	26.9	192	261	328	461	54.4	4.4
Total	625	100.0	631	663	711	847	100.0	1.5
SCENARIO A3								
Agriculture	423	67.2	387	315	274	209	24.1	-3.1
Industry	37	5.9	52	84	108	177	20.4	6.1
Services	166	26.9	192	267	340	483	55.6	4.6
Total	625	100.0	631	666	722	869	100.0	1.6
VAN SUB-REGION								
SCENARIO A1								
Agriculture	313	72.3	302	276	249	233	39.2	-1.3
Industry	15	3.5	23	35	54	90	15.1	6.8
Services	105	24.2	123	159	200	272	45.7	4.0
Total	433	100.0	448	470	503	595	100.0	1.4
SCENARIO A2								
Agriculture	313	72.3	302	274	248	226	36.8	-1.4
Industry	15	3.5	23	42	60	95	15.5	7.1
Services	105	24.2	123	160	206	293	47.7	4.3
Total	433	100.0	448	476	514	614	100.0	1.6

Table 1.2.3: Sub-regions, Scenarios and Sectoral Employment by Year (Continued)

SECTORS	Employment 1997 (1,000) Persons	Employment share (%) in 1997	EMPLOYMENT (1,000 Persons)				Employment share (%) in 2020	2000-2020 Annual Average Growth (%)
			2000	2005	2010	2020		
SCENARIO A3								
Agriculture	313	72.3	302	254	223	197	32	-2.1
Industry	15	3.5	23	42	65	106	17.2	7.6
Services	105	24.2	123	179	228	313	50.8	4.7
Total	433	100.0	448	475	514	616	100.0	1.6
EAP REGION								
SCENARIO A1								
Agriculture	1,508	70.1	1.399	1,273	1,161	1,013	37.9	-1.6
Industry	94	4.4	124	178	253	427	16.0	6.2
Services	549	25.5	611	735	899	1230	46.1	3.5
Total	2,152	100.0	2.134	2,186	2,313	2,670	100.0	1.1
SCENARIO A2								
Agriculture	1,508	70.1	1.399	1,261	1,153	998	36.1	-1.7
Industry	94	4.4	124	195	276	454	16.4	6.5
Services	549	25.5	612	770	947	131	47.5	3.8
Total	2,152	100.0	2.134	2,226	2,376	2,763	100.0	1.3
SCENARIO A3								
Agriculture	1,508	70.1	1.399	1,232	1,118	955	33.9	-1.9
Industry	94	4.4	124	202	290	481	17.1	6.8
Services	549	25.5	612	813	998	1380	49.0	4.1
Total	2,152	100.0	2.134	2,247	2,406	2,816	100.0	1.4

NOTE: * Sectoral totals may not add up due to rounding off.

Table 1.2.4: Total Investments in the EAP Region ($ Million/Period)

SECTORS	SCENARIO											
	A1				A2				A3			
	2001-2005	2006-2010	2011-2020	Total 2001-2020	2001-2005	2006-2010	2011-2020	Total 2001-2020	2001-2005	2006-2010	2011-2020	Total 2001-2020
1. Agriculture	1,532	2,252	5,607	9,391	1,578	2,391	6,181	10,150	1,625	2,490	6,676	10,791
2. Industry	1,803	3,493	11,966	17,262	1,911	3,969	14,845	20,725	2,047	4,471	18,510	25,028
Manufacturing Industry	964	2,087	7,125	10,176	1,017	2,331	8,975	12,323	1,090	2,608	11,035	14,733
3. Services	9,460	13,399	30,807	53,666	9,861	14,821	38,520	63,202	10,262	16,219	44,642	71,123
TOTAL	12,795	19,144	48,379	80,318	13,350	21,181	59,546	94,077	13,934	23,179	69,828	106,941

Source: EAP Master Plan, Strategy and Restructuring Scenarios

Table 1.2.5: Total Investments by Sub-region, Period and Scenario ($ Million/Period)

SECTORS	A1			A2			A3		
	2001-2005	2006-2010	2011-2020	2001-2005	2006-2010	2011-2020	2001-2005	2006-2010	2011-2020
ERZURUM SUB-REGION									
1. Agriculture	575	938	2,642	588	971	2,826	608	1,017	3,025
2. Industry	687	1,466	5,620	729	1,638	6,729	753	1,796	8,123
Manufacturing Industry	350	819	3,025	369	905	3,738	396	1,024	4,590
3. Services	3,447	5,197	13,340	3,581	5,734	16,635	3,738	6,386	18,286
TOTAL	**4,708**	**7,601**	**21,601**	**4,897**	**8,343**	**26,191**	**5,098**	**9,199**	**29,433**
MALATYA-ELAZIĞ SUB-REGION									
1. Agriculture	535	726	1,790	568	806	2,027	588	839	2,153
2. Industry	713	1,261	3,751	779	1,506	4,946	832	1,677	6,016
Manufacturing Industry	409	819	2,338	429	911	3,077	449	991	3,619
3. Services	3,939	5,237	10,328	4,101	5,765	12,488	4,187	5,996	14,634
TOTAL	**5,187**	**7,225**	**15,869**	**5,448**	**8,076**	**19,461**	**5,607**	**8,512**	**22,803**
VAN SUB-REGION									
1. Agriculture	422	588	1,176	422	614	1,327	429	634	1,499
2. Industry	403	766	2,595	403	825	3,170	462	997	4,371
Manufacturing industry	204	449	1,763	218	515	2,159	244	595	2,826
3. Services	2,073	2,966	7,138	2,179	3,322	9,397	2,338	3,837	11,722
TOTAL	**2,899**	**4,319**	**10,909**	**3,003**	**4,761**	**13,894**	**3,230**	5,468	17,593
EAP REGION	**12,795**	**19,145**	**48,379**	**13,350**	**21,181**	**59,546**	**13,934**	23,179	69,828

Source: EAP Master Plan, Strategy and Restructuring Scenarios

Table 1.2.6: Public Investments by Period ($ Million / Period)

SECTORS	SCENARIO A1			SCENARIO A2			SCENARIO A3		
	2001-2005	2006-2010	2010-2020	2001-2005	2006-2010	2010-2020	2001-2005	2006-2010	2010-2020
ERZURUM SUB-REGION									
1. Agriculture	99	125	198	106	132	225	106	145	258
2. Industry	317	528	1,532	339	594	1,816	337	614	1,948
Manufacturing Industry	53	79	304	59	92	343	66	99	363
3. Services	726	1,043	2,490	755	1,158	2,992	779	1,162	3,249
TOTAL	**1,142**	**1,697**	**4,220**	**1,199**	**1,884**	**5,032**	**1,222**	**1,922**	**5,455**
MALATYA-ELAZIĞ SUB-REGION									
1. Agriculture	79	92	178	86	106	225	92	112	225
2. Industry	271	343	700	310	475	1,057	337	522	1,149
Manufacturing Industry	79	119	225	86	132	251	86	132	251
3. Services	773	997	1,935	806	1,142	2,371	819	1,103	2,668
TOTAL	**1,123**	**1,433**	**2,813**	**1,202**	**1,724**	**3,652**	**1,248**	**1,737**	**4,042**
VAN SUB-REGION									
1. Agriculture	59	86	172	59	92	185	59	86	205
2. Industry	172	251	561	158	231	634	198	330	1,076
Manufacturing Industry	26	40	99	26	40	112	33	53	132
3. Services	429	542	1,162	429	568	1,334	449	634	1,704
TOTAL	**660**	**878**	**1,895**	**647**	**892**	**2,153**	**707**	**1,050**	2,985
EAP REGION	**2,925**	**4,008**	**8,928**	**3,048**	**4,500**	**10,837**	**3,177**	**4,709**	12,482

Source: EAP Master Plan, Strategy and Restructuring Scenarios

Table 1.2.7: Private Sector Investments by Period and Scenario ($ Million / Period)

SECTORS	SCENARIO A1			SCENARIO A2			SCENARIO A3		
	2001-2005	2006-2010	2011-2020	2001-2005	2006-2010	2011-2020	2001-2005	2006-2010	2011-2020
ERZURUM SUB-REGION									
1. Agriculture	475	812	2,443	482	839	2,602	502	872	2,767
2. Industry	370	938	4,088	390	1,043	4,913	416	1,182	6,175
Manufacturing Industry	297	740	2,721	310	812	3,394	330	925	4,226
3. Services	2,721	4,154	10,850	2,826	4,576	13,643	2,958	5,224	15,037
TOTAL	**3,566**	**5,904**	**17,381**	**3,698**	**6,458**	**21,158**	**3,876**	**7,277**	**23,978**
MALATYA-ELAZIĞ SUB-REGION									
1. Agriculture	456	634	1,611	482	700	1,803	495	726	1,928
2. Industry	442	918	3,051	469	1,030	3,890	495	1,156	4,867
Manufacturing Industry	330	700	2,113	343	779	2,826	363	858	3,368
3. Services	3,167	4,240	8,393	3,295	4,623	10,117	3,368	4,893	11,966
TOTAL	**4,065**	**5,792**	**13,056**	**4,246**	**6,353**	**15,809**	**4,358**	**6,775**	**18,761**
VAN SUB-REGION									
1. Agriculture	363	502	1,004	363	522	1,142	370	548	1,294
2. Industry	231	515	2,034	244	594	2,536	264	667	3,295
Manufacturing Industry	178	409	1,664	192	475	2,047	211	542	2,694
3. Services	1,644	2,424	5,976	1,750	2,754	8,063	1,889	3,203	10,018
TOTAL	**2,239**	**3,441**	**9,014**	**2,358**	**3,870**	**11,742**	**2,523**	**4,418**	**14,608**
EAP REGION	**9,870**	**15,137**	**39,451**	**10,302**	**16,681**	**48,709**	**10,757**	**18,470**	**57,347**

Source: EAP Master Plan, Strategy and Restructuring Scenarios

Table 1.2.5 gives sub-regional distribution of investments. Industrial investments are concentrated heavily in Malatya-Elazığ and Erzurum Sub-regions in all three scenarios, as a natural outcome of the projected strategies. Industrial investments are lower, in absolute value, in Van Sub-region compared to the other two sub-regions.

Public sector has to make considerable amount of investments in order for each scenario to be realized. Total amount of public investments needed in 2001-2020 period is $15.9 billion in Scenario A1, $18.4 billion in Scenario A2, and $20.4 billion in Scenario A3 **(Table 1.2.6)**. These numbers correspond to 19.8 % of the total investments in Scenario A1, 19.6 % in Scenario A2, 19.1 % in Scenario A3. As these numbers and **Table 1.2.7** indicate, much of the investments, roughly 80 %, have to be conducted by the private sector.

1.2.3. Projected Investments and Investment Capacity

It is realized that sizable amounts of investments are needed in order to achieve the income targets and growth rates projected in the scenarios. Investments are high both in absolute terms and as a portion of the regional product. According to scenarios, investment requirement reaches approximately to 26 % of the gross regional product in 2001-2005, 29 % in 2006-2010, and 22 % in 2011-2020 period (**Table 1.2.8**).

Projected public investments range between 4 % and 6 % of gross regional product in different scenarios and periods. By the same comparison, private sector investments will have to range between 17.3 % and 23.7 % of gross regional product. Assuming that part of the public investments will be financed by taxes collected in the Region, if investments are going to be financed by the Region's resources, though it may vary by scenario and by period, it becomes clear that some 22-30 % of the gross regional product will have to be allocated to investments.

It is doubtful for a Region in which income per capita in a large portion such as Erzurum and Van Sub-region is $1000 and only in Malatya-Elazığ Sub-region it is about $2000, to allocate 22-30 % of its gross regional product to investments. Turkey was able to allocate only 10.4 % of its gross national product to fixed capital investments in 1950. Except for 1954 and 1955, the country could not allocate more than 15 % of its gross national product to investments until 1963 (Temel and Saygılı, 1995-97). Investments reached, for the first time, to 20 % of gross national product in 1977, and they exceeded again, for the first time, 25 % in 1988 (26.1 %) **(Table 1.2.9)**. After this year it did not fall below 22 %. The country has been able to allocate 20-25 % of its gross national product only as the income per capita approached to $3000.

Table 1.2.8: Investments in Proportion to Gross Regional Product in the EAP Region (%)

YEARS	SCENARIO		
	A1	A2	A3
I. TOTAL INVESTMENTS			
2001-2005	25.8	26.2	26.6
2006-2010	28.5	28.9	29.7
2011-2020	21.2	21.7	22.3
II. PUBLIC INVESTMENTS			
2001-2005	5.9	5.9	6.0
2006-2010	5.9	6.1	6.0
2011-2020	3.9	3.9	3.9
III. PRIVATE INVESTMENTS			
2001-2005	19.9	20.2	20.6
2006-2010	22.5	22.7	23.6
2011-2020	17.3	17.7	18.3

Source: EAP Master Plan. Strategy and Restructuring Scenarios

Table 1.2.9: Characteristics of Fixed Capital Investments (FCI) in Turkey (1980-1998)

YEAR	Total FCI/ GDP (%)	Private FCI / GDP (%)	Public FCI / GDP (%)	Private FCI / Total FCI (%)	Public FCI / Total FCI (%)
	I	II	III	IV	V
1980	16.5	7.7	8.8	47.0	53.0
1981	15.5	6.5	9.0	41.8	58.2
1982	14.8	6.6	8.2	44.7	55.3
1983	15.6	6.9	8.7	44.1	55.9
1984	14.8	6.8	8.0	45.9	54.1
1985	20.1	10.9	9.2	54.5	45.5
1986	22.8	12.6	10.2	55.3	44.7
1987	24.6	14.7	9.9	59.6	40.4
1988	26.1	17.3	8.9	66.1	33.9
1989	22.5	15.0	7.5	66.5	33.5
1990	22.6	15.7	6.9	69.2	30.8
1991	23.5	16.0	7.5	68.1	31.9
1992	22.8	15.4	7.4	67.7	32.3
1993	25.3	18.1	7.2	71.5	28.5
1994	24.3	19.3	5.0	79.4	20.6
1995	23.9	19.0	4.4	81.1	18.9
1996	25.1	20.0	5.1	79.7	20.3
1997	26.3	20.4	5.9	77.6	22.4
1998	25.9*	19.8*	6.1*	76.3*	23.7*

*Estimated realization.

Source: For 1980-94; Adil Temel and Şeref Saygılı. "An Estimation of Gross Fixed Capital Formation in The Turkish Economy", in T. BULUTAY (Ed.). Investment and Labor Market in Turkey. Proceedings of a Seminar Held in Ankara. 5 December 1995. (Ankara: SIS. 1995), pp. 83, 85-6; for 1995-1988: State Planning Organization. Main Economic Indicators, April 1999, pp. 13, 36.

Only a few countries so far have been able to allocate more than 25 % of their gross national product to investments. For example, Japan allocated 31.8 % of its gross national product between 1950-1969 and 31.9 % between 1970-1989. While Japan had lower income levels, the share it was able to allocate to investments from its gross domestic product was 16.6 % between 1910-1929 and 20.5 % between 1930-1949. By the same token, Korea was able to allocate only 5.1 % of its gross domestic product to investments between 1911-1925, 16.3 % between 1951-1969. This share could reach to 29.1 % only between 1970-1989. Investments/gross domestic product ratio of the United States (US) and the United Kingdom (UK) stayed below 20 % throughout the twentieth century (Barro and Sala-i-Martin, 1995: p.8).

The investment capacity of a country is primarily determined by the size of domestic savings. Except Korea, and the US between 1970-1989, for all the countries mentioned above savings rate occurred to be higher than investment rate. Savings behavior is a function of a complicated set of economic, such as the real interest rates, as well as sociological and psychological factors such as consumption behaviors. Turkey has never been able to achieve high savings rate like 30 % in the past, and it was able to achieve investment rates of around 25 % of the gross national product only through capital inflow from abroad. Given the country experience, it is quite difficult, if not impossible, for the Region to finance those investments, which reach 22-30 % of its gross regional product by its own savings. This implies that in order to achieve the growth and employment targets projected by the scenarios, the Region has to import sizable amount of capital from outside in the context of the scenario assumptions on capital/revenue ratio.

It will be necessary to get most of the imported capital from the private sector. (**Table 1.2.9)** gives the ratio of private sector fixed capital investments to gross national product since 1980 in the country. In the first half of the 1980s this ratio did not exceed 7.7 %, only in the second half of the 1980s has it started to increase as the Government pulled out from the economy and income per capita, hence the savings increased, and reached to approximately 20 % level in the second half of the 1990s. Looking at **Table 1.2.8**, one can see that the private investments to the gross regional product ratio projected in the scenarios ranges between 17.3 % and 23.7 %. In light of the past country experience, it seems impossible for the regional private investors to achieve the investment levels projected in the scenarios even if they showed similar behavior with the national private investors. Therefore, large amounts of private capital have to be brought to the Region from outside in order to realize the income and employment targets of the scenarios. The necessary incentives and organizations to attract foreign capital to the Region are discussed in detail in the manufacturing industry section.

Even though it is projected in the scenarios that 80 % of the investments be handled by the private sector and 20 % by the public sector, in absolute terms the public sector still has to make very high levels of investments. As mentioned earlier, the amount of investments the public sector has to handle in the coming twenty years, between 2001-2020, is $15.9 billion in Scenario A1, $18.4 billion in Scenario A2, and $20.4 billion in Scenario A3 **(Table 1.2.6)**. The public sector has to change its behavior and allocate more funds at least to the projects in the annual investment programs in order to achieve the regional investment targets specified in these scenarios.

Table 1.2.10: Investments in the EAP Region in the Year 2000 Investment Program

	Total Investments	Estimated Expenditures by end-1999	Year 2000 Investments	Investments After 2000
1) Province Totals (TL.Tril.)	4,954.4	1,841.4	205.1	2,907.9
2) Miscellaneous (TL.Tril.)	991.8	235.3	61.6	693.9
TOTAL (TL.Tril.)	5,946.2	2,076.7	266.7	3,602.8
TOTAL ($ Million)*	9,590.6	3,349.5	430.2	5,810.9

* $1 = TL 620,000.

Table 1.2.10 gives the EAP Region's Public Investments in the Year 2000 Investment Program. EAP Region's total investments in the Investment Program are $9.6 billion. Out of this amount, $3.3 billion has been spent until the end of 1999. The amount of allocation for the year 2000 Investment Program is $430.2 million, and the amount to be spent after 2000 is $5.8 billion. Assuming there is not going to be any new project to be included in the Investment Program, and the same amount of allocation is used every year as the year 2000, it will take 13.5 years to complete the investments projected in the current investment program. With the same amount of allocation in the year 2000, it will take 37 years to complete the public investments projected in Scenario A1, and 43 years for the investments in Scenario A2. Putting it differently, in order to complete the public investments in Scenario A1 in the next 20 years, the annual amount of allocation has to be increased, as opposed to its 2000 level, 1.3 times in 2001-2005, 1.8 times in 2006-2010, and 2.1 times in 2011-2020 period. Projected average public investment levels in the Plan are relatively lower for the period of 2001-2005 than the other period. It is hard but not impossible for the public sector to allocate the resources to the Region required by the scenarios especially in the coming years during which an anti-inflationary stabilization program is expected to be in place. If the inflation and public sector deficits can be controlled as projected in the last stabilization program, investment capacity of the public sector will remarkably go up, hence it will become feasible to allocate more and more resources to the EAP Region. Besides, if Turkey can join the European Union by the year 2010, then it will become possible to get considerable amount of funds from the EU funds allocated to Regional Development and infrastructure, hence the public will be able to make the investments projected in the scenarios.

The EAP resembles to the SAP in terms of the size of investments and the priority it should get from the public investments. The public sector allocated $14 billion as of 1999 to the SAP, which has been the highest priority for Turkey in the last 20 years. According to 1989 Master Plan, the SAP, which required $32 billion aggregate investment, was supposed to be completed by the year 2005. However, only 43.3 % of the total expenditure requirement has been realized until the year 2000. The SAP investments need to be accelerated, too. Acceleration of the SAP will have positive effects in terms of employment, input supply and market on the EAP Region, and stimulate the entrepreneurs of the Region.

The fact that the size of investments is high requires both the development of new finance models and implementation of the development strategies so as to call for minimum level of funds. These strategies are discussed in the strategy report. In the

sectoral plans section of this report funding requirements and the possible funding sources are investigated whenever needed, and an attempt is made to develop finance models in the finance section.

1.2.4. Some Issues Related to Investments

When producing the scenarios to realize the projected growth targets, investment needs are derived from incremental capital-revenue ratio obtained from the data of the Turkish economy for 1980-1997 period and from dI=f(dY) relationship called adjusted acceleration principle. (Here dI = change in investments and dY = change in Gross Domestic Product). Even though these methods are commonly used in planning, two features in terms of the results need to be paid attention.

The first issue is that incremental capital (investment)-revenue ratio is an unstable coefficient continuously varying from one year to another. Therefore, when deriving the investment demand it is important to keep in mind for which year(s) this coefficient is taken, or which sectoral coefficients are taken as base.

Different capital-revenue ratios result in different investment needs. According to adjusted acceleration principle that could be considered as a different variation of the capital-revenue coefficient used in the scenarios, investment-revenue relationship for Turkey in 1980-1997 period was dI= -29.54 + 0.52 dY (R^2=80, η=18, df=6). When deriving scenarios in light of this relationship, if investment, I, happens to be less than 20 % or greater than 40 % of the revenue (Gross Domestic Product), then the investment model is adjusted, i.e. the constraint $0.20 \leq dI/dY \leq 0.40$ is used. Under this constraint, it is possible to derive quite different investment requirements for the same revenue (income) change.

The second issue is that as the economy develops, i.e. as Gross Domestic Product increases, the ratio dI/dY goes up as well. This is a reflection of the fact that simpler technologies are used in many sectors at low-income levels, while more complicated and more expensive technologies are to be used at higher income levels. Since the Region far behind Turkey in terms of income, and since the same income increase could be achieved in the Region with relatively lower income, at least in the short and medium run, than the other regions, it is highly likely that Di/Dy ratios derived for Turkey will be much higher relative to the real situation in the Region. In other words, required investments to achieve the projected targets are likely to be remarkably lower than given in the scenarios. The reason to use the data for overall Turkey to generate investment requirements in spite of the fact that this issue was known is the unavailability of the regional data and the impossibility to generate them within the projected time to prepare the plan. Therefore, one should be cautious about the investment requirements generated in the scenarios.

Despite this reservation, even we accept the possibility that the derived investment requirements might be considerably higher than would be needed in reality, investment requirements are still quite large. For this reason, it is imperative to take into account the sizable gap between the possible sources and the possible investment requirements when choosing and implementing the strategies, and prioritizing the projects. In this context, the following issues should be paid attention though many of them may seem to be simple.

1.2.5. Some Principles of Action in the Context of Resource Constraint in Development

Even though there are not shortcuts to development, yet there are certain resource-saving methods and technologies that might vary from region to region. In this context technologies can be divided into two:

i) Relatively expensive technologies that are embedded in machinery and equipment,
ii) Relatively information and/or labor intensive technologies based on knowledge and skill.

Which one of these technologies would be more appropriate for a region depends on the level of development of the region, its resources, and the its comparative advantage.

Some of the resource-saving approaches to increase income and welfare of the Region are analyzed below.

i) Animal Husbandry and Sown-Planted Agriculture

The Eastern Anatolian Region, like any other underdeveloped region, is a region in which capital is scarce and labor is abundant. The only comparative advantage area shared by a large portion of the Region is animal husbandry based on meadow and pastureland. The prerequisite for improving animal husbandry and making the Region's comparative advantage more efficient is the rational use of the meadow-pastureland. Improvement of the pastureland, which has become terribly unfruitful and distorted in the last 30-40 years caused by the reasons resulting from population pressure and common use of pastureland, and putting the livestock out to pastureland on a rotating basis are indispensable for development of the Region. Improvement of and institutionalized and rotational use of the pastureland in accordance with its capacity are not capital intensive practices. The whole issue is to be able to implement current accumulation of knowledge and technologies that are known and that could be adapted to the Region. And this requires a functional publication organization and supervision of the use of pastureland. Otherwise, it is impossible to achieve development in most of the Region, which has already lost its comparative advantage in animal husbandry with its current practices of pastureland use to a great extent.

The second problem in the Region concerning the animal husbandry is the widespread presence of the unproductive animal races. Current races may be improved by artificial fertilization and/or imported animal races that fit to the regional conditions may be substituted for the current races. Improvement of race via artificial fertilization is, again, not a capital intensive, but rather a knowledge and skill intensive activity. Expansion of this activity in the Region depends on the presence of a functional publication organization and an incentive mechanism stimulating private sector's interest in the issue. However, even if the existing races are improved, getting high yield from them and getting the regional animal husbandry to be able to compete with other regions and imported animal products depend on getting low cost inputs within the Region, and this in turn depends on, in the context of the Region, improving the meadow-pastureland and putting the livestock out to pasture on a rotational basis and with respect to its capacity. It is impossible to

achieve a visible improvement in the yield of the livestock, hence in the Region's economy without improving the pastureland and using them in accordance with their capacity.

Another issue concerning the animal husbandry, especially milk animal husbandry, is the need for publicly supported or promoted private marketing enterprises, which would mostly eliminate the market risk in the Region in which there exists a scattered settlement structure and it is difficult to establish producer organizations that would minimize the market risk for sociological reasons. This is not a capital incentive, but knowledge and skill intensive activity.

Improvement of the sown-planted agriculture in the Region depends on reducing the size of fallowed land, increasing product variety, and more importantly increasing productivity, especially land productivity. Realization of all these depend on transfer of new technologies, expansion of improved races, appropriate prices, and the presence of a research and publication organization, which would find solutions to the problems and introduce new technologies to farmers who have low level of education and limited access to the information sources in the current conditions.

ii) Publication Organization

It is not going to be discussed in detail how should a publication organization be established here. There are successful publication examples in the world. An example of publication organization exists in our country as well, which was tried in the 1950s and 1960s in Çukurova and found successful, but stopped later on. This could be improved by taking lessons from its successes and failures. The common characteristics of all successful publication organizations are research-publication integrity and more importantly, giving frequent visits to the farmers and educating them on the field, having them informed about the problems and producing solutions to the problems in cooperation with the research institution.

In addition to be able to cover the current expenses and hiring skilled personnel, successful operation of a publication institution depend on, first of all, duration of the personnel to stay in a given region long enough to get acquainted with the prevalent climatic, land, market, and credit conditions as well as social structure and producers' reactions to innovations. It is impossible to get efficient results with frequently moving personnel from one place to another. Because it takes time to get acquainted with the local conditions and develop publication methods to fit these conditions. If the personnel move frequently it becomes impossible to develop publication methods and content suitable with that location, hence the service gets unfruitful.

In the current policy the publication personnel have the same status with the pure public service personnel such as justice and security, hence they circulate frequently or get appointed to other places upon their request. But there is an essential difference between the services that are considered to be pure public good and the publication services. For the personnel working in services of pure public good such as justice and security, it is possible to benefit from the experience in one place obtained in another place since the same laws and regulations are applied everywhere. On the other hand, it is not possible to benefit from the experience of a publication personnel on farmers' conditions, climate,

produce variety, and social structure of a certain location in a different one, so the local experience and accumulation of knowledge internalized in that personnel is lost. This is a tremendous individual as well as social loss.

For this reason, publication personnel should be hired with a "permanent" status, earning good amount of money on condition to work continuously in a specific place, having the job as long as he/she works in that specific location, just like they do in a private company.

iii) Health

Another area for which similar policies suggested for publication services in terms of personnel employment and that would be investment-saving at least in the short and medium term is the health services. In the context of possible regional demand for medical services at the Region's income level, the main problem in the Region for the time being is not lack of physical facilities but equipment in the present facilities, and more importantly lack of personnel. The priority in the Region should be given to providing equipment and personnel to the existing ones, rather than building new medical facilities. Instead of the rotation method for providing sufficient medical personnel, which was tried and failed in the past and once again on the agenda these days, it is suggested that "permanent" staff policy that was also suggested for publication services should be adapted. Furthermore, since it is more likely to stay permanently for those medical personnel who are educated and trained in the Region compared to the ones educated in other regions, the medical education and training facilities in the Region should be strengthened and their capacities should be expanded.

One thing that reduces the need for medical investments in the long run is the public health services. Expansion of many public health services from vaccination to hygiene education will reduce the demand for medical treatment services, this will in turn reduce the need for medical facility investments.

iv) Industry

The most important factor in the short and the medium run to mobilize the relatively small industrial potential of the Region due to certain reasons such as location, distance from the gravity center of the market, and difficulty to get inputs is operating the existing industrial plants efficiently. Many of the present manufacturing industry plants in the Region work with idle capacity, which reduces their profit margins and discourages the potential entrepreneurs. The primary reason for this, according to the local industrialists, is the marketing difficulties. Small and medium sized enterprises common in the Region generally do not have resources to allocate for marketing research, and hire personnel for this purpose. Therefore, in addition to other things, market research institutions to help the regional industrialists are needed in the Region.

Economic Development Agency or a similar organization should be established in the Region with participation of the Chambers of Commerce and Industry. Such an organization, which could be established under a different name, should be able to do marketing research for the members upon demand, prepare feasibility reports, help in

getting suitable raw materials, machinery and equipment, and introduce the Region's opportunities to domestic as well as foreign investors. The most important requirement for the organization to work efficiently is to keep it outside of political pressures in hiring personnel, and work professionally.

If the existing industrial plants can be operated at full capacity, considerable increases in employment would be possible even if no new industrial investment is made in the short and the medium run. More importantly, getting the present plants operate more successfully is one of the most important factors in encouraging new investors and getting the Region's industry make progress.

1.2.6. Road Map in Development: Strategies and Plans

The current situation and the potentials of the Region are discussed in detail in Current Situation Report, and the strategies to be followed in the context of these potentials are analyzed in "Strategy and Restructuring Scenarios" Report. The sectoral plans and implementation principles formed in accordance with these strategies are discussed in the following sections of this report. A summary of the strategies is provided above and an attempt is made to draw attention to a few important issues in regard to resource requirements, capacity of the country to provide these requirements, and a successful plan implementation.

In light of the past experience, policy planning and strategies have become a matter of primary importance in the world recently with regard to regional development, rather than the detailed development plans. This is due to four principal reasons as the following:

- Financial capital has become globalized and can now flow between countries in a way no one can predict easily beforehand.

- Physical capital investments have started to be made more and more on a global integration basis taking market possibilities into account, as a result of reducing or removing the trade distortions gradually in the context of formation of regional trading blocks and international agreements.

- In many countries including Turkey, mixed economy model has been given up and investments, except for education and health sectors, are started to be made by private sector in accordance with the requirements of free market conditions.

- The Government, in many countries including Turkey, pulled off the economy except for infrastructure, justice, education and health, and reduced or totally stopped intervening with the price mechanism.

These four factors made the future uncertain to a great extent. It is impossible to make comprehensive plans and implement them under the conditions of uncertainty. Therefore, policy planning, strategies, and institutionalization that has the capacity to implement these policy plans and strategies by adjusting them to the conditions changing over time has started to become more prevalent. For this reason, again, assuming there will

be macroeconomic stability in the country, certain institutionalization principles are particularly stressed in the context of the EAP Region. The strategies put forth in the context of development of the East are essential. Even though the sectoral plans developed indicate what must be done in education, health, and infrastructure in the context of the road map put forth by the strategies, for many other sectors they just try to determine what could be done if the resources and the changing competition conditions become available.

Under free market conditions, a regional plan, from private sector's perspective, means a declaration of will by the Government, and a document removing or minimizing the uncertainty in certain issues. In order for this document to be operational the Government has to make infrastructure investments in the plan in accordance with the projected timing and spatial strategy.

Another issue that has become prevalent in regards to planning in the last 15-20 years is the concept of "sustainability." The prerequisites of sustainability in the East where the industrial potential is limited, protection, improvement and rotational use compatible with their carrying capacity of the meadow-pastureland on which the animal husbandry as being the main economic activity currently as well as in the foreseeable future rely, and prevention of the rivers and lakes including dam lakes from getting polluted. Another issue is the erosion control especially in the river basins. Otherwise, sustainable development in the East will become impossible to a great extent.

1.2.7. Possible Interactions Between the EAP Region and Other Regions

We cannot think of development of any region in a given country separate from development of the other regions. The relations and interactions between the EAP Region and the other regions depend on what is happening in the other regions as well as the developments within the EAP Region itself.

Implementing even the modest scenario, Scenario A1, developed for the EAP Region, the migration from the Region to the Marmara, the Aegean, and the Mediterranean Regions will decline gradually. This, in turn, will reduce the pressure on the metropolitan centers such as İstanbul, İzmir, Ankara and Adana.

Improvement of transportation channels linking the Region to the western regions will open up the Region more to the industrial goods of western origin. This applies to the goods having scale economies that have higher value/weight ratios particularly in the short and the medium run, and adversely affects the Region. On the other hand, western industries, which face increasing competition in the western regions due to the Customs Union might want to prefer to invest in the Region as the infrastructure is improved, to benefit from the relatively cheap labor in the East and escape from some of the negative externalities of the metropolitan areas. Incentives might accelerate this kind of industries to migrate to the Region.

Industries that do not have scale economies and use relatively cheap labor-intensive technologies can be located in the attraction centers of the Region, in order to increase their competitive power as urban, physical and social infrastructure as well as East-West transportation and communication channels are improved.

Improving Trabzon-Erzurum highway is likely to stimulate Erzurum's development by making possible for small and medium scale industries to be established in Erzurum to get inputs at a lower cost via Trabzon harbor.

The thing that would influence the Eastern Anatolian Region most, especially the central and southeastern parts, is the developments in the SAP Region. It is likely that the SAP Region might attract some migration from the East, especially from the Van Sub-region, as the SAP Region might develop rapidly brought about by the irrigation investments. It is also probable that the industry in Gaziantep in the SAP Region adversely affects industrial development in Van Sub-region.

Some of the industrial inputs such as cotton produced in the SAP Region may be used in Malatya-Elazığ Urban Region and this may accelerate industrialization in this region. Feed plants produced in the SAP Region and some secondary industrial produces such as residue of crushed seeds may be used to reduce feed deficits for the animals and increase animal products in the EAP Region.

1.2.8. Globalization and Its Likely Impacts On the Region

In order to investigate the likely effects of globalization on the Region, the concept of globalization has to be defined and understood first. Globalization is to do the actual organization of the economic activities in a system that goes beyond the national boundaries and integration of the national economies with one another. Just like local and regional economies depend on one another in a national economy, national economies depend on one another in a global world economy as well. One thing that occurs in one national economy affects other national economies. Interdependence of national economies does not mean that global replaces the national, regional, and local, nor does it mean that global comes before the other ones. Globalization means the state of existence of different economies, regardless of any geographical or political scale they might exist i.e. national, regional, or local, in wider interregional relations and networks. Geographical location does not constitute a fixed obstacle for social and economic interaction and organization. Internet and the fact that one can buy and sell in global financial markets 24 hours a day are good examples on how can the limits of geographical location be exceeded and on how interactions between individuals and organizations can go beyond the old time and space limitations.

In globalization, the events and developments in distant locations may result in serious developments in a national economy, and similarly, a local or regional event might cause global influences. The fact that the financial crisis that broke out in the Southeast Asia in 1998 adversely affected Turkish exports is a good example of this interaction. Similarly, the fact that labor demonstrations in a semiconductor producing company led to increases in world computer prices in the same year is another example in the same realm.

Globalization reflects itself in the flow of goods, capital, human beings, as well as ideas. The size of these currents depends on the state of physical infrastructure such as transportation and communication, normative infrastructure such as trading rules, and symbolic infrastructure such as English being the "lingua franca." This infrastructure constitutes the prerequisite of the systematic and relatively long lasting global connections.

The quantities and qualities of these prerequisites, ceteris paribus, determine the extent to which one can participate in the global economy.

Globalization is not a new event. It is a fact that has been, at least since the 16th century, comprising geographically more and more countries and regions, and economically more and more activity areas. In our times, the thing that distinguishes today's globalization from the past is the unprecedented scale and size of the modern global interaction. Daily volume of transactions in foreign exchange markets today is 60 times higher than the volume of nations' exports to one another. Global production of multi-national corporations (MNCs) is above the total world exports. In 1997 there were 53,000 MNCs and they had roughly 450,000 child companies in foreign countries. In the same year, total value of goods and services they sold all over the world reached to $9.5 trillion (UNCTAD, 1998).

Globalization has been one of the influencing, even determining factors for the EAP Region's economic structure. The distant location of the Region to the Western European countries, which has been the main trading partners of the country compared to the other regions, and its far distance from the main export and import points and ports put the Region in a disadvantageous position. It would be useful to give two examples on how influential the foreign trade relations and relative location are to see the position of the Region in a more comprehensive perspective.

At the beginning of the nineteenth century trade between Europe and Iran was concentrated largely in the Russian port Suhumkale, today's Şuhumi. In 1832, the Empire decided to impose the same tariffs applied in other parts of the country in Suhumkale and required that all customs check and tax procedures of all goods destined to Iran and Central Asia be handled in Tiflis, which is located 350 kilometers away from the sea. This switched Iran trade from Suhumkale-Tiflis-the Caspian Sea destination to the Trabzon-Erzurum-Tebriz overland route. The total tonnage of the ships coming to Trabzon port reached to 25,648 tons in 1836 from 12,822 in 1833, the value of cargo went up from 560 thousand Pounds to 1,451 thousand Pounds. Between 1856-60 annual average value of goods coming to Trabzon and being sent to the Ottoman's eastern provinces and Iran reached to 3,306 thousand Pounds. This trade increased the populations of Trabzon and Erzurum. According to an estimation, Trabzon's population was around 15 thousand in 1803. It reached to 25-30 thousand in 1835, and to 70 thousand in 1870 (Turgay, 1994:67). Transit trade caused the same thing in Erzurum's population as well. The population of the city between 1830-1840 was around 15 thousand (Behar, 1996:33).

The liveliness Iran trade brought to Trabzon and Erzurum did not last long. The Suez Canal was opened in 1869 and England and France switched part of the Iran trade to Basra-Bagdat-Kirmanşah destination. Tsar Russia completed Poti-Tiflis railway and Tiflis Railway Company succeeded in switching the Iranian exports to use Poti Port via Tiflis by providing cheaper transportation to Iranian merchants. As a result of these two developments the importance of Trabzon declined gradually. The population of Trabzon fell down to 40 thousand in 1890. The population of Erzurum was also approximately the same, 39 thousand (Behar, 1996:43).

Second example is Gaziantep, which has a much more convenient location than the cities of the EAP Region, and indicates how important the relative location with respect to the ports of export and import is for the industry of a city or a province. The owner of one of the biggest Gaziantep based industrial companies said recently: "We always thought Gaziantep as the location for our investments. We went to other cities only when it was not possible to handle the projected investment in Gaziantep. If we had not thought so, and had invested in Istanbul or Izmir, I believe we would have been economically more powerful today. We buy the raw materials from western provinces or nations and bring them to Gaziantep with a considerable transportation cost. After processing here, we resell or export them to western provinces or nations. This of course is rising the cost and we do not have the option to add transportation cost to total cost and declare the price accordingly (Hürriyet, Ekonomi Eki. 01.10.2000:5).

Globalization, as mentioned earlier, means ever-increasing flow of goods, services, and ideas. One factor accelerating globalization for Turkey is the Customs Union with the European Union. The western regions of the country, especially the Marmara, the Aegean and to some extent the Mediterranean Regions became superior relative to other regions both as importers and exporters under the increased flow of goods and services. This superiority is likely to be strengthened even more in case Turkey joins the European Union.

The Customs Union excluded the import of agricultural products from free trade without tariffs for the time being. When this period ended in 2010s domestic agricultural production will face competition from the EU members, which benefit from scale economies and high technology. It is highly likely that this competition will put the production of animal products in the EAP Region in a difficult position if counter measures are not taken. In order for the animal husbandry of the Region to be able to compete with animal products originating from Western Europe, the main source of nutrition, meadow-pastureland, which gradually became unproductive due to excessive and irregular use, has to be improved, they should be used on a rotational basis, animal races should be improved, the share of feed plants in plant rotation should be increased, animal diseases should be fought against, and to achieve all these, the publication organization has to be made more efficient, and the farmers should be educated and organized.

On the other hand, in case Turkey joins the European Union she will be able to benefit from various funds of the Union such as "Regional Development Fund," "European Social Fund," "Agricultural Guidance and Guarantee Fund," and "Adjustment Fund" for environment and infrastructure by a total amount of roughly 6 billion ECU. Part of this assistance can be directed to infrastructure investments, meadow-pasture improvement, and other agricultural and industrial infrastructure projects in the East, hence the competitive power of the Region can be strengthened in livestock and industrial products. Improvement of especially transportation and communication infrastructure may attract some industrial investments from the Union to utilize the cheap labor.

With the collapse of the Soviet Union the nations of the Caucasus and Central Asia adopted free market economy at various degrees and entered the globalization process. Central Asian Turkic Republics, Kazakhstan, Kirghizistan, Uzbekistan, Tajikistan and Turkmenistan have a total population of 60 million, and their income per capita is below

$1000, except for Kazakhstan whose income per capita is $1100. It is impossible for these countries with this low income and agriculture-based economy to create large demand for industrial and agricultural products. Among these countries, total imports were $791 million for Azerbaijan, $931 million for Georgia, $4,275 million for Kazakhstan, $709 million for Kirghizistan, $4,842 million for Uzbekistan, and $1,201 million for Turkmenistan in 1997, hence amounting to $12,749 million in total. In the same year their total imports from Turkey reached to $1,081.3 million, which corresponds to 8.45 % of the total (SIS, 1997).

Azerbaijan, Kazakhstan and Turkmenistan have important natural gas and/or petroleum reserves. Income per capita for these three countries can go up rapidly. In a study, taking 1995 as 100, income per capita for the year 2011 was predicted to rise to 207 in Kazakhstan, 243 in Azerbaijan, and 135 in Turkmenistan. According to the same study, income per capita index in the same year will rise to 211 in Georgia, 183 in Kirghizistan, 125 in Tajikistan, and 125 in Uzbekistan. One can argue that remarkable increases are taking place in some of these. Import demand will also go up in these countries as income per capita rises. Most of this import demand will turn toward industrial goods due to their high income elasticity. It is natural that Turkey will get a share from this increase due to cultural and geographical proximity. But at least in the short and the medium run, it is highly likely that most of the import demand for Turkish goods from these countries will be satisfied by the western regions due to their improved industrial and marketing organizations. It is likely that the Eastern Anatolian Region can get only a marginal share in the short and the medium run from this rising import demand. In the long run, on the other hand, it is more likely to get a larger share due to improved industry partly thanks to this demand. We will return to this topic in the manufacturing industry section.

The most important country to the east of the Region is Iran, with its more than 60 million population and $14,705 million imports in 1997. Turkey was able to get a share of only $307 million or 2.09 % from this value in that year. Exports to Iran were much higher in the 1980s. But commercial relations with Iran depend on political relations and they are unstable. Therefore, it is hard to estimate the export potentials of the Eastern Anatolia to Iran in the future. Nevertheless, one can argue that all developed nations keep an eye on Iran due to its large market. Iran produces similar industrial goods produced by Turkey. Goods with price advantage, which do not require high technology can be sold to Iran, and currently such goods are being sold, too. In the future, the Region can get a share from the Iranian market by taking advantage of geographical proximity. Besides, since Iran has food deficit, the Region can get a share from Iran's food products market provided that agriculture and animal husbandry are improved in the Region.

Another market for the Eastern Anatolia is our southern neighbors (Syria and Iraq) and the Gulf countries. Our exports to Iraq and the Gulf countries reached to quite high levels during the 1980s. But the embargo imposed on Iraq and the resulting difficulties to reach the Gulf countries reduced the exports to these countries. These southern markets can regain importance in the future if the embargo is stopped, and if positive political relations with Syria can be developed. However, the SAP provinces are more advantageous than the EAP provinces in trading with the south. Traditionally live animals have been exported from the East to the south, too. The Gulf countries' demand for agricultural product and live animal will continue in the future because they are not self-sufficient in terms of food.

But in order for the East to get a remarkable share in this market, as summarized earlier, it has to increase productivity in animal husbandry and be able to compete in animal products, especially sheep and lamb meat, originating from Australia, New Zealand, and Western Europe.

1.2.9. Scenario to be Implemented

When the funding requirements of the various scenarios investigated above in the "Scenarios and the required Investments" section, possible savings capacity of the Region, possibility to attract investments to the Region from outside, and the scarcity of the public resources are taken into account, the most feasible scenario is Scenario A1. Even for this scenario the resource requirement is quite high. But, given that the country will probably grow in the next 20 years between 5.2-5.4 % annually according to this study, 7 % per annum according to FYDP VIII, if the Region grows slower than projected in Scenario A1, then the income per capita gap between the Region and the rest of the regions in the country will get even larger, instead of getting narrowed.

Table 1.2.11: Income and Population in the Sub-regions

YEARS	Income Per Capita		Population	
	Value * (TL Million)	Sub-region/Turkey (%)	Total (000)	Urban/Total (%)
ERZURUM SUB-REGION				
Scenario A1				
1997	176.3	38.4	2,892	40.0
2005	224	38.8	3,015	53.5
2010	293	41.4	3,176	59.3
2020	548	50.0	3,474	70.0
Scenario A2				
1997	176.3	38.4	2,892	40.0
2005	236	40.9	3,015	53.5
2010	337	47.5	3,176	59.3
2020	712	65.0	3,474	70.0
Scenario A3				
1997	176.3	38.4	2,892	40.0
2005	730	42.0	3,015	53.5
2010	1,160	51.6	3,176	59.3
2020	3,043	80.0	3,474	70.0
MALATYA-ELAZIĞ SUB-REGION				
Scenario A1				
1997	291.9	63.6	1,654	40.0
2005	375	65.0	1,865	53.5
2010	484	68.3	2,003	61.3
2020	821	75.0	2,256	74.0
Scenario A2				
1997	291.9	63.6	1,654	40.0
2005	393	68.2	1,865	53.5
2010	532	75.1	2,003	61.3
2020	985	90.0	2,256	74.0
Scenario A3				
1997	291.9	63.6	1,654	40.0
2005	409	71.0	1,865	53.5
2010	568	80.2	2,003	61.3
2020	1,095	100.0	2,256	74.0
VAN SUB-REGION				
Scenario A1				
1997	158.1	34.5	1,322	40.0
2005	209	36.2	1,417	53.5
2010	286	40.4	1,467	59.3
2020	547	50.0	1,561	70.0
Scenario A2				
1997	158.1	34.5	1,322	40.0
2005	217	37.7	1,417	53.5
2010	318	44.9	1,467	59.3
2020	712	65.0	1,561	70.0
Scenario A3				
1997	158.1	34.5	1,322	40.0
2005	230	39.9	1,417	53.5
2010	352	63.1	1,467	59.3
2020	876	80.0	1,561	70.0

*In 1997 prices.

Table 1.2.12: Employment Growth by Sub-region, Scenario and Period (1000 persons)

SECTORS	PERIOD			
	2001-2005	2006-2010	2011-2020	2001-2020
ERZURUM SUB-REGION				
SCENARIO A1				
Agriculture	-38	-42	-67	-147
Industry	18	37	74	129
Services	37	56	140	233
Total	17	51	147	215
SCENARIO A2				
Agriculture	-43	-41	-68	-152
Industry	22	41	75	138
Services	53	63	144	260
Total	32	63	151	246
SCENARIO A3				
Agriculture	-47	-42	-72	-161
Industry	27	43	78	148
Services	70	63	154	287
Total	50	64	160	274
MALATYA-ELAZIĞ SUB-REGION				
SCENARIO A1				
Agriculture	-62	-43	-65	-170
Industry	24	19	65	108
Services	50	67	119	236
Total	12	43	119	174
SCENARIO A2				
Agriculture	-67	-41	-65	-173
Industry	30	22	68	120
Services	69	67	133	269
Total	32	48	136	216
SCENARIO A3				
Agriculture	-72	-41	-65	-178
Industry	32	24	69	125
Services	75	73	143	291
Total	35	56	147	238
VAN SUB-REGION				
SCENARIO A1				
Agriculture	-26	-27	-16	-69
Industry	12	19	36	67
Services	36	41	72	149
Total	22	33	92	147
SCENARIO A2				
Agriculture	-28	-26	-22	-76
Industry	19	18	35	72
Services	37	46	87	170
Total	28	38	100	166

Table 1.2.12 Employment Growth by Sub-region, Scenario and Period (1000 persons) (Continued)

SECTORS	PERIOD			
	2001-2005	2006-2010	2011-2020	2001-2020
SCENARIO A3				
Agriculture	-48	-31	-26	-105
Industry	19	23	41	83
Services	56	49	85	190
Total	27	39	102	168
EAP REGION				
SCENARIO A1				
Agriculture	-125	-112	-148	-385
Industry	54	75	174	303
Services	123	164	331	618
Total	52	127	357	536
SCENARIO A2				
Agriculture	-138	-108	-155	-401
Industry	71	81	178	330
Services	159	176	364	699
Total	92	150	387	629
SCENARIO A3				
Agriculture	-167	-114	-163	-444
Industry	78	88	191	357
Services	201	185	382	768
Total	113	159	410	682

* Sectoral totals may not add up due to rounding off.

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2.0. EASTERN ANATOLIA PROJECT MASTER PLAN

2.1. HUMAN RESOURCES DEVELOPMENT

2.1.1. POPULATION

2.1.1. Population

EAP region has a high level of natural population growth rate. Although this rate decreased recently because of out migration of young population, urbanisation and some social and economic factors, it is still higher than the other regions of Turkey except Southeastern Region. However, according to 1998 Turkish Demographic and Health Survey, which is realised quinquennially, conducted by Hacettepe University Institute of Population Studies, fertility rate and natural growth rate displays a decreasing trend, as is the case for Turkey. Because of the factors of urbanisation, nuclear families' diffusion, increase in the burden of children for families in terms of education and of becoming an element of expenditure from an element of income, the trend of decrease is expected to continue in the period of Plan and estimated to decrease considerably to low levels after 2010s.

Population as a resource of Labor force, is the main factor of production and determinant of savings which goes to investments and, in turn, main determinant of economic growth rate. Population growth rate too, when considered together with economic growth rate, is main determinant of increase rate in per capita income, which means an increase in the rate of welfare level in society. Because of these reasons, estimation of population size and its growth rate has a great importance. In this section, population projections are presented which have been prepared on the basis of the analysis of Turkish Population and Health Surveys and 1999 projections of ATIP (TUSIAD, Association of Turkish Industrialists and Businessmen) which also used the same surveys' data.

As is the case for Turkey, reliable and up to date employment data for the region as well is not available. To be comparable with Plan's estimates of employment and to underline what kind of changes Plan will bring about in employment structure, estimates of Plan and some past figures of employment are presented together. By implementation of even the simplest scenario, employment structure will change and an employment increase will occur both in industry and services.

2.1.1.1. Summary of Current Situation

Eastern Anatolian Region is dominantly a rural region. The region has been experiencing a permanent out migration. Therefore population growth rate of the region is lower than that of Turkey. When EAP region is analysed as sub-regions; it is seen that population shares of Erzurum sub-region has a decreasing, Malatya-Elazığ sub-region has more or less a stable and Van sub-region has an increasing trends compare to other sub-regions in the period 1960-1990 (Strategy and Restructuring Scenarios).

In the period of 1990-1997, the highest level of decrease in the share of regional population is seen, in order, in provinces of Tunceli, Gümüşhane and Kars. On the counter part, the highest increase levels are seen in provinces of Hakkari, Van and Malatya.

In EAP region, it is estimated that out migration out of each province and out of region will display different trends for each province and sub-region. It is unlikely to see a change in the firs ten years especially in provinces having experienced out migration.

Provinces like Kars and Gümüşhane are foreseen to reach a level of having a positive population growth rate only after the year 2010. Tunceli, on the other hand, is likely to reach the year 2010 with a low momentum. It is estimated that social investments that will be realised in this province will have positive impacts. The provinces, which have a trend of population increase, will be able to sustain their similar trends.

Projections with different methodologies indicate that provinces with decreasing population will eventually lose all their population. According to Population Count of 1997, provinces with negative growth are Bayburt, Bingöl, Erzincan, Gümüşhane, Kars and Tunceli. Projections are based on the assumption that these provinces will not lose population and will not realise a noticeable increase neither. It is thought that terror events which came to an end and economic movements will not contribute to returning migration at considerable levels, and leads to a decrease of out migration. It is also expected that though there will be seasonal migration to neighbouring region, it is not going to be a permanent migration.

Migration within Region

In 1985-1990 period, 7 out of 10 provinces, which experienced the highest out migration in Turkey, are in East Anatolian region. In EAP region, the highest rate of out migration was seen in provinces of, in order, Kars, Tunceli, Gümüşhane, Bayburt, Erzurum, Muş, Ağrı, Erzincan, Bingöl, Bitlis, Malatya, Elazığ, Van and Hakkari in the same period.
Satisfied

It is observed that population of EAP region decreased after 1980s. Province of Van is the second province, which both increased the share of population in the region and realised the least out migration. It is possible to reach the same conclusion for Hakkari as well. Van as a sub-region has the characteristics of sustaining its population more than other sub-regions. There was a high out migration movement in all sub-regions in the period of 1985-1990 (**Table 2.1.1.1.**).

Basic target provinces in terms of migration for the region are, in order, Ankara, Antalya, Aydın, Bursa, İçel, İstanbul, İzmir, Kocaeli, Muğla and Tekirdağ. Migration movement has an impact of increasing the “regional differences” between the provinces of out migration and in migration. As a result of migration, while metropolitan areas, which are receiving migration, are affected negatively because of high population increase, development in areas of out migration is getting slower because of population loss. Eastern Anatolian Region, is loosing its young Labor force on the one hand, process of capital accumulation in the region is getting slower on the other hand. In other words, population loss in the region brings about a decrease in Labor force and loss of human capital. The areas, which are migrated from, are experiencing a qualitative change regardless of their rural or urban character. Among the factors of out migration though there are classical factors, terror appears as the specific pushing factor for the region.

Table 2.1.1.1: In, Out and Net Migration Rate in EAP Region (1980-1990)

	In Migration			Out Migration			Net Migration			Net Migration Rate ‰		
	1980	1985	1990	1980	1985	1990	1980	1985	1990	1975-1980	1980-1985	1985-1990
Ağrı	9,798	13,662	17,162	34,784	32,667	54,474	-24,986	-19,005	-37,312	-80.55	-53.48	-95.4
Erzincan	24,269	19,628	24,246	33,638	31,211	49,820	-9,369	-11,583	-25,574	-38.45	-45.39	-93.31
Erzurum	30,624	29,407	34,250	76,717	78,152	122,548	-46,093	-48,745	-88,298	-66.34	-64.82	-113.2
Gümüşhane	9,485	12,724	10,526	31,247	26,799	32,831	-21,762	-14,075	-22,305	-86.16	-54.15	-135.3
Kars	19,102	25,209	26,759	89,974	75,635	131,784	-70,872	-50,426	-105,025	-113.06	-77.94	-163.5
Bayburt	0	0	6,480	0	0	20,288	0	0	-13,808	0	0	-133.7
Ardahan	0	0	0	0	0	0	0	0	0	0	0	0
Iğdır	0	0	0	0	0	0	0	0	0	0	0	0
Muş	8,351	11,237	12,425	25,288	25,583	46,254	-16,937	-14,346	-33,829	-66.43	-49.36	-100.5
Erzurum Sub-region Total	101,629	111,867	131,848	291,648	270,047	457,999	-190,019	-158,180	-326,151	-75.17	-57.52	-119.2
Bingöl	6,148	7,703	9,878	16,826	16,989	29,766	-10,678	-9,286	-19,888	-54.61	-44.14	-87.7
Elazığ	22,112	23619	25,880	39,478	37,302	47,044	-17,366	-13,683	-21,164	-44.19	-31.57	-46.1
Malatya	25,106	33,149	36,364	48,289	46,093	71,571	-23,183	-12,944	-35,207	-43.23	-22	-54.3
Tunceli	6,643	8,489	9,118	19,961	26,286	29,450	-13,318	-17,797	-20,332	-93.72	-123.9	-153.8
Malatya-Elazığ Sub-region Total	60,009	72,960	81,240	124,554	126,670	177,831	-64,545	-53,710	-96,591	-65.76	-53.61	-81.5
Bitlis	10,641	11,070	13,606	28,294	20,310	34,115	-17,653	-9,240	-20,509	-81.91	-36.97	-71.9
Hakkari	4,562	5,211	6,990	6,626	6,263	11,462	-2,064	-1,052	-4,472	-16.55	-7.63	-32.9
Van	13,123	15,506	22,187	20,750	27,500	42,967	-7,627	-11,994	-20,780	-19.7	-26.28	-37.9
Van Sub-region Total	28,326	31,787	42,783	55,670	54,073	88,544	-27,344	-22,286	-45,761	-29.54	-17.72	-35.6
EAP Region Total	189,964	216,614	255,871	471,872	450,790	724,374	-281,908	-234,176	-468,503	-56.82	-42.95	-78.8

Source: Tuncer Kocaman, Sema Beyazıt, 1983, "Türkiye'de İç Göçler ve Göç Edenlerin Sosyo-Ekonomik Nitelikleri," SPO, General directorate of Social Planning.

2.1.1.2. Population Projection for EAP

In the preparation of projections, natural population increase trend, experience of the EAP staff in the analysis process, impressions in the region and projections for Turkey are taken into consideration. For the projections, it is assumed that the region will be rescued from its negative rate of increase and will not reach a high rate of positive population increase.

In the projections, population census/count data and projection of State Institute of Statistics for the period 1960-1997 are taken as it is. Analysis of the data displays that population of Erzurum sub-region declined from 2,925,000 to 2,892,000 in the period of 1985-1997. In other words, there has been observed a population decrease of 33,000 in absolute terms. This refers approximately to a 1.1 % as aggregate and close to zero percent as yearly average decrease. This figure stands for the fact that in 1985-1997 period, net out migration was at the levels of over natural growth rate. However, net out migration is assumed not to have a negative value in 2000s, because of at least three reasons. Firstly,

the terror which was effective for the last ten years has been already finished. Secondly, initiation of economic assistance programme for the region encourages the return of region's own population which has already migrated to near and remote metropolitan areas. Thirdly, it is assumed that related to EAP initiation, people keep back their desire to migrate with an expectation that there will be a development move in the region. More clearly, it is assumed that net migration rate will be less than natural growth rate in Erzurum sub-region. As a result, this sub-region will have a positive rate of population increase.

In a report published in 1999 by ATIP called "Opportunity Window of Turkey", the fertility based projections are claimed to have estimated higher population size so far than the realisations. According to this report, population growth rate in Turkey will decrease to 0.83 % at the end of the next 20 years. It is also stated that the dream of 100 million will not be real.

Lastly, estimates of SPO as 74,115 thousands and 81,923 thousands for the year 2010 and 2020 respectively for total population of Turkey are accepted as a framework. According to this estimates, population of Turkey will increase 22.5 % as an aggregate and 1.1 % as a yearly average in next 20 years.

According to assumptions and estimates mentioned above, projections for EAP region and its sub-regions are determined as the following; General fertility rate will decrease in EAP region and in Turkey. However, though limited, out migration will continue. Related to this, EAP region population growth rate will be 1.0 % annually which is lower than Turkey's average. In Erzurum sub-region, as it includes the provinces with a probable negative net migration, population increase rate will be the least in EAP region with a value of 0.7 %. Malatya-Elazığ sub-region will reach to Turkey's average in terms of urbanisation and many economic indicators in a shortest time. Since it has such structure population growth rate in the sub-region will be closer to Turkey's average with a value over than 1.3 %. Lastly, Van sub-region, as it is extremely away from Turkey's average in terms of economic development and as it has high out migration, will have a population growth rate of 0.7 % which below the average of EAP region and of Turkey (**Table 2.1.1.2).**

Table 2.1.1.2: Change of Population Growth Rates in Sub-Region (1960, 1997, 2020)

Provinces	1960-1997	1997-2020
Erzurum Sub-Region	1.0	0.7
Malatya-Elazığ Sub-Region	1.5	1.3
Van Sub-Region	3.2	0.7
EAP Total	1.5	1.0
Turkey	2.2	1.1

Source: EAP Region, Strategy and Restructuring Scenarios

Population Growth Rates used in projections are the same with the ones in **Table 2.1.1.3**.

Table 2.1.1.3: Total Population Growth Rates in EAP Region (%)

Provinces	1960	1965	1970	1975	1980	1985	1990	1995	1997	1998	2000	2005	2010	2015	2020
Ağrı	-	2.8	3.2	2.6	2.2	2.7	0.7	0.7	1.5	0.6	0.7	0.7	1.1	1.1	0.7
Erzincan	-	1.3	1.3	0.5	-0.1	1.2	0.0	-0.1	-3.3	-0.7	0.5	0.1	1.0	0.8	1.1
Erzurum	-	2.0	1.7	1.7	1.4	1.3	-0.2	-0.2	1.9	0.3	0.6	0.9	1.1	0.8	0.4
Gümüşhane	-	1.6	1.4	0.8	-1.3	-8.8	-0.8	1.3	-8.1	-0.7	0.3	0.3	0.9	1.1	1.1
Kars	-	-2.2	1.7	1.4	-0.2	-12.5	-1.3	-1.5	-0.2	-0.9	-0.2	-0.4	0.9	0.8	1.2
Bayburt	-	-	-	-	-	-	-0.4	-0.4	-2.4	-1.0	-1.5	0.8	1.0	1.0	1.0
Ardahan	-	-	-	-	-	-	-	-3.9	-4.0	-3.7	-2.4	-2.4	0.3	1.0	1.0
Iğdır	-	-	-	-	-	-	-	0.1	-0.1	1.0	0.7	0.7	0.3	0.8	1.0
Muş	-	3.4	3.2	2.6	2.5	2.3	2.1	1.9	0.8	0.9	1.2	1.6	1.1	1.1	1.2
Erzurum Sub-Region	**-**	**2.1**	**1.9**	**1.6**	**0.8**	**1.4**	**-0.2**	**-0.0***	**-0.1**	**0.0**	**0.4**	**0.7**	**1.0**	**0.9**	**0.8**
Bingöl	-	2.8	3.3	3.4	1.6	1.1	0.7	0.7	-5.1	-0.9	0.2	0.8	0.5	0.8	1.3
Elazığ	-	3.0	3.1	2.1	1.1	1.9	0.6	0.5	0.8	0.4	1.4	1.6	1.0	1.2	0.7
Malatya	-	2.8	2.4	2.4	1.1	1.9	1.1	1.0	5.0	1.2	1.7	2.0	1.8	1.5	1.1
Tunceli	-	1.9	0.4	1.0	-0.9	-0.8	-2.5	-2.7	-15.4	-3.6	2.4	2.2	2.1	2.1	2.1
Malatya-Elazığ Sub-Region	**-**	**2.7**	**2.5**	**2.3**	**0.9**	**1.5**	**0.5**	**0.5**	**0.9**	**0.4**	**1.5**	**1.7**	**1.4**	**1.4**	**1.0**
Bitlis	-	3.5	3.7	3.3	3.4	3.1	1.8	1.7	-2.9	0.0	0.3	0.1	0.1	0.2	0.3
Hakkari	-	4.2	3.9	4.2	4.1	-2.2	4.3	4.3	1.4	2.3	1.5	0.8	0.7	0.6	0.6
Van	-	4.7	4.0	3.4	3.9	3.1	3.0	2.9	1.8	1.4	1.2	1.0	0.9	0.8	0.7
Van Sub-Region	**-**	**4.3**	**3.9**	**3.5**	**3.8**	**2.2**	**2.9**	**2.8**	**0.5**	**1.2**	**1.0**	**0.7**	**0.7**	**0.6**	**0.6**
EAP Region Total	**-**	**2.6**	**2.4**	**2.1**	**1.3**	**1.6**	**0.6**	**0.7**	**0.3**	**0.4**	**0.8**	**1.0**	**1.1**	**1.0**	**0.8**
Turkey	**-**	**2.5**	**2.5**	**2.5**	**2.1**	**2.5**	**2.2**	**1.4**	**1.6**	**1.5**	**1.4**	**1.3**	**1.2**	**1.1**	**1.0**

*The value of 0.0 is negative , it is not appeared because of rounding.

Districts' population is also calculated for both rural and urban areas on the basis of province projections for Eastern Anatolian region.

In the year 2020, while population of Erzurum sub-region will be 3,474,000 according to the projections, population of Malatya-Elazığ sub-region will reach to 2,256,000, and Van sub-region to 1,561,000. Total population of three sub-region will be 7,291,000. The region which had a population of 5,868,000 according to 1997 Population Count, is estimated to have an extra population of 1,430,000 after next 20 years (**Table 2.1.1.4**).

Table 2.1.1.4: Population Projections of Provinces in EAP Region (Thousand)

Provinces	1960	1965	1970	1975	1980	1985	1990	1995	1997	1998	2000	2005	2010	2015	2020
Ağrı	215	247	290	330	368	421	437	452	466	469	476	493	522	551	571
Erzincan	243	259	276	284	282	300	300	299	280	278	281	283	298	310	327
Erzurum	569	628	685	747	802	856	848	841	873	876	**886**	**926**	977	1019	1040
Gümüşhane	243	263	282	293	275	177	170	181	154	153	**154**	**156**	163	172	182
Kars	544	606	660	707	700	374	350	324	323	320	**319**	**312**	326	340	361
Bayburt	0	0	0	0	0	109	107	105	100	99	**96**	**100**	105	111	116
Ardahan	0	0	0	0	0	207	170	139	129	126	**120**	**122**	128	135	142
Iğdır	0	0	0	0	0	142	143	142	145	146	**148**	**150**	156	164	173
Muş	168	199	234	267	302	339	377	415	422	426	**436**	**473**	500	529	562
Erzurum Sub-Region	**1,982**	**2,202**	**2,427**	**2,628**	**2,729**	**2,925**	**2,902**	**2,898**	**2,892**	**2,893**	**2,916**	**3,015**	**3,175**	**3,331**	**3,474**
Bingöl	131	151	178	211	229	242	251	260	235	233	**234**	**244**	250	260	277
Elazığ	278	323	377	418	441	484	498	510	518	520	**535**	**579**	610	648	670
Malatya	394	453	511	575	607	666	702	**738**	815	825	**854**	**945**	1035	1115	1176
Tunceli	140	154	157	165	158	152	134	117	86	83	**87**	**97**	108	120	133
Malatya-Elazığ Sub-Region	**943**	**1,081**	**1,223**	**1,369**	**1,435**	**1,544**	**1,585**	**1,625**	**1,654**	**1,661**	**1,710**	**1,865**	**2,003**	**2,143**	**2,256**
Bitlis	129	154	185	218	258	301	330	**360**	340	340	342	344	346	350	356
Hakkari	68	84	102	126	155	139	172	213	219	224	**231**	**241**	250	258	266
Van	211	267	326	386	469	547	637	736	763	774	**793**	**832**	871	907	939
Van Sub-Region	**408**	**505**	**613**	**730**	**882**	**987**	**1,139**	**1,309**	**1,322**	**1,338**	**1,366**	**1,417**	**1,467**	**1,515**	**1,561**
EAP Region Total	**3,333**	**3,788**	**4,263**	**4,727**	**5,046**	**5,456**	**5,626**	**5,832**	**5,868**	**5,892**	**5,992**	**6,297**	**6,646**	**6,988**	**7,291**
Turkey	**27,755**	**31,391**	**35,605**	**40,348**	**44,737**	**50,664**	**56,473**	**60,554**	**62,808**	**63,451**	**65,310**	**69,822**	**74,115**	**78,121**	**81,923**

It is projected that all the provinces in the region will exceed the population of 100.000. Bayburt is estimated to be the province with the least population size. Population estimate for Bayburt in 2020 is 116,000. Tunceli follows Bayburt with a population of 133,000.

Proportion of Erzurum sub-region's population to EAP region's total population will decrease to 47.6 % in 2020 from its level of 59.5 % in 1960. While the proportion of Malatya-Elazığ sub-region to EAP region was 28.3 % in 1960, it is going to reach to 30.9% in 2020. Van sub-region will have a population proportion of 21.4 % doubling its level of 12.2 % in the year 1960 (**Table 2.1.1.5**).

Table 2.1.1.5: Proportion of Sub-Region Population to EAP Total Population (1960-2020)

(Thousand)

Years	Erzurum Sub-Region	Erzurum Sub-Region/ EAP	Malatya-Elazığ Sub-Region	Malatya-Elazığ Sub-Region/ EAP	Van Sub-Region	Van Sub-Region/ EAP	EAP	EAP/ Turkey	Turkey
1960	1,982	59.5	943	28.3	408	12.2	3,333	12.0	27,755
1965	2,202	58.1	1,081	28.5	505	13.3	3,788	12.1	31,391
1970	2,427	56.9	1,223	28.7	613	14.4	4,263	12.0	35,605
1975	2,628	55.6	1,369	29.0	730	15.4	4,727	11.7	40,348
1980	2,729	54.1	1,435	28.4	882	17.5	5,046	11.3	44,737
1985	2,925	53.4	1,544	28.3	987	18.1	5,456	10.8	50,664
1990	2,902	51.6	1,585	28.2	1,139	20.2	5,626	10.0	56,473
1995	2,898	49.7	1,625	27.9	1,309	22.4	5,832	9.6	60,554
1997	2,892	49.3	1,654	28.2	1,322	22.5	5,868	9.4	62,866
1998	2,893	49.1	1,661	28.2	1,338	22.7	5,892	9.3	63,451
2000	2,916	48.7	1,710	28.5	1,366	22.8	5,992	9.2	65,310
2005	3,015	47.9	1,865	29.6	1,417	22.5	6,297	9.0	69,822
2010	3,176	47.8	2,003	30.1	1,467	22.1	6,646	9.0	74,115
2015	3,330	47.7	2,143	30.7	1,515	21.7	6,988	8.9	78,121
2020	3,474	47.6	2,256	30.9	1,561	21.4	7,291	8.9	81,923

Another result that will come out in the pattern of population in the year 2020 is the "new urban integrities" which is mentioned in the section called urban settlements. Proximity between provinces of Malatya and Elazığ will create a focus of urban agglomeration. Population of these two provinces is estimated to be 1,846,000. There will appear an area with a population reaching to two million. Another important region could be the region composed of Bitlis and Van. Population of these two provinces is estimated to be 1,295,000.

As a result, in the year 2020, the cities which are estimated to have an urban population in between 100,000 – 250,000 are followings, in order; Muş (244,000), Bitlis (213,000), Erzincan (199,000), Kars (189,000), Bingöl (165,000) and Hakkari (163,000). Provinces which are projected to have a population in between 250,001 – 500,000 are Ağrı (287,000) and Elazığ (447,000). Provinces which are likely to exceed 500,001 are Van (501,000), Erzurum (627,000) and Malatya (799,000) (**Table 2.1.1.6**).

With regard to sub-regions, in the year 2020, urbanisation will increase to 71 % in Malatya-Elazığ sub-region. Urbanisation will be 55 % in Erzurum sub-region, 54 % in Van sub-region. While urban population will increase substantially, rural population will increase more slowly. For instance, in Van sub-region, while urban population increases from 731,000 to 878,000, rural population will increase from 634,000, only to 682,000. In the same period of time, rural population will only increase one third of an increase in urban population with absolute terms.

Table 2.1.1.6: Urban and Rural Population Projections by Provinces and Districts

(Thousand)

Provinces	District	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural
AĞRI	Center	109	71	38	113	74	39	120	81	39	126	86	40	131	89	42
AĞRI	Diyadin	38	11	27	40	11	29	43	12	31	46	13	33	48	17	31
AĞRI	Doğubeyazıt	94	50	44	99	52	46	105	56	49	112	59	52	117	67	50
AĞRI	Eleşkirt	39	10	29	40	10	29	41	11	30	42	11	31	42	12	31
AĞRI	Hamur	22	4	17	23	5	18	25	5	20	28	6	22	29	9	21
AĞRI	Patnos	123	66	56	127	69	58	134	73	62	142	77	65	147	84	63
AĞRI	Taşlıçay	20	4	16	21	5	16	23	5	17	24	5	19	25	7	18
AĞRI	Tutak	31	5	26	31	5	25	31	5	26	32	5	26	31	5	26
AĞRI	**Total**	**476**	**223**	**253**	**493**	**231**	**262**	**522**	**244**	**278**	**551**	**258**	**293**	**571**	**288**	**283**
ARDAHAN	Center	43	15	27	43	16	28	45	16	29	48	17	31	50	21	29
ARDAHAN	Çıldır	10	2	9	11	2	9	11	2	9	12	2	10	12	3	9
ARDAHAN	Damal	8	2	6	8	2	6	9	2	6	9	3	7	10	3	6
ARDAHAN	Göle	32	7	26	33	7	26	35	7	28	36	7	29	38	11	28
ARDAHAN	Hanak	14	4	10	14	4	10	15	4	11	16	5	11	17	6	11
ARDAHAN	Posof	12	2	10	12	2	10	13	2	11	14	2	11	14	4	11
ARDAHAN	**Total**	**120**	**31**	**89**	**122**	**32**	**90**	**128**	**34**	**94**	**135**	**35**	**100**	**142**	**47**	**95**
BAYBURT	Center	75	38	37	78	39	38	82	41	40	86	44	43	90	49	41
BAYBURT	Aydıntepe	9	5	4	10	5	4	10	6	5	11	6	5	11	7	5
BAYBURT	Demirözü	12	2	10	13	2	10	13	3	11	14	3	11	15	4	11
BAYBURT	**Total**	**96**	**45**	**51**	**100**	**47**	**53**	**105**	**50**	**55**	**111**	**52**	**59**	**116**	**60**	**56**
ERZİNCAN	Center	168	108	60	169	109	60	178	114	63	185	119	66	195	133	63
ERZİNCAN	Çayırlı	9	3	6	9	3	6	9	3	6	9	3	6	10	4	6
ERZİNCAN	İliç	5	2	3	5	2	3	6	2	3	6	2	4	6	3	3
ERZİNCAN	Kemah	6	2	4	6	2	5	6	2	5	7	2	5	7	2	5
ERZİNCAN	Kemaliye	7	3	4	7	3	4	8	3	5	8	3	5	8	4	5
ERZİNCAN	Otlukbeli	3	2	1	3	2	1	3	2	1	3	2	1	4	3	1
ERZİNCAN	Refahiye	12	5	6	12	6	6	12	6	7	13	6	7	14	7	7
ERZİNCAN	Tercan	29	10	19	29	10	19	31	11	20	32	11	21	33	14	20
ERZİNCAN	Üzümlü	43	28	14	43	28	15	45	30	15	47	31	16	50	35	15
ERZİNCAN	**Total**	**281**	**159**	**122**	**283**	**161**	**122**	**298**	**169**	**129**	**310**	**176**	**134**	**327**	**200**	**127**
ERZURUM	Center	351	322	29	367	337	30	387	355	32	403	370	33	412	379	32
ERZURUM	Aşkale	30	13	17	32	14	18	34	15	19	35	15	20	36	17	19
ERZURUM	Çat	23	6	17	24	6	18	25	7	19	26	7	19	27	8	19
ERZURUM	Hınıs	43	23	20	45	24	21	48	26	22	50	27	23	51	28	23
ERZURUM	Horasan	53	23	30	56	24	31	59	26	33	61	27	34	63	29	34
ERZURUM	Ilıca	28	12	15	29	13	16	30	13	17	32	14	18	32	15	17
ERZURUM	İspir	26	9	17	27	10	18	29	11	18	30	11	19	31	12	19
ERZURUM	Karaçoban	27	10	17	29	10	18	30	11	19	31	11	20	32	12	20
ERZURUM	Karayazı	23	3	20	24	3	21	25	3	22	26	4	23	27	5	22
ERZURUM	Köprüköy	25	6	19	26	6	20	27	6	21	28	7	22	29	8	21
ERZURUM	Narman	37	16	20	38	17	21	41	18	23	42	19	24	43	20	23
ERZURUM	Oltu	48	30	17	50	32	18	52	33	19	55	35	20	56	36	20
ERZURUM	Olur	9	2	6	9	2	7	9	2	7	10	2	7	10	3	7
ERZURUM	Pasinler	51	30	21	53	31	22	56	33	23	59	34	24	60	36	24
ERZURUM	Pazaryolu	8	4	4	9	5	4	9	5	5	10	5	5	10	5	5

Table 2.1.1.6: Urban and Rural Population Projections by Provinces and Districts (Continued)

(Thousand)

Provinces	District	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural
ERZURUM	Şenkaya	26	4	21	27	5	22	28	5	23	29	5	24	30	6	24
ERZURUM	Tekman	30	5	25	32	5	26	34	6	28	35	6	29	36	7	28
ERZURUM	Tortum	38	9	29	39	9	30	42	10	32	43	10	33	44	12	33
ERZURUM	Uzundere	10	4	7	11	4	7	12	4	7	12	4	8	12	5	8
ERZURUM	**Total**	**886**	**519**	**367**	**926**	**543**	**383**	**977**	**573**	**404**	**1019**	**597**	**422**	**1040**	**627**	**413**
GÜMÜŞHANE	Center	37	22	15	39	23	16	43	25	18	47	27	19	51	34	18
GÜMÜŞHANE	Kelkit	46	13	33	46	13	33	46	13	33	47	13	34	48	15	33
GÜMÜŞHANE	Köse	10	5	5	11	6	6	12	6	6	13	6	7	13	7	6
GÜMÜŞHANE	Kürtün	15	4	11	15	4	11	16	4	12	17	4	13	17	6	12
GÜMÜŞHANE	Şiran	27	14	13	27	13	13	28	14	14	29	15	15	31	17	14
GÜMÜŞHANE	Torul	18	6	13	18	6	12	18	6	13	19	6	13	21	8	13
GÜMÜŞHANE	**Total**	**154**	**63**	**91**	**156**	**64**	**92**	**163**	**67**	**96**	**172**	**71**	**101**	**182**	**86**	**96**
MUŞ	Center	177	70	107	192	75	117	203	80	123	215	84	130	228	105	123
MUŞ	Bulanık	102	32	70	111	35	76	117	37	80	124	39	85	131	51	80
MUŞ	Hasköy	40	20	20	43	22	22	46	23	23	49	24	24	52	29	23
MUŞ	Korkut	30	6	24	33	7	26	35	7	28	37	7	29	39	12	28
MUŞ	Malazgirt	53	17	36	58	19	39	61	20	41	65	21	44	69	28	41
MUŞ	Varto	33	14	20	36	15	21	38	16	22	40	17	24	43	21	22
MUŞ	**Total**	**436**	**158**	**278**	**473**	**171**	**302**	**500**	**181**	**319**	**529**	**192**	**337**	**562**	**245**	**317**
IĞDIR	Center	87	47	40	92	50	42	98	53	45	106	58	49	115	71	45
IĞDIR	Aralık	20	7	12	21	8	13	22	8	14	24	9	15	26	12	14
IĞDIR	Karakoyun	15	5	10	15	5	10	15	5	10	15	5	10	15	5	10
IĞDIR	Tuzluca	24	10	14	22	9	13	20	8	12	18	8	11	16	4	12
IĞDIR	**Total**	**146**	**69**	**77**	**150**	**71**	**79**	**156**	**74**	**82**	**164**	**78**	**86**	**173**	**91**	**82**
KARS	Center	130	96	33	127	94	33	132	98	34	138	103	36	147	113	33
KARS	Akyaka	12	2	10	12	2	10	13	2	10	13	3	11	14	4	10
KARS	Arpaçay	23	3	20	22	3	20	23	3	21	24	3	21	26	6	20
KARS	Digor	23	3	20	22	3	19	23	3	20	24	3	21	26	6	20
KARS	Kağızman	40	15	25	39	15	24	40	15	25	42	16	26	45	20	25
KARS	Sarıkamış	57	24	32	55	24	31	58	25	33	60	26	34	64	32	32
KARS	Selim	22	4	19	22	4	18	23	4	19	24	4	20	25	7	19
KARS	Susuz	13	3	10	13	3	10	13	3	10	14	3	11	15	5	10
KARS	**Total**	**319**	**147**	**172**	**321**	**144**	**168**	**326**	**151**	**175**	**340**	**157**	**183**	**361**	**189**	**172**
Erzurum Sub-rg.	**TOTAL**	**2,914**	**1,414**	**1,500**	**2,600**	**1,262**	**1,338**	**3,175**	**1,541**	**1,634**	**3,331**	**1,617**	**1,714**	**3,474**	**1,830**	**1,644**
BİNGÖL	Center	115	72	43	120	75	45	123	77	46	128	80	48	136	91	45
BİNGÖL	Adaklı	8	3	5	9	4	5	9	4	5	9	4	6	10	5	5
BİNGÖL	Genç	35	17	17	36	18	18	37	18	19	39	19	19	41	23	18
BİNGÖL	Karlıova	29	9	20	30	10	21	31	10	21	32	10	22	35	14	21
BİNGÖL	Kığı	5	4	1	5	4	1	5	4	1	6	4	1	6	5	1
BİNGÖL	Solhan	36	18	18	38	19	19	39	19	19	40	20	20	43	24	19
BİNGÖL	Yayladere	3	3	0	3	3	0	3	3	0	4	3	0	4	3	0
BİNGÖL	Yedisu	2	1	1	2	1	1	2	1	1	2	1	1	2	2	1
BİNGÖL	**Total**	**234**	**127**	**107**	**244**	**133**	**111**	**250**	**136**	**114**	**260**	**141**	**119**	**277**	**166**	**111**
ELAZIĞ	Center	349	272	77	377	294	83	398	310	88	422	329	93	437	346	90
ELAZIĞ	Ağın	3	2	1	3	2	1	3	2	1	3	2	1	3	2	1

Table 2.1.1.6: Urban and Rural Population Projections by Provinces and Districts (Continued)

(Thousand)

Provinces	District	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural
ELAZIĞ	Alacakaya	8	3	5	8	3	5	9	3	5	9	3	6	9	4	5
ELAZIĞ	Arıcak	16	5	11	18	6	12	19	6	13	20	6	14	21	7	13
ELAZIĞ	Baskil	18	5	13	20	5	14	21	6	15	22	6	16	23	7	16
ELAZIĞ	Karakoçan	25	10	15	27	11	17	29	11	18	31	12	19	32	14	18
ELAZIĞ	Keban	9	6	2	9	7	3	10	7	3	11	8	3	11	8	3
ELAZIĞ	Kovancılar	46	23	24	50	25	26	53	26	27	56	28	29	58	30	28
ELAZIĞ	Maden	18	7	11	19	8	12	20	8	12	22	9	13	22	10	13
ELAZIĞ	Palu	30	12	18	33	13	20	35	14	21	37	14	22	38	16	22
ELAZIĞ	Sivrice	13	7	6	14	7	7	15	8	7	16	8	7	16	9	7
ELAZIĞ	**Total**	**535**	**345**	**190**	**579**	**373**	**206**	**610**	**393**	**217**	**648**	**418**	**230**	**670**	**447**	**223**
MALATYA	Center	524	450	74	579	498	82	635	545	89	684	587	96	721	630	91
MALATYA	Akçadağ	37	9	27	41	10	30	44	11	33	48	12	36	50	16	34
MALATYA	Arapkir	15	10	5	17	11	6	18	12	6	20	13	7	21	14	7
MALATYA	Arguvan	8	2	6	8	2	6	9	2	7	10	3	7	10	3	7
MALATYA	Battalgazi	25	14	11	28	16	12	30	17	13	33	19	14	35	21	13
MALATYA	Darende	38	9	29	43	10	32	47	11	35	50	12	38	53	17	36
MALATYA	Doğanşehir	56	17	40	63	18	44	68	20	48	74	22	52	78	28	49
MALATYA	Doğanyol	8	4	4	9	5	5	10	5	5	11	6	5	12	6	5
MALATYA	Hekimhan	36	12	25	40	13	27	44	14	30	47	15	32	50	19	30
MALATYA	Kale	8	3	4	8	4	5	9	4	5	10	4	6	10	5	5
MALATYA	Kuluncak	17	5	12	19	6	13	21	7	14	22	7	15	23	9	14
MALATYA	Potürge	19	2	17	21	3	19	23	3	20	25	3	22	26	6	21
MALATYA	Yazıhan	18	4	14	20	4	16	22	5	18	24	5	19	25	7	18
MALATYA	Yeşilyurt	44	12	32	49	13	36	54	15	39	58	16	42	61	21	40
MALATYA	**Total**	**854**	**534**	**320**	**945**	**591**	**354**	**1,035**	**647**	**388**	**1,115**	**697**	**418**	**1,176**	**780**	**396**
TUNCELİ	Center	31	26	5	35	29	5	39	33	6	43	36	7	48	42	6
TUNCELİ	Çemişgezek	9	4	5	10	5	5	11	5	6	13	6	7	14	8	6
TUNCELİ	Hozat	10	8	2	11	9	2	13	10	2	14	11	3	16	13	2
TUNCELİ	Mazgirt	10	3	7	11	4	8	13	4	9	14	4	10	16	7	9
TUNCELİ	Nazimiye	5	3	2	5	3	2	6	3	2	6	4	3	7	5	2
TUNCELİ	Ovacık	6	4	2	7	4	2	7	5	3	8	5	3	9	7	3
TUNCELİ	Pertek	13	7	6	14	7	7	16	8	8	17	9	8	19	12	8
TUNCELİ	Pülümür	3	2	1	3	2	1	3	2	2	4	2	2	4	3	2
TUNCELİ	**Total**	**87**	**56**	**31**	**97**	**62**	**35**	**108**	**69**	**39**	**120**	**77**	**43**	**133**	**94**	**39**
Malatya-Elazığ Sub-Rg.	**Total**	**1,710**	**1,062**	**648**	**1,865**	**1,159**	**706**	**2,003**	**1,246**	**757**	**2,143**	**1,333**	**810**	**2,256**	**1,487**	**769**
BİTLİS	Center	68	52	16	68	52	16	69	52	16	70	53	17	71	54	16
BİTLİS	Adilcevaz	51	30	21	51	30	21	52	30	21	52	31	21	53	32	21
BİTLİS	Ahlat	37	22	15	38	22	15	38	22	15	38	23	16	39	23	15
BİTLİS	Güroymak	33	14	18	33	14	19	33	14	19	33	15	19	34	15	19
BİTLİS	Hizan	35	11	25	36	11	25	36	11	25	36	11	25	37	12	25
BİTLİS	Mutki	39	7	32	39	7	32	39	7	32	40	7	33	40	8	32
BİTLİS	Tatvan	79	65	14	79	65	14	80	66	14	81	66	14	82	68	14

Table 2.1.1.6: Urban and Rural Population Projections by Provinces and Districts (Continued)

(Thousand)

Provinces	District	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural	2000 Total	2000 Urban	2000 Rural
BİTLİS	**Total**	**342**	**200**	**142**	**344**	**201**	**143**	**346**	**202**	**144**	**350**	**204**	**146**	**356**	**213**	**143**
HAKKARİ	Center	80	62	18	83	65	18	86	67	19	89	69	20	92	73	19
HAKKARİ	Çukurca	12	4	8	13	4	9	13	4	9	13	4	9	14	5	9
HAKKARİ	Şemdinli	41	13	28	43	13	30	44	14	31	46	14	32	47	16	31
HAKKARİ	Yüksekova	98	59	39	102	61	41	106	63	43	110	66	44	113	70	43
HAKKARİ	**Total**	**231**	**136**	**95**	**241**	**142**	**99**	**250**	**147**	**103**	**258**	**152**	**106**	**266**	**163**	**103**
VAN	Center	319	250	68	334	262	72	350	275	75	364	286	78	377	302	76
VAN	Başçesaray	16	4	12	17	4	13	18	4	13	18	4	14	19	6	14
VAN	Başkale	46	14	32	48	15	34	51	16	35	53	16	37	55	19	35
VAN	Çaldıran	48	9	39	51	10	41	53	10	43	55	10	45	57	14	43
VAN	Çatak	19	4	15	20	4	16	21	5	17	22	5	17	23	6	17
VAN	Edremit	15	4	11	16	5	11	17	5	12	17	5	12	18	6	12
VAN	Erciş	158	86	73	17	9	8	174	94	80	181	98	83	187	107	80
VAN	Gevaş	25	9	16	26	10	17	28	10	18	29	10	18	30	12	18
VAN	Gürpınar	31	5	25	32	6	27	34	6	28	35	6	29	36	8	28
VAN	Muradiye	42	12	30	44	13	31	46	13	33	48	14	34	50	17	33
VAN	Özalp	52	7	46	55	7	48	57	7	50	60	8	52	62	11	50
VAN	Saray	21	4	17	22	4	18	23	4	18	24	4	19	25	6	19
Van Sub-region	**Total**	**793**	**396**	**397**	**832**	**416**	**416**	**871**	**435**	**436**	**907**	**453**	**454**	**939**	**501**	**438**
EAP Region	**TOTAL**	**5,990**	**3,208**	**2,782**	**5,353**	**2,897**	**2,456**	**6,645**	**3,572**	**3,073**	**6,989**	**3,762**	**3,227**	**3,820**	**2,367**	**1,453**

According to 1997 data, there are 30 districts which have a population of 20,000 and over among a total of 133 districts in EAP region. Districts which are listed in **Table 2.1.1.7** are 22.6 % of all districts. However, population of districts listed are 75.8 % of the population of all districts (**Table 2.1.1.8**). It is estimated that the number of districts which have a population of 20,000 and over will be 41 by the year 2020. This refers to 30.8 % of all districts. 81.8 % of all urban population are estimated to live in these cities with a population over 20,000.

Table 2.1.1.7: Urban Population of Districts with 20.000 and Over in 1997 and 2020

(Thousand)

Order	Province	District	1997 Population	Province	District	2020 Population
1	Malatya	Center	400,248	Malatya	Center	629,787
2	Erzurum	Center	298,735	Erzurum	Center	379,324
3	Elazığ	Center	250,534	Elazığ	Center	346,364
4	Van	Center	226,965	Van	Center	301,568
5	Erzincan	Center	102,304	Erzincan	Center	132,540
6	Kars	Center	93,038	Kars	Center	113,231
7	Van	Erciş	77,095	Van	Erciş	107,251
8	Ağrı	Center	69,384	Muş	Center	105,474
9	Bingöl	Center	67,022	Bingöl	Center	90,955
10	Bitlis	Tatvan	65,901	Ağrı	Center	89,491
11	Muş	Center	65,801	Ağrı	Patnos	84,280
12	Ağrı	Patnos	65,008	Hakkari	Center	72,824
13	Hakkari	Center	57,077	Iğdır	Center	70,526
14	Hakkari	Yüksekova	54,739	Hakkari	Yüksekova	70,247
15	Bitlis	Center	51,927	Bitlis	Tatvan	67,963
16	Ağrı	Doğubeyazıt	48,863	Ağrı	Doğubeyazıt	66,522
17	Iğdır	Center	45,941	Bitlis	Center	54,383
18	Bayburt	Center	38,453	Muş	Bulanık	51,478
19	Muş	Bulanık	30,014	Bayburt	Center	49,420
20	Erzurum	Oltu	29,808	Tunceli	Center	41,625
21	Erzurum	Pasinler	28,283	Erzurum	Oltu	36,219
22	Bitlis	Adilcevaz	25,736	Erzurum	Pasinler	35,918
23	Erzincan	Üzümlü	25,182	Erzincan	Üzümlü	34,526
24	Kars	Sarıkamış	24,779	Gümüşhane	Center	33,579
25	Tunceli	Center	24,449	Bitlis	Adilcevaz	31,940
26	Erzurum	Hınıs	23,463	Kars	Sarıkamış	31,816
27	Erzurum	Horasan	22,806	Elazığ	Kovancılar	30,455
28	Gümüşhane	Center	22,775	Erzurum	Horasan	28,776
29	Bitlis	Ahlat	21,542	Muş	Hasköy	28,597
30	Elazığ	Kovancılar	21,262	Malatya	Doğanşehir	28,351
31				Erzurum	Hınıs	28,129
32				Muş	Malazgirt	27,518
33				Bingöl	Solhan	23,913
34				Bitlis	Ahlat	23,451
35				Bingöl	Genç	22,941
36				Ardahan	Center	21,161
37				Malatya	Battalgazi	21,148
38				Malatya	Yeşilyurt	20,972
39				Muş	Varto	20,546
40				Erzurum	Narman	20,154
41				Kars	Kağızman	20,045
		Total	**2,379,134**		**Total**	**3,495,408**

Table 2.1.1.8: Comparison of Urban Population of Districts with 20.000 and Over in 1997 and 2020

Year	Number of Districts	Proportion of District Population to Total Population %	Total Population of Districts with 20.000 and over	Proportion of Districts' Total Urban Population to Districts' Total Urban Population in EAP Region %
1997	30	22.56	2,379,134	75.80
2020	41	30.83	3,495,408	81.84

2.1.1.3. Population And Migration Policies

EAP Region, because of the combination of factors including its geography and historical process, has been experiencing underdevelopment compared to other regions. Although the region has a high level of fertility, population displays decreasing trend because of out migration.

In order to Eastern Anatolian Region to compensate its population lost and has a population increase it needs both national policies and local investment programmes. For activities which are going to be made under the framework of "Preparation Project of Sub-region Development Plan for Returning to Village and Rehabilitation", which was published as a Prime Ministry Notice in 1999, SAP Regional Development Administration has started the process and fund was appropriated for it. Under the framework of this project, the provinces of Bingöl, Hakkari, Tunceli, Bitlis, Van and Muş have been decided to be placed with priority in Investment Programme. In the same direction necessary funds are appropriated in the Investment Programme of 1999 and 2000 for projects of returning village in these provinces. Implementation of Returning to Village and Rehabilitation Project ends by 2001. Replacement of families which had already migrated out of Eastern Anatolia covers around 1000-1500 families. Families will be able to subsist on animals and land that will be provided with.

However, unless social and economic investments are realized, projects like returning village could not be sufficient. Trend of eradicating terror and measures taken for activating economy in the region will be able to bring about a population increase.

Legal arrangements for the region are hopeful for the future. With the decision dated March 5th 1999 and numbered 99/12477 of Board of Ministers, in 24 provinces among which 15 are in Eastern Anatolia (Adıyaman, Ağrı, Ardahan, Bayburt, Batman, Bingöl, Bitlis, Diyarbakır, Elazığ, Erzincan, Erzurum, Gümüşhane, Hakkari, Hatay, Iğdır, Kars, Mardin, Muş, Ordu, Siirt, Şırnak, Tunceli, Van, Yozgat), an important step was taken in order to support incomplete investments. All incomplete investments in different sectors including industry, education, health will be supported. This will activate social and economic life and will be a reasonable factor for returning.

Another legal arrangement that will cause returning migration is the law dated January 23rd 1998 and numbered 4325 about Extraordinary State Region and Creating Employment and Encouraging Investment in Priority Areas of Development. By this arrangement, certain improvements are expected in provinces of Adıyaman, Ağrı,

Ardahan, Bayburt, Batman, Bingöl, Bitlis, Diyarbakır, Elazığ, Erzincan, Erzurum, Gümüşhane, Hakkari, Hatay, Iğdır, Kars, Mardin, Muş, Ordu, Siirt, Şırnak, Tunceli, Van and Yozgat.

By the announcement 99/1 of decision dated March 5th 1999 and numbered 99/12477 of Board of Ministers also brings a new incentive measure. According to this, in the framework of Incentive Fund for Investment, energy, infrastructure, build-operate-manage investments, research and development, design, new product and model development investments, electronic industry investments, techno-park, information technology, service sector investments like education, health and tourism, and all new investments are supported. The purpose of regional development investments is to support new investments (with the exception of animal husbandry, textile, transportation) which cost at least 8 million dollars and employs at least 75 persons in the provinces of Batman, Bingöl, Bitlis, Diyarbakır, Hakkari, Hatay, Mardin, Muş, Siirt, Tunceli and Van.

By the decision dated February 26th 1999 and numbered 99/12478 of Board of Ministers, small and medium sized industries are provided with support of discount and easiness in energy consumption in many Eastern Anatolian Provinces (Adıyaman, Ağrı, Ardahan, Bayburt, Batman, Bingöl, Bitlis, Diyarbakır, Elazığ, Erzincan, Erzurum, Gümüşhane, Hakkari, Hatay, Iğdır, Kars, Mardin, Muş, Ordu, Siirt, Şırnak, Tunceli, Van, Yozgat) (**Annex Table 2.1.16**).

National policies and practices for the region, though can not prevent out migration completely, will slow it down gradually.

2.1.1.4. Employment

2.1.1.4.1. Current Situation in Employment Structure

According to 1990 Census data, active population in EAP region is 3,631,752. Proportion of active population in the region to active population in Turkey is 8.9 %. Total labor force in the region is 2,462,964. This refers to 10 % of total labor force in Turkey.

Labor force participation rate, which shows the share of labor force in active population, was 70.95 % in 1980 and decreased to 67.82 in 1990. According to 1990 data, 64.57 % of labor force was employed and the rest 5.43 % is unemployed. According to 1990 Census results, unemployment in Turkey is 7.8 % for men and 8.5 for women. However, size of unemployment is rather larger than the figure displays.

When the region is analyzed in terms of sectors, it is seen that the economically active population has been moving from agricultural sectors to non-industrial sectors. There is a resemblance between EAP region and Turkey regarding this move. Employment in the sectors of agriculture, forestry and fishing is decreasing in EAP region as is the case in Turkey. Highest increase is seen in social and personal service sector in EAP region. There was an increase in the sector of construction in 1985-1990 period (**Table 2.1.1.9**). Since construction sector can employ unqualified labor especially coming from rural areas, it contributes in relieving the problem of unemployment.

In EAP region, there has not been a stable improvement in industrial production sector. Share of employment in industrial production sector was 3.09 % in 1980, dropped to 2.63 % in the following period and increased to 3.44 % by 1990 (**Table 2.1.1.9**).

Table 2.1.1.9: Distribution of Employment by Economic Branches in EAP Region

Economic Branches	1980		1985		1990	
	Number	%	Number	%	Number	%
Agriculture, forestery, hunting and fishing	1,625,233	76.2	1,748,114	75.9	1,679,308	72.1
Mining and quarrying	7,687	0.4	5,302	0.2	4,803	0.2
Manufacturing	65,909	3.1	60,470	2.6	80,039	3.4
Electricity, gas and water	2,613	0.1	1,458	0.1	6,362	0.3
Construction	65,785	3.1	56,197	2.4	77,071	3.3
Wholesale and retail trade, restaurant and hotels	56,854	2.7	71,451	3.1	85,112	3.7
Transportation, communication ad storage	37,117	1.7	42,779	1.9	48,806	2.1
Finance insurance, real estate and business services	10,251	0.5	12,504	0.5	15,155	0.7
Community, social and personal services	251,512	11.8	293,590	12.8	325,836	14.0
Total	**2,133,853**	**100.0**	**2,302,415**	**100.0**	**2,329,264**	**100.0**

2.1.1.4.2. Employment Estimates in EAP Region

In the process of Strategy and Restructuring Scenarios for EAP region, three alternatives was considered for employment estimates. In this section data is reevaluated. Employment in sub-regions is expected to be different in each sector in Eastern Anatolian Region. In addition to this, there will appear a different employment profile according to three growth scenarios[1]. Distribution of employment by sub-regions according to A1 scenario is displayed in the table below.

[1] In the process of Strategy and Restructuring Scenarios for EAP region, three alternatives was considered for employment estimates. In this section data is reevaluated.

Table 2.1.1.10: Distribution of Employment by Sub-Regions According to A1 Scenario in EAP Region

(Thousand person /Year)

Sectors	1997	%	2000	2005	2010	2020	%	Aggregate Growth Rate (%)	Annual Growth Rate (%)
Agriculture	**1508**	**70.1**	**1399**	**1273**	**1161**	**1013**	**37.9**	**-27.6**	**-1.6**
Agriculture	1503	69.8	1388	1255	1135	969	36.3	-30.2	-1.8
Forestry	2,7	0,1	5	9.7	15	25	0.9	400.0	8.0
Hunting and Fishing	2,5	0,1	5,5	8	11	19	0.7	245.5	6.2
Industry	**94,27**	**4,4**	**124**	**178**	**253**	**427**	**16.0**	**244.4**	**6.2**
Mining and Quarrying	6,12	0,3	10	15	21	43	1.6	330.0	7.3
Manufacturing	81,15	3,8	100	143	204	332	12.4	232.0	6.0
Electricity, Gas and Water	7	0,3	14	20	28	52	1.9	271.4	6.6
Services	**549,5**	**25,53**	**611.6**	**735**	**899**	**1230**	**46.07**	**101.1**	**3.5**
Construction	76,35	3,5	89	122	158	233	8.7	161.8	4.8
Wholesale and Retail trade	81,2	3,8	92	127	172	259	9.7	181.5	5.2
Restaurant and Hotels	10,38	0,5	19	29	46	79	3.0	315.8	7.1
Transportation, Communication	50,27	2,3	62	85	122	196	7.3	216.1	5.8
Financial Services	11	0,5	14.93	19	26	42	1.6	181.3	5.2
Business Services	15,45	0,7	17.65	23	31	50	1.9	183.3	5.2
Public Services	300,2	13,9	309	318	327	344	12.9	11.3	0.5
Real Estate	4,64	0,2	8	12	17	27	1.0	237.5	6.1
Total	2152	100	2134	2186	2313	2670	100.0	25.1	1.1
Rate			-0.28	0.48	1.13	1.44			
L/N	36,7		35.6	34.7	34.8	36.6			

Employment will develop in sub-regions balanced with population development. Majority of urban inhabitants are foreseen to take place in the sectors of industry and services. In **Table 2.1.1.10**, expected distribution of employment for EAP Region is displayed. Employment being 2152 thousands at the beginning of Plan period, will increase and reach to 2670 thousands at the end of the period. While aggregate growth rate in agriculture will become –22 %, it becomes 165 % in industry and 67 % in services sector. Therefore, annual growth rates in three main sectors become, –1,6 % for agriculture, 6,2 % for industry and 3,5 % for services. Total employment will be distributed to agriculture with 37,9 %, industry with 16,0 %, and services with 46,1 %. Total rate of three sectors from the year 2000 to 2020 will be, in order, –0,28 %, 0,48 %, 1,13 %, 1,44 %. Share of total employment in population being 36,7 % in 2000, will be almost the same in 2020 (36,6 %).

Table 2.1.1.11. Employment in Public Sector in EAP Region According to A1 Growth Scenario

(Thousands Person /Year)

Sectors	1997	%	2000	2005	2010	2020	%	Aggregate Growth Rate (%)	Annual Growth Rate (%)
Employment	595	100	601	621	648	736	100.0	22.4	1.0
Rate			0.3	0.7	0.9	1.3			
Public/Total	27.6		28.2	28.4	28.0	27.6			

The share of public sector is estimated according to the scenario. The employment in public sector in 1997 corresponds to 27 % of total employment. The share will be 28,2 % in 2000, 28,4 % in 2005, 28,0 % in 2010, and will reach to 27,6 % in 2020 **(Table 2.1.1.11)**.

2.1.1.5. Conclusion

EAP has been facing many problems because of out migration. Migration to big cities left an unbalanced demographic structure. In other words, population loss brought about a decrease in young labor force. The region which young population had left changed its characteristics both in urban and rural areas. The areas where the population loss felt severely, became places of dependant population like women, child and elderly.

Among the factors of migration, in addition to classical factors, terror problem made an accelerating effect.

The region has been deprived of many facilities improving life standards like education and health. Diffusion and improvement of both formal and public educational organizations and provision of effective health services will make the region more attractive both for inhabitants of the region and for those who are willing to come to the region for investment and employment.

Development of population is dependent to policies of all the other sectors. Every investment and improvement in agriculture, industry, education, health and culture sectors will affect population directly. For this reason, population policy should not be understood as an independent policy. The area of population policy itself is limited. However, the point of emphasize is to take necessary measure to improve quality of population.

Table 2.1.1.12: Strategies to be Implemented in Population Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			PLACE
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011-2020)	
Removal of Demographic Unbalances	Formation of a situation where local potentials can appear	Migration of working age population to region by activation of local potentials	Provision of a balanced settlement	All sub-regions
Provision of Active Participation	Provision of entrepreneur support by participation of civil society organizations	Preparation of infrastructure to attract educated population	Improvement of participation in all fields	All sub-regions
Realization of Education Investments	Establishment of organization training intermediate labor and increasing the number of qualified labor force in three main sectors	Increasing employment opportunities in three main sectors		All sub-regions
Dissemination of Communication Media	Dissemination of public education by specialized communication system	Provision of idea enrichment and information on opportunities for population groups through easily accessible Communication system	Improvement of Communication network	All sub-regions
Increase of Accessibility in Health Services	Improvement of hygiene and establishment of health infrastructure.	Provision of life expectancy increase by making available new developments for region's population and increasing quality of life	Increasing quality of life	All sub-regions

2.1.2. EDUCATION

2.1.2. Education

A skilled labor force is one of the indispensable conditions of development and the way of creating a skilled labor force is education.

The Region is backward in education compared to the average of overall Turkey, at the every level of education. It is inadequate in terms of the number of facilities, their equipment, the quality and oftentimes the quantity of instructors, at the pre-school, primary, secondary and higher education, in short, at all the levels of education. Therefore, there is a need for a considerable improvement in education in the Region.

The first precondition of having a progress in education in the Region is the allocation of adequate financial resources and the second precondition is the raising of high quality educators (teachers, instructors, etc.). The Plan identifies these preconditions and includes some strategies and projects to cope with them.

2.1.2.1. Summary of the Current Situation

One of the basic dynamics of the regional development is education. Without having a developed education sector, it is impossible that the other sectors are developed in a balanced way. The Eastern Anatolia Region is underdeveloped in the education sector as in many of the other sectors. It is observed that the Region is quite below the average of Turkey in terms of the school enrollment rate. The school enrollment rate figures are even worse for the girls. The share of education in the public investments has been decreasing in the Region, as in Turkey in general, over the years. In spite of the incentives provided, the private sector has not invested enough in the field of education in the EAP Region.

a) Pre-School Education

The number of schools, students and teachers at the pre-school education in the Region is considerably low compared to the overall Turkey. Almost half of the schools are in Malatya, Elazığ and Erzurum. The amount of income and the high number of the children per family in the Region are the causes of the low degree of interest in pre-school education. One of the reasons of the children's not attending pre-school education is the indifference of the families towards education. There are few major public institutions in the Region; moreover, there are not enough day nurseries and kindergartens in these institutions except for the universities. This influences the pre-school education in a negative way (**Table 2.1.2.13**).

b) Primary Education

When the number of students at the primary education per classroom is examined, it is found that the average of Turkey is 43 and the average of the Region is 40. The number of the students per classroom is low in the villages and its primary reason is the intense migration from the villages to the cities. As there are more settlements that are geographically small in this region, there are more combined schools. This decreases the quality of education. It is seen that the Region is not disadvantageous in terms of double

education when compared to Turkey. Double education is a problem in overall Turkey. Approximately 41% of Regional Primary Boarding Schools are in the Region. That a normal education is given at these schools is good for the quality of education in the Region. However, the number of the Schools with Dormitories, which are more advantageous in terms of both their low cost to the government and the students' socialization, is low (**Table 2.1.2.14**) (**Table 2.1.2.15**).

c) Secondary Education

There are 93 industrial technical instructional schools at the secondary education level in the EAP. It is observed that the multi-programmed high schools in the Region are being established in the districts. While the proportion of general high schools to vocational high schools is 55/45 in the Region, it is 62/38 in the overall Turkey, in the 1999-2000 education year. When the rate of the students in the Region is examined, it is seen that the rate of the student enrollment rates for vocational schools is less than the rate of the ones in overall Turkey. When it comes to the distribution of the students in the vocational schools in the EAP Region, it is observed that there are more students in the "İmam Hatip" (Prayer Leader and Preacher) High Schools. There are differences in distribution of the teachers at the secondary education according to the cities and districts. It is seen that there has not been a regular increase in the number of the students at the secondary schools in the EAP over the years. There has been a decrease in the number of the industrial technical instructional school students in the EAP and the overall Turkey (**Table 2.1.2.16**).

d) Higher Education

Approximately 4.2 % of the university or higher education students are placed in the universities in the EAP Region. There is an out-migration of university instructors from the Region in serious numbers. The limited budget allocations prevent the educational expenditures of the universities to increase in the optimum amounts. There are some shortcomings in terms of physical space and equipment. Moreover, the relations of the regional universities with the industry have not been developed as desired (**Table 2.1.2.17**).

e) Apprenticeship and Informal Education

Apprenticeship and informal education has a tendency to increase continually in the provinces in the Region of EAP. It is known that the courses in the Region have become intense in cutting out, sewing, needlework and preparation for the schools that require an entrance-exam. From the present situation, it is understood that the informal education activities in the Region are not sufficient (12.5 %) when compared to overall Turkey. The low rate of the literate people in the Region is still an important problem (**Table 2.1.2.18**).

f) In-Service Education

The activities related to in-service training are not sufficient. That there is not enough private sector in the Regions and that the benefits of in-service training are not

understood well enough by the private sector can be thought as the reasons of the inadequate activities on this field (**Table 2.1.2.20**).

2.1.2.2. The on-going Project in the Region

In **Table 2.1.2.1** the on-going secondary education projects in the provinces of EAP Region, are shown. It is understood that these projects are insufficient when compared to overall Turkey. The projects are generally for high schools and dormitories. It is expected that these projects will be completed by the years 2000 and 2001. However, it must be stated that these project can't solve the problems stated above. Only four of the projects out of 51 are Multi-programmed High Schools. The number of these schools should be increased.

Table 2.1.2.1: The Projects that are in Progress for the Secondary Education in the Provinces in EAP Region

CITY	ORDER	NAME OF THE PROJECT	LOCATION	COST (Million TL)	DATE OF START	DATE OF END	ESTIMATED EXPENSE TILL THE END OF THE YEAR 2000	RESPONSIBLE INSTITUTION
Ağrı	Project 1	Students'Dormitory	Ağrı	331,000	1993	2000	1000	Gen.Dir.of Foundations
	Project 2	Ind.Vac.H.Sc.Add. Building	Ağrı-Eleşkirt	610,000	1993	2000	450,000	MNE
	Project 3	Students'Dormitory	Ağrı-Tutak	282,000	1998	2001	150,000	MNE
Bingöl	Project 1	General High School	Bingöl	320,000	1994	2000	150,000	MNE
	Project 2	Teachers' House	Bingöl	591,000	1994	2000	150,000	MNE
Bitlis	Project 1	Ind.Voc.H.Sc.	Bitlis-Ahlat	450,000	1994	2000	70,000	MNE
	Project 2	Multi-Prog.H.Sch. +Dormitory	Bitlis-Güroymak	1,300,000	1991	2001	500,000	MNE
	Project 3	Anatolian High School	Bitlis	735,000	1995	2000	60,000	MNE
Elazığ	Project 1	Students'Dormitory	Elazığ-Karakoçan	656,000	1997	2002	24,000	Gen.Dir.of Foundations
	Project 2	The Building of P.L. and Preachers H.S.	Elazığ-Keban	370,000	1997	2000	120,000	MNE
	Project 3 Project 4	Students'Dormitory	Elazığ-Kovancılar and Sivrice	465,000	1997	2001	60,000	MNE
Erzincan	Project 1	Health Voc.H.School	Erzincan	2,291,120	1992	2001	300,000	MRS, Gen.Dir. of Construction Works
	Project 2	Sports Hall of Anat.H.Sc.	Erzincan	275,000	1992	2000	50,000	MNE
Erzurum	Project 1	Health Voc.H.School	E. Oltu	470,000	1991	2000	30,000	Ministry of Health
	Project 2	Industrial Voc.H.School	Erzurum Pazaryolu	480,000	1995	2000	100,000	MNE
	Project 3	School for the Blinds	Erzurum	1,902,000	1993	2001	400,000	MNE
	Project 4	Genel High School Aşkar H.School. Dadaşkent H. Şükürpaşa H. Oltu H.S.Add.Bld. Genel High School College of Science	Erzurum E.Şenkaya Erzurum Erzurum E. Oltu E.İspir Erzurum	350,000 250,000 350,000 275,000 220,000 220,000 640,000	1993 1995 1995 1995 1996 1998 1995	2000 2000 2000 2000 2000 2000 2000	100,000 100,000 25,000 150,000 50,000 100,000 50,000	MNE

Table 2.1.2.1: The Projects that are in Progress for the Secondary Education in the provinces in EAP Region (Continued)

CITY	ORDER	NAME OF THE PROJECT	PLACE	COST	THE YEAR OF START	THE YEAR OF FINISH	THE GUESSED EXPENSE TILL THE END OF THE YEAR 2000	RESPONSIBLE INSTITUTION
Erzurum	Project 4	Ind.Voc.H.Sc Anat.Arts H.Sch.	Erzurum Erzurum	430,000 650,000	1997 1998	2001 2001	100,000 80,000	MNE
	Project 5	Secondary Edu.Dorm.s	Towns of Erzurum	1,475,000	1995	2000	260,000	MNE
	Project 6	HİE Institute	Erzurum	2,200,000	1990	2000	300,000	MİİB
Hakkari	Project 1	Building of Educat.Equip.	Hakkari	420,000	1998	2000	100,000	MNE
	Project 2	Anatolian H.School	Hakkari	460,000	1996	2000	150,000	MNE
	Project 3	Secondary Edu.Dorm.s	Yüksekova	350,000	1995	2000	50,000	MNE
Gümüşhane	Project 1	Health Voc.H.School	Gümüşhane	640,000	1991	2000	80,000	MNE
	Project 2	Multi-Prog.H.Schl.s	G.Torul	390,000	1996	2000	250,000	MNE
	Project 3	Students' Dormitories	G.Kürtün	195,000	1997	2000	50,000	MNE
Kars	Project	Sch.for the Mentally Retarded Peo.	Kars	232,000	1995	2000	5000	MNE
	Project	Teachers' House	Sarıkamış	380,000	193	2000	200,000	MNE
Malaya	Project 1	Sürgü Multi-Pr.H.School	Doğanşehir	350,000	1995	2000	40,000	MNE
	Project 2	Ind.Vo.H.S+Dr	Pötürge	760,000	1995	2001	200,000	MNE
	Project 3	Sch.for the ment.Ret.Peop.	Malatya	911,000	1995	2000	400,000	MNE
	Project 4	T.Özal H.Sch.	Malatya	380,000	1997	2001	200,000	MNE
	Project 5	Anato.Hotel Menagemant.Tourism.Voc.H.S.	Malatya	650,000	1995	2000	500,000	MNE
	Project 6	Multi-Pr.H.Sch	Yazıhan	270,000	1995	2000	30,000	MNE
Muş	Project 1	Anatolian H.Sch	Muş	300,000	1996	2000	50,000	MNE
	Project 2	Trade Voc.H.Sc.	Muş	365,000	1997	2000	180,000	MNE
Tunceli	Project 1	Houses Provided For Teachers	Pülümür	400,000	1992	2000	700,000	BİB Structure
	Project 2	Public Edu.Center	Ovacık	196,000	1994	2001	96,000	MNE
	Project 3	Science H.Sch.	Tunceli	800,000	1995	2001	150,000	MNE
	Project 4	Students' Dormitories	Tunceli Ovacık	300,000 500,000	1995 1998	2000 2001	100,000 50,000	MNE
Van	Project 1	Ind.Voc.H.Sch.	Van	510,000	1993	2000	270,000	MNE
	Project 2	Sch.for the Blinds	Van	1,754,000	1986	2001	400,000	MNE
	Project 3	Multi-Purpose Edu.Center	Van	240,000	1997	2001	200,000	MNE
Bayburt	Project 1	Students'Dormitory	Bayburt	260,000	1998	2001	120,000	MNE
	Project 2	Sports Hall	Bayburt	840,000	1997	2001	100,000	MNE
Ardahan	Project 1	Anatolian H.Sch	Ardahan	380,000	1997	2001	80,000	MNE
	Project 2	Sports Hall	Towns	840,000	1997	2001	100,000	MNE
	Project 3	Multi-Programmed High School	Damal Göle Hanak	780,000	1997	2001	120,000	MNE
	Project 1	Teachers'Hous.	Ardahan	400,000	1993	2000	180,000	MNE
Iğdır	Project 2	Bld. Of Edu.Equip.Maintanence&Serv	Iğdır	490,000	1997	2000	80,000	MNE

Source: SPO, the Investment Program of the year 2000.

4.7 % of the university students in Turkey attend universities of Atatürk, Fırat, İnönü, Yüzüncü Yıl and Kafkas, which are in the EAP region. Even though the population of the Region is low, it has a large geographical area. However, the number of students attending Hacettepe University is more than the number of all students in the Region. There are two universities in the sub-region of Erzurum, two universities in the sub-region of Malatya-Elazığ and one university in the sub-region of Van. Moreover, in province centers there is a faculty or a vocational higher school (V.H.S). At the Atatürk University the faculty of dentistry, pharmacy, science-literature, economics and administration, theology, communication, Kazım Karabekir Education Faculty, engineering, medicine, agriculture, Ağrı Education Faculty, Erzincan Education Faculty and Erzincan Faculty of law are the faculties that accept students. It is planned to have students at the faculty of veterinary, Oltu V.H.S., İspir V.H.S. and Ağrı Health V.H.S. in 2000-2001 education year (**Table 2.1.2.2**). At Fırat University, there are the faculties of engineering, science-literature, theology, veterinary, medicine, water crops, technical education and education faculty. The faculties that are planned to accept students in 2000-2001 education year are faculty of communication, Muş Education Faculty, Conservatory and Malazgirt Alparslan Vocational Higher School.

Table 2.1.2.2: The on going Projects of Atatürk University

ORDER	NAME OF THE PROJECT	LOCATION	COST (Million TL)	DATE OF START	DATE OF END	ESTIMATED EXPENSE TILL THE END OF THE YEAR 2000	RESPONSIBLE INSTITUTION
Project 1	Faculty of Law	Erzincan	1,789,000	1991	2000	100,000	Atatürk Univ.
Project 2	Building of the Provided Houses	Erzurum	6,059,000	1993	2000	1,000,000	Atatürk Univ.
Project 3	Oltu Voc.H.School	Oltu	435,000	1997	2000	150,000	Atatürk Univ.
Project 4	Narman Voc. H.School	Narman	435,000	1997	2000	150,000	Atatürk Univ.
Project 5	Central Classroom Lab.	Erzurum	2,585,000	1997	2002	800,000	Atatürk Univ.
Project 6	Edu. Faculty.S Sa.	Erzurum	862,838	1998	2001	85,000	Atatürk Univ.

Source: SPO, the Investment Program of the year 2000.

Table 2.1.2.3: The on Going Projects of Fırat University

ORDER	NAME OF THE PROJECT	LOCATION	COST (Million TL)	DATE OF START	DATE OF END	ESTIMATED EXPENSE TILL THE END OF THE YEAR 2000	RESPONSIBLE INSTITUTION
Project 1	The Provided Houses of the University	Elazığ	2,166,000	1982	2000	28,000	Fırat University
Project 2	The Lab. Of the Eng. Fac.	Elazığ	2,482,000	1982	2002	500,000	Fırat University
Project 3	Med. Soc. Instıtutıons	Elazığ	3,150,000	1984	2002	200,000	Fırat University
Project 4	Infrastructure of the Campus	Elazığ	3,450,000	1985	2003	500,000	Fırat University
Project 5	Stu.s' Bld. of the Fac. Of Medicine	Elazığ	3,100,000	1985	2002	200,000	Fırat University
Project 6	Tech.Edu.Fac.	Elazığ	3,900,000	1979	2004	350,000	Fırat University
Project 7	Clinics of the Faculty of Veterinary	Elazığ	1,104,000	1991	2001	2000	Fırat University
Project 8	Fac. Of Water Products	Elazığ	1,699,000	1998	2003	200,000	Fırat University
Project 9	Sports Hall	Elazığ	2,208,750	1994	2001	100,000	Fırat University
Project 10	Faculty of Agriculture	Bingöl	919,000	1993	2003	50,000	Fırat University

Source: SPO, the Investment Program of the year 2000.

The faculties that are in İnönü University are science and literature, economics and administration, engineering and medicine. In the 2000-2001-education year, students are enrolled to physical education and sports colledge, Hekimhan V.H.S, and Doğanşehir V.H.S (**Table 2.1.2.4**).

Table 2.1.2.4: The on Going Projects of İnönü University

ORDER	NAME OF THE PROJECT	LOCATION	COST (Million TL)	DATE OF START	DATE OF END	ESTIMATED EXPENSE TILL THE END OF THE YEAR 2000	RESPONSIBLE INSTITUTION
Project 1	Infrastructure of the Campus	Malatya	9,312,000	1979	2002	250,000	İnönü University
Project 2	The Provided Houses of the University	Malatya	2,300,000	1984	2001	90,000	İnönü University
Project 3	Faculty of Medicine	Malatya	3,300,000	1994	2001	750,000	İnönü University
Project 4	Faculty of Engineering	Malatya	3,028,000	1998	2002	750,000	İnönü University
Project 5	Mus.Painting. + Sürgü VHS	Malatya	597,000	1998	2001	200,000	İnönü University
Project 6	Information Center of the Rectorate	Malatya	1,878,000	1991	2001	250,000	İnönü University
Project 7	Sports Hall	Malatya	578,825	1994	2000	110,000	İnönü University

Source: SPO, the Investment Program of the year 2000.

In Yüzüncü Yıl University, there are faculties of education, science and literature, teology, medicine, veterinary, and agriculture. The faculties, for which a promise is taken from Higher Education Institution but which will start operating in the following years when their infrastructure is completed, are; the faculties of fine arts, economics and administration, engineering and arthitecture (**Table 2.1.2.5**). In Kafkas University, there are faculties of science and literature, veterinary and Artvin Faculty of Forestery. A decision is made by the Council of Ministers to have an education faculty there, and it is planned to accept students in the following years (**Tablo 2.1.2.6**).

Table 2.1.2.5: The on Going Projects of Yüzüncü Yıl University

ORDER	NAME OF THE PROJECT	LOCATION	COST (Million TL)	DATE OF START	DATE OF END	ESTIMATED EXPENSE TILL THE END OF THE YEAR 2000	RESPONSIBLE INSTITUTION
Project 1	Adilcevaz VHS	Bitlis-Adilcevaz	551,000	1995	2000	180,000	Yüzüncü Yıl Univ.
Project 2	Bitlis VHS	Bitis	919,000	1993	2001	180,000	Yüzüncü Yıl Univ.
Project 3	Özalp VHS	Van-Özalp	425,000	1995	2000	40,000	Yüzüncü Yıl Univ.
Project 4	The Infrastructure of the Campus	Van	782,800	1984	2004	150,000	Yüzüncü Yıl Univ.
Project 5	Fac. Of Agriculture	Van	183,800	1990	2001	270,000	Yüzüncü Yıl Univ.
Project 6	The provided Houses for the Personnel of the Uni.	Van	320,000	1984	2004	300,000	Yüzüncü Yıl Univ.
Project 7	Performance Field of the University	Van	1,149,000	1990	2001	20,000	Yüzüncü Yıl Univ.
Project 8	Information Center	Van	1,414,000	1994	2001	30,000	Yüzüncü Yıl Univ.
Project 9	Central Lab ve Support	Van	4,249,000	1994	2003	650,000	Yüzüncü Yıl Univ.
Project 10	Faculty of Medicine	Van	1,723,000	1995	2003	100,000	Yüzüncü Yıl Univ.
Project 11	Fac. Of Teology	Van	976,000	1995	2002	250,000	Yüzüncü Yıl Univ.
Project 12	Ercis VHS	Van-Erciş	804,000	1998	2003	40,000	Yüzüncü Yıl Univ.
Project 13	Open- air Sports. Facilities	Van	830,775	1998	2002	70,000	Yüzüncü Yıl Univ.

Source: SPO, the Investment Program of the year 2000.

Table 2.1.2.6: The on Going Projects of Kafkas University

ORDER	NAME OF THE PROJECT	LOCATION	COST (Million TL)	DATE OF START	DATE OF END	ESTIMATED EXPENSE TILL THE END OF THE YEAR 2000	RESPONSIBLE INSTITUTION
Project 1	Research Projects of Various Units	Kars	51,000	1993	2000	15,000	Kafkas University
Project 2	Faculty of Veterinary Medicine	Kars	1,900,000	1994	2001	800,000	Kafkas University
Project 3	Science-Social Fac.	Kars	1,723,000	1994	2002	493,000	Kafkas University
Project 4	The Building of Rectorate	Kars	1,033,000	1994	2001	100,000	Kafkas University
Project 5	Central Cafeteria	Kars	574,000	1995	2002	50,000	Kafkas University
Project 6	The Infrastructure of the Campus	Kars	2,487,000	1996	2002	500,000	Kafkas University
Project 7	Physical Edu.&Sports H.School	Kars	1,149,000	1997	2001	100,000	Kafkas University
Project 8	The Performance Field of Veterinary Fac.	Kars	459,000	1993	2001	10,000	Kafkas University
Project 9	The Building of the Provided Houses	Kars	2,700,000	1987	2001	270,000	Kafkas University
Project 10	Kars VHS	Kars	735,000	1999	2003	1000	Kafkas University
Project 11	Kağızman VHS	Kars	735,000	1999	2003	1000	Kafkas University
Project 12	Sports Hall	Kars	802,503	1994	2001	105,000	Kafkas University

Source: SPO, the Investment Program of the year 2000.

2.1.2.3. Project Proposals

A total number of 29 projects have been suggested to improve the education level in the Eastern Anatolia Region. Each project has the qualification to form its sub-projects in itself.

I. Project Name: Extention of Pre-school Education

Project Purpose: It is envisaged that the school enrollment rate in pre-school education will be 12% in the year 2000. The demand for pre-school education is under the average of Turkey in the Region. This education stage was not able to be extended, not only because of economic conditions of the local people but also because of lack of people's information about pre-school education. The activity of making pre-school education widespread will continue by adding classrooms to schools that have enough infrastructure.

In order to eliminate the shortage of teachers in pre-school education at present, studies are underway to raise expert teacher and teacher, by giving to the graduates of department of child development of female vocational high school, a chance to attend undergraduate and graduate programs at Anatolia University.

The required equipment should be given to public institutions to open kinder gardens and day nurseries for pre-school education.

The private sector should be encouraged to increase kindergartens and day nurseries.

To encourage the education given in kindergartens and day nurseries, support of local televisions should be taken. The importance of the pre-school education should be announced to people by publishing model programs about this issue.

The Date of Start and End **:** Continuous Starting from 2001

Implementing Authority **:** Public Institutions and private contractors

Location **:** First Erzurum, Malatya, Elazığ, Van, Erzincan and Ağrı

II. Project Name: Project For Increasing Technical Infrastructure in Primary Education Schools

Project Purpose: The primary schools of the EAP Region completely lack the capacity of giving modern education. For that reason, their technical equipment requirements should be supplied immediately.

Alternatives for schools with five classrooms should be provided to turn them to exact primary education schools with eight classrooms and laboratory, lecture and sport auditorium, library and computer facilities. Also, it is necessary to form cultural activities in the primary education schools and secondary education and form procedures that will enable the usage of sport auditoriums for the whole day. These kinds of applications have a great role in the development of children.

The Date of Start and End **:** Continuous starting from 2001

Implementing Authority **:** Ministry of National Education

Location **:** Giving priority to Erzurum, Malatya, Elazığ, Van

III. Project Name: Developing Adequate Number of Primary Education Schools

Project Purpose: It seems that the greatest requirement for the primary schools is in Van in the EAP Region. 36 primary schools for Van, 14 primary schools for Malatya and 13 primary schools for Elazığ are required. The provinces in which primary schools are not required are Gümüşhane, Erzincan, Kars, Ardahan and Bayburt. As there is a problem of intense migration from rural area to city centers in the Region, the need of primary schools in the city centers is much more than in villages. 13 primary schools for 960 students in Van and Malatya and 11 primary schools in Elazığ city center are required. Schools that are needed for primary education area should be built as soon as possible in the EAP Region. As the primary education is compulsory, it must be given to everybody. Forming the required physical settling in primary education is a pre-condition for supplying equality of opportunity and possibility in education. Aids of private and voluntary institutions should be increased about this subject.

The requirement for schools that are necessary in the Region has been determined for the year 2000. It is observed that, what is urgent today is the provision of the primary education buildings.

Table 2.1.2.7: The Need of Primary Education School in the EAP Region in 1999-2000 Education Year

Provinces	The Need for Schools in Rural Area (According to student numbers)				The Need for Schools in Urban Area (According to student numbers)				Number of Schools Required
	240	480	720	960	240	480	720	960	
Ağrı	-	-	3	1	-	2	1	3	10
Bingöl	-	-	-	-	2	-	-	2	4
Bitlis	1	3	3	-	-	-	1	-	8
Elazığ	1	-	1	-	-	-	-	11	13
Erzurum	-	1	1	-	-	1	1	4	8
Hakkari	-	-	-	-	-	-	1	5	6
Malatya	-	-	-	-	-	-	1	13	14
Muş	1	1	2	13	1	1	-	-	19
Tunceli	-	-	-	-	1	-	-	-	1
Van	4	-	-	17	-	2	-	13	36
Iğdır	3	-	1	2	-	-	-	2	8
TOTAL	**10**	**5**	**11**	**33**	**4**	**6**	**5**	**53**	**137**

Source: Ministry of National Education, 1999

***** There is no primary education building required in Gümüşhane, Erzincan, Kars, Ardahan and Bayburt provinces.

The Date of Start and End **:** Starting from the year of 2001

Implementing Authority **:** Ministry of National Education, Private Sector, Civil Society Organizations

Location **:** All Listed Provinces

IV. Project Name: Bringing Student Numbers in Classrooms to the Standards

Project Purpose: For the time being, the student/classroom ratio in primary education is at the range of 60-70 %. Also, reaching to 100% school enrollment rate in the eight-year continuous primary education in 2000-2001 education year is aimed.

The project envisages decreasing the number of students in a class to 30. On the other hand, with switching to the eight-year continuous education program, need for new classrooms have appeared. **Table 2.1.2.8** gives the number of classrooms that will be needed in line with the increasing population. The investments needed for primary education in the provinces of Eastern Anatolia Region because of the population increase are given in the **Table 2.1.2.9**. The needs for classroom according to populations at school ages that have appeared due to population increase are calculated in **Table 2.1.2.8.** The calculated numbers are for the number of additional primary schools so they do not include the schools that already exist. According to this, instead of a definite school enrollment rate assumption for the school-age population of primary education, the calculations are based on the compulsory education.

Table 2.1.2.8: The Number of Required Primary Education School (with 8 classrooms) For Provinces of Eastern Anatolia Region According to the Population at Primary Education Age in the period of 2000-2020.

PROVINCES	Year 2000	Year 2005	Year 2010	Year 2015	Year 2020
Ağrı	29	22	37	37	25
Erzincan	0	2	14	11	15
Erzurum	16	42	54	44	22
Gümüşhane	0	2	7	9	10
Kars	0	0	29	29	44
Bayburt	0	4	5	6	5
Ardahan	0	4	13	15	15
Iğdır	22	4	13	17	19
Muş	64	48	35	37	42
Total Number of Erzurum Sub-Region	**131**	**110**	**177**	**173**	**158**
Bingöl	10	12	7	12	21
Elazığ	48	44	31	38	22
Malatya	55	91	90	80	61
Tunceli	1	10	11	12	13
Total Number of Malatya-Elazığ Sub-Region	**114**	**523**	**466**	**472**	**381**
Bitlis	19	12	11	10	10
Hakkari	23	45	45	42	37
Van	128	62	61	58	56
Total Number of Van Sub-Region	**170**	**120**	**117**	**110**	**103**
General Total of the EAP Region	**415**	**752**	**760**	**755**	**642**

***** By using **Table 2.1.1.2**, the year 2000 values are calculated.
******The calculations are made based on the population at Primary School ages.
Note: In the table, a primary school with 8 classrooms and 240 students is taken as a base.

The Date of Start and End **:** Starting from the year 2000

Implement-ing Authority **:** Ministry of National Education, Private sector, civilian public institutions

Location **:** All the Provinces Listed

Cost: In **Table 2.1.2.9,** the cost of necessary investments for the population at primary education age that will increase according to years is calculated. In the calculation, prices of the year 2000 are used. For the provinces in the regions, breakdown of schools according to districts should be done with the help of local units like the Provincial Administrations.

Table2.1.2.9: The Estimated Cost of Schools with 8 Classrooms that are Necessary for the Primary Education Students (with 2000 Prices)

PROVINCES	Year 2000	Year 2005	Year 2010	Year 2015	Year 2020
Ağrı	3.535.239	2.634.984	4.494.972	4.494.972	3.099.981
Erzincan	0	221.176,9	1.658.826	1.327.061	1.880.003
Erzurum	1.950.477	513.3424	6.545.116	5.390.095	2.695.048
Gümüşhane	0	237.992,7	832.974,6	1.070.967	1.189.964
Kars	0	0	3.574.554	3.574.554	5.361.832
Bayburt	0	478.116,4	597.645,5	717.174,6	597.645,5
Ardahan	0	510.650,6	1.531.952	1.787.277	1.787.277
Iğdır	2.681.906	510.650,6	1.531.952	2.042.603	2.297.928
Muş	7.801.907	5.805.933	4.236.762	4.550.596	5.178.264
Erzurum Sub-region	**15.969.529**	**13.351.484**	**21.578.156**	**21.038.703**	**19.285.477**
Bingöl	1.219.048	1.498.572	899.143	1.498.572	2.547.572
Elazığ	5.851.430	5.410.562	3.811.987	4.672.758	2.705.281
Malatya	6.704.764	11.083.092	10.961.300	9.743.378	7.429.326
Tunceli	121.904,8	1.260.731	1.386.804	1.512.877	1.638.951
Malatya-Elazığ Sub-region	**13.897.147**	**63.750.162**	**56.758.209**	**57.580.792**	**46.475.925**
Bitlis	2.316.191	1.504.043	1.353.638	1.203.234	1.203.234
Hakkari	2.803.810	5.495.523	5.495.523	5.072.790	4.509.147
Van	15.603.814	7.573.457	7.424.958	7.127.960	6.830.961
Van Sub-region	**20.723.816**	**14.573.022**	**14.274.119**	**13.403.984**	**12.543.342**
General Total Number of the EAP Region	50.590.492	91.674.669	92.610.484	92.023.478	78.304.744

*The numbers in this table are calculated by taking the calculations of the cost that are used in the investment program of the year 2000.
*A primary school with 8 classrooms is taken as a base. It is taken that there will be one classroom for each level of students and that there will be 30 students in each class and 240 students in the school.

V. Name of the Project: Project of Making the Private Schools Widespread

Project Purpose: There are not any private schools in 7 out of 16 provinces in the Region. 2.8% percent of the private schools in our country are in the EAP Region. With the investments in the Region, a new social structure will emerge. The new social structure will keep its continuity with the development in the quality of the urban life. For this reason, there will be a need for private schools, which can give foreign language education.11 primary schools are built in the Region by İstanbul Stock Exchange. That the income level of the Region is low when compared to the other regions causes businessmen of other regions to have the responsibility of building more primary schools in this region. Improvement of the quality of regional life depends on the improvement of primary education in the region and providing the necessary physical equipment's and infrastructure fitting to the national standards. The number of private education schools in the Region is less than the average of Turkey. In order to increase the quality of primary education in the Region, the number of private and primary education schools should be increased.

The private schools, which give foreign language education and are equipped with computers, should be encouraged especially in the province centers. The private sector should be encouraged to invest on education. To do this, tax discounts should be employed for the private enterprises that invest in the region. Private schools should be made widespread in the provinces of Malatya, Elazığ, Erzurum and Van. Establishment of kindergartens of which the region is comparatively more in need should be encouraged.

Table 2.1.2.10: Strategies to be Implemented in Private Education

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			
	1st Period (2001-2005)	2nd Period (2006-2010)	3rd Period (2011-2020)	Location
The Insufficiency of Private Schools	Legislation to encourage the private sector to make new investments, bringing additional tax discounts for private enterprises which will have investments on education. Extending the private kindergartens and private primary schools.	Establishing science high schools, extending the private high schools	Increasing the rivalry and the quality of schools, extending the private schools	All provinces with giving priority to Elazığ, Malatya, Erzurum and Van.

The Date of Start and End : All the steps that are shown in the **Table 2.1.2.10** starting from 2001

Implementing Authority : Civil Society Organizations, Private Entrepreneurs

Location : All Provinces Giving Priority to Malatya, Elazığ, Erzurum and Van

VI. Name of the Project: The Project of Supporting the Vocational Technical High Schools, which meet the Need of Workforce at Different Levels

Project Purpose: Raising the middle level technical work force that the EAP Region needs depend on the development of vocational and technical education. The students that attend the vocational and technical high schools in 1998-1999-education year constituted 45% of the high school students. This rate is the same as the corresponding rate in overall Turkey.

The Ministry of National Education has started the preparations for twelve-year compulsory education by putting the (8+4) system into force in the 200-2001 education year. This program aims at raising personnel ready for working in production in the vocational and technical education schools. It is important to make this system widespread; which is used particularly in the European Union. Moreover, a technical management staff can be prepared according to the potential. Every province has a potential especially in the agriculture sector. Technical personnel in these fields can be raised. There is also a great shortage of technical personnel in the health sector.

It is necessary to establish the vocational high schools, suitable for the planned sectoral structure of each city.

The Date of Start and End : 2001-2005

Implementing Authority : Ministry of National Education

Location : All the Provinces

VII. Name of the Project: The Project of Employment and Education Support Generating of Vocational Technical Schools

Project Purpose: The vocational schools can create a labor force; and if desired they can also support secondary schools.

The students of the vocational schools to be established on computer and related fields can learn to assemble computers. By selling the assembled computers to the schools in the Region, the students will be provided with income and employment.

The Date of Start and End : 2001-2005

Implementing Authority : Ministry of National Education and Ministry of Labor and Social Security

Location : All the Provinces, by giving priority to Erzurum, Van, Elazığ, and Malatya

VIII. Name of the Project: The Project of Overviewing the Situation of the Vocational High Schools in the Entrance to the Universities

Project Purpose: Although vocational high schools raise technical personnel, their graduates' low chance in the university entrance exam cause them not to be preferred. In order to prevent the disadvantages of students of the vocational and technical education schools, the university entrance exam should be re-arranged. The graduates of vocational and technical high schools should have a priority in the entrance to the engineering programs related to their field. In the new system, the students who have graduated from the computer department of a technical high school is disadvantageous when compared to a graduate of a general high school. The university entrance systems should be re-arranged without restricting the decision of the vocational and technical high school students' choice of the programs related to their field.

The Date of Start and End : 2001-2005

Implementing Authority : Ministry of National Education, The Administration of Higher Education Board

Location : All Provinces

IX. Name of the Project: The Project of Establishing Multi-Programmed High Schools in the Province and District Centers

Project Purpose: The quality of employment is low in the Region. Moreover, there is the problem of unemployment. These problems should be overcome as soon as possible.

Instead of vocational and technical high schools in the district centers in the Region, multi-programmed high schools should be established. The foundation of multi-programmed high schools should have a priority in the province centers besides the district centers. The need for technical personnel in the vocational and technical areas in the Region should be analyzed in the near future and more importance should be given to the development of vocational and technical education in the cities- such as Elazığ, Malatya, Erzurum, and Van- which are stronger in terms of the industrial infrastructure when compared to other cities in the Region. There is a correlation between the development of vocational and technical education and industry. The vocational and technical education develops in the provinces where the industry develops.

The Date of Start and End : Starting from 2001

Implementing Authority : Ministry of National Education

Location : The Provinces in which the Industry is Supported, Giving Priority to Elazığ, Maltya, Erzurum and Van

X. The Name of the Project: The Project of Increasing the Role of Communication Technology in Education

Project Purpose: The local mass communication media should use broadcasts, which will make the public conscious of the education of girls. For the development of a country, the skilled human force is very important. The inequality or unbalance of gender in education is an obstacle for development. Attendance of female children to the education has been increased with the increase of compulsory primary education to eight years. This improvement has provided female children's studying the compulsory education three years more when compared to the ex-application. Eight-year compulsory education will increase the demand of female children for secondary education. Female children's participation to secondary education should be encouraged with the help of the communication media.

The project of informing public opinion and conducting parent education can be done in all three sub-regions. However, the priority should be given to the Van Sub-region. The project of education and consciousness rising should be started first in Van Sub-region.

The Date of Start and End : Starting from 2002

Implementing Authority : Public and Private Mass Communication Media

Location : All Sub-regions, Giving Priority to Van Sub-region

XI. Project Name: Project of Supporting Research Centers

Project Purpose: Research centers of EAP universities are not functional. There is not any education center that does strategic researches about education from primary education to higher education at the regional level.

In additional to the existing European Community Application and Research Center in Atatürk University, Middle East Research Center in Fırat University and Van Cat Research and Application Center in Yüzüncü Yıl University; Centers of Eastern Anatolia Region Education Improvement Research (EARERC) that do strategic researches towards improving education quality at the regional level should be established. The necessary financial and expert researcher support should be supplied to these centers.

Table 2.1.2.11: Investment Estimates of Education Research Centers of Eastern Anatolia Region (Million TL)

Universities	EARERC 1*	EARERC 2*	EARERC 3*	EARERC 4*	EARERC 5*
	Atatürk University Erzurum	Fırat University Elazığ	İnönü University Malatya	Yüzüncü Yıl University Van	Kafkas University Kars
Expenses	450.000	450.000	450.000	450.000	450.000
Starting Year	2001	2001	2001	2001	2001
Finishing Year	2004	2004	2004	2004	2004
Yearly Total Amount	**150.000**	**150.000**	**150.000**	**150.000**	**150.000**

* Eastern Anatolia Region Education Research Center

The Date of Start and End **:** 2001-2004

Implementing Authority **:** Public and Private Sector

Location **:** Erzurum, Malatya, Elazığ, Van, Kars

Cost **:** 450,000 *5 (Reference table)

XII. Project Name: Project of Promoting Specialization in Present Universities

Project Purpose: Before establishing a new university in the EAP Region, what is required is to make the present universities specialize .

Instead of establishing laboratories that require specialism in each university, what is required is specialized university that brings the experts together, who are related to the subject in which specialized machine, equipment and computer programs are used intensively.

Although improvements are achieved about buying specialized machines for universities that are in the Eastern Anatolia Region, specialized academicians are still inadequate. Each university should decide its potential accumulation within the Region, by enumerating the potentials that it has and compromising with other universities at the same time. After this stage, investments should be guided. However, the most important support may be in the subject of expert academician. The universities should be supported in that aspect.

The Date of Start and End **:** 2005-2010

Implementing Authority **:** Related Universities

Location **:** University Cities

XIII. Project Name: Project of Tele-education System in the Region

Project Purpose: There are fast transformations in information technologies within the globalization process. It is important to use the information technologies in the EAP Region, for equality of opportunity in education and for improving the quality of education.
Information and Communication Technologies are not so widespread in the Eastern Anatolia Region. Especially, information technologies should be used more in Region in the rapidly developing education sector. Five universities are chosen as pilot area in this frame. Establishing tele-education system between Atatürk, Fırat, İnönü, Kafkas and Yüzüncü Yıl Universities, that are in the scope of the EAP Master Plan, and the State Planning Organization is being planned.

This project will make it possible to set up a balance in the distribution of professors over the country. Moreover, the system will make it possible to give conference to university professors, students, businesses and the local people from Ankara.

When this system is connected with international networks, transfer of information from universities of other countries and international institutions and organizations will be achieved. The networks that will be established will provide regional universities with opportunities to set up reciprocal real time communication not only with each other but also with universities, research institutes and international institutions in and out of the country.

The Date of Start and End **:** 2005-2005

Implementing Authority **:** Related Universities

Location **:**Provinces of Related Universities

XIV. Project Name: Project for University-Industry Cooperation

Project Purpose: When the university-industry cooperation is considered, there are several kinds of mechanisms. Most important ones are technoparks, shared scientific researches and contact offices. To realize the first two, the industry should be improved and reach at the level of producing technology. Contact offices are units, which are university centered and give counseling services, particularly for the small and medium-sized enterprises (SMEs). The industry of the Region consists of small and medium-sized enterprises and has a traditional structure. Hence they need the counseling of universities.

Universities should build contact offices according to their opportunities and industrial features of their environments at the regional level. Although centers have been built in Fırat, Yüzüncü Yıl and Atatürk Universities, they can't work in a functional way. These centers are required to work co-operatively with industry. By building contact offices in organized industrial zones, it would be possible to meet the needs of the industry.

The most important problem of universities in the Eastern Anatolia is the qualified academic staff problem as it is stated in every step. The problem existing in overall Turkey affects the Eastern universities much stronger. The rapid increase in the numbers of foundation universities in Turkey caused qualified academicians to change their work places. On the other hand, in Eastern universities the problem starts with the difficult life conditions and goes on by hardening with the non-preference of the academicians for going to East. Due to this problem, Eastern universities are under pressure to accomplish their tasks with only the present personnel. Thinking that the first duty of universities is the education, the difficulties of the suggested project should be grasped.

The universities which primarily improve and strengthen their academic staff will be able to co-operate with industry beginning from the year 2005. It is expected that especially İnönü and Fırat Universities will co-operate with Chambers of Industry. Establishing techno-parks, as a result of this co-operation, will activate the economy of region.

The Date of Start and End **:** Starting from 2005

Implementing Authority **:** Ministry of Industry and Trade, Industry Offices and Related Universities

Location **:** Elazığ, Erzurum, Van, Malatya, Kars

XV. Project Name: Project of Encouraging In-service Education

Project Purpose: In-service education is not given at the desired level in the EAP Region. In-service education of staff that works at public and private sectors has great importance from the perspective of improving human resources. In-service education of academic staff that works in the public sector is done at the central level and in-service education activities are arranged in certain places in Turkey.

Legal arrangements that will provide giving in-service education opportunity at the regional level for employees that work in the public sector should be done starting from 2001. The necessary arrangements have been done in the Ministry of National Education. In 2000, Erzurum In-service Education Institute and in 2001, Van In-service education Institute will start to operate. There is not yet an In-service Education Institute in Malatya-Elazığ Sub-region, but it should be established soon in Elazığ that has appropriate conditions not only in terms of transportation but also climate.

Table 2.1.2.12: Elazığ In-service Education Institute (Million TL)

Inservice Education Institution	
Place	Elazığ
Expenses	2.5 trillion TL.
Characteristics	For 480 persons
Starting Year	2001
Finishing Year	2005
Expenses to be made according to a year	500 billionTL.
Employment that will be created in a year	30 persons
The Institution responsible for the Implementation	MNE

The Date of Start and End **:** 2001-2005

Implementing Authority **:** Ministry of National Education

Location **:** Elazığ

XVI. Project Name: Project of Strengthening the Staff of Public Education Centres

Project Purpose: Informal education is an education system that has low cost when compared to formal education. High rate of unemployment in the Region causes the informal education to be a strong alternative. The number of coffeehouses is more than schools in the Region. The major objective is to prepare the Regional people, who sit in coffee houses, to win qualification that will make them able to participate into an active working life.

It is not possible to give this qualification only with formal education. Public Education Centers in the Region should be brought to a sufficient level in term of equipment and personnel. An intensive education should be given to Public Education Directors about this subject.

The Date of Start and End **:** Continuous starting from 2005

Implementing Authority **:** Real and legal personalities

Location **:** All sub-regions, Giving Priority to Malatya, Elazığ, Erzurum, Van

XVII. Project Name: Project of Courses that will Create Jobs by Informal Education.

Project Purpose: Not only unemployment but also lack of education is a big problem.

Need of public education in regional level should be well determined, and priority should be given to programs that is for public needs. Especially, young unemployed people in the Region graduated from high schools should be given courses that give certificate about computer and internet usage.

The Date of Start and End : 2001-2005

Implementing Authority : Ministry of National Education

Location : Erzurum, Van, Elazığ and Malatya as pilot provinces.

XVIII. Project Name: Project of Courses that will Create Experience by Informal Education

Project Purpose: Agricultural education activities are important in provinces of the Region that are suitable for agriculture. For that reason, opportunities that improve agricultural productivity should be utilized. Programs of farmer education should be arranged in the Region.

The Date of Start and End : 2001-2010

Implementing Authority : Agriculture Ministry

Location : All Provinces According to their Agricultural Potential.

XIX. Project Name: Project of Co-ordination Activities and Apprenticeship Education in Informal Education.

Project Purpose: There is a problem of finding qualified personnel in provinces that have an industrializing potential. For that reason, skill-oriented occupation courses should be arranged.

Apprenticeship education should be developed in Malatya, Elazığ, Erzurum and Van in which industry has developed much more when compared to other provinces of the Region. It should be provided that Apprenticeship Education Centers and Industry establish an organic connection between each other. The trust of local people in apprenticeship education should be increased. Strengthening of present Apprenticeship Education Centers should be achieved also in other provinces in which industry has less developed in the Region.

The Date of Start and End : 2001-2010

Implementing Authority : Ministry of National Education, Ministry of Industry and Trade.

Location : All Provinces, Giving Priority to Malatya, Elazığ, Erzurum, Van

XX. Project Name: Project for Achieving the Participation of Handicapped People into Economic Life

Project Purpose: The Eastern Anatolia Region is among the least developed regions of Turkey. There are a large number of physically and mentally handicapped people as a result of marriages among relatives. These people should be reintegrated into the public life.

Private Courses should be arranged for physically handicapped people, in which they learn occupations, and the civil society organizations should take an active role in this. It should be ensured that they get occupations by giving them certificate under the control of Ministry of National Education. However, it is more important to guarantee that no handicapped children will be born in the first place. That the parents do not have an adequate education, leads to the birth of physically and mentally handicapped children. This problem can be diminished with the help of developing technology. There are important responsibilities for visual and auditory media, in this issue.

There is also not a qualified institution that gives required education for handicapped people in the Eastern Anatolia. This becomes a big problem for parents of mentally handicapped people.

The voluntary institutions under the control of the Ministry of Health should build centers, with which mental development can be achieved.

The Date of Start and End **:** 2001-2010

Implementing Authority **:** Ministry of National Education, Civil Society Organizations

Location **:** All Provinces, Giving Priority to Malatya, Erzurum, Elazığ, Van

Table 2.1.2.13: Strategies to be Implemented in Pre-school Education Level

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			PLACE
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011- 2020)	
Deficiency about becoming conscious in Pre-school education subject	Informing and educating parents through the way of publication,	Arranging courses in precedence of MNE and ANAÇEV	Increasing the ratio of school enrollment in pre-school education,	All sub-regions
Insufficiency of public and private pre-school education institutions	Establishing nursery classes of existing pre-school education institutions that to be strengthened in terms of equipment	Encouraging opening new pre-school education institutions Extending the kindergartens with 2 classrooms.	Increasing the private pre-school education institutions, Providing children of poor families with free of charge education and transportation	All sub-regions (Giving priority to Van Sub-region with regard to Turkish education)

Table2.1.2.14: Strategies to be Implemented in Primary Education Level

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			PLACE
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011- 2020)	
Physical Insufficiency	Continuing to build new schools, Increasing especially Primary schools with Dormitory.	Ending the education in combined classes, Decreasing number of students in a class to 30, Increasing and encouraging private schools,	Solving classroom problem,	All sub-regions
Low level of education quality	Directing teachers to graduate studies, Providing with the opportunity to study, do social and cultural activities in the school, Improving teachers' salary and promotion opportunities,	Supporting organic education with remote-education, Giving importance to foreign language education, Making the guidance widespread, Fixed personnel application,	Making administrators, teachers and parents subject to continuous education,	All sub-regions
Insufficiency of equipment	Increasing the education with TV and video, Increasing the computer laboratories.	Building gymnasiums, Building workshops, Providing handicapped Students with necessary equipmets,	Realizing education with computer and internet usage,	All sub-regions

Table 2.1.2.15: Strategies to be Implemented in Female Children's Education

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			PLACE
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011- 2020)	
Education of Female Children	Parent education Public education with local mass communication means Increasing quota for female children in YİBO's Opening multi programme high schools	Making widespread the public education activities towards making public become conscious about female children's education	Stopping gender bias in education	All sub-regions (Giving priority to Van Sub-region)

Table 2.1.2.16: Strategies to be Implemented in Vocational and Technical Education

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			PLACE
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011- 2020)	
Decrease of the demand for vocational and technical education	Reorganizing the higher education entrence-exam system to increase the chance of vocational and technical high school students,	Stopping the decrease of student numbers in vocational and technical high schools,	Obtaining balance in the ratio of general high school to vocational and technical high school students,	All sub-regions
	Extending the departments such as computer and electronic instead of programs that lost their importance,	Determining the need of medium rank technical human power that the Region needs,	Improving vocational programs appropriately according to the need of region and country,	All sub-regions
	Opening multi programmed high schools in province and district centers.	Locating the consciousness of improving vocational and technical education,	Strengthening the industry of the Region and concentrating the vocational and technical high schools in the developed provinces of the Region.	Elazığ, Malatya, Erzurum and Van

Table 2.1.2.17: Strategies to be Implemented in Higher Education

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			PLACE
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011- 2020)	
Migration of academic staff	Applying encouraging salary policy that will obtain to stay in region universities, Facilitating promotion opportunities of academic staff, Giving precedence to sending the academic staff to foreign country,	Stopping the migration of academic staff and taking precautions to increase the quality,	Improving the quality in higher education,	Erzurum, Elazığ, Malatya, Van and Kars
Postgraduate Education	Increasing the academic staff in region universities with regard to quality and quantity	Doing Postgraduate education in the areas where the Region universities are strong,	Reaching to international quality standards in postgraduate education in Regional universities	Erzurum, Elazığ, Malatya, Van and Kars
Opening new university and higher education institutions	Strengthening the present Regional universities	Supplying support to higher education institutions that will be opened in other provinces of the Region from the existing Regional universities,	Improving and extending the regional higher education institutions with regard to needs of the country and the region.	All sub-regions
Physical Place and Finance	Improving the physical capacity of the present Regional universities. Separating more portion from investment budget to the Regional universities,	Stopping the deficiency of physical place and equipment,	Reaching the optimum physical place size in the Regional universities,	Erzurum, Elazığ, Malatya, Van and Kars
Co-operation of University-Industry	Achieving an effective university-industry co-operation,	Establishing R&D centers, directed the organized industrial zones, in the Regional Universities and making the existing ones effective.	Applying R&D projects that will bring solutions to industry of Region,	Erzurum, Elazığ, Malatya, Van and Kars

Table 2.1.2.18: Strategies to be Implemented in Improving Apprenticeship and Informal Education

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			PLACE
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011- 2020)	
Insufficiency of Apprenticeship and common education	Strengthening the rigging of apprenticeship education centers, improving the public education centers,	Increasing the occupational courses that provide with skill-gaining, Education programs directed to farmer,	Bringing new employment opportunities,	All Regional Provinces Malatya, Elazığ (1. Priority) Erzurum, Van, Iğdır (2. Precedence)
Low level of the Literacy	Starting a campaign for increasing Literacy	Arranging literacy courses,	Increasing the literacy rate	All Regional Provinces
Parent Education	Determining educational needs of parent,	Arranging the parent education courses, Supporting the efforts of the voluntary institutions about public education,	Increasing the consciousness level of parents about child education,	All Regional Provinces
Female Education	Organizing culture and ability gaining oriented courses for females,	Extending the female education, Supporting to civilian institutions,	Increasing the female's participating to active work life,	All Regional Provinces (Giving priority to Ağrı, Hakkari, Van, Bitlis, Bingöl)

Table 2.1.2.19: Strategies to be Implemented in Private Education

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			PLACE
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011- 2020)	
Insufficiency of Private Education Institutions	Making the legal arrangements that will encourage the private sector's investments, Bringing the tax reduction for private institutions that will make investments to education, Making the kindergarten schools widespread,	Building Private science high schools, Making private high schools widespread,	Increasing the competition in education and improving the quality, Making the private education institutions widespread,	Elazığ, Malatya, Erzurum, Van and Erzincan

Table 2.1.2.20: Strategies to be Implemented in In-service Education

BOTTLENECK (LIMITING FACTORS)	STRATEGIES TO BE IPMLEMENTED			PLACE
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011- 2020)	
Insufficiency of Human Resources	Providing legal arrangements that will bring opportunity for regional in-service education in public sector, Building "centers of improving human resources" in the Regional universities, Building Elazığ In-service Education Institute that is bound to National Education Ministry,	Encouraging of private education and counseling companies, Improving the Regional personnel's interest in in-service education,	Increasing the quality of human resources,	All provinces.

2.1.3. HEALTH

2.1.3. Health

Health is important with respect to both individual well being and protecting human resources and increasing its quality. In a situation in which baby and adult deaths are high and individuals become ill frequently and illnesses are not treated for a long time, human resources and social capital are wasted. In such a case it is impossible to reach high and sustainable growth rates. For this reason, health issue is extremely important.

The region is behind the averages of Turkey with regard to all health indicators. Infant mortality rate is high, average life expectancy is short and accessibility to health services is at a low level because of the financial difficulties and the scattered settlement structure in countryside and hard winter conditions. The number of health personnel in the region is inadequate. The list of these shortcomings could be extended.

The most important issues are attraction of sufficient health personnel and increasing the level of accessibility of health services in the region. As a result of insufficient health personnel, numerous health institutions could not be worked in full capacity, bed occupation rate is remaining low and patients have to go big cities in or outside the region. The number of health personnel in the region should be increased urgently by higher payment, applying rotation and giving additional points to the newly graduated physicians, who has worked in the region for a while, in the Examination of Specialisation in Medicine. Furthermore, for increasing the level of getting health services, the scope of green card application should be expanded. In the middle run, employment policy should be changed, salaries of staff should be made on a contractual basis, in which case, the rights and responsibilities between worker and the public institution should be valid as long as the personnel works in that institution. As a result, the personnel would be "permanent personnel" of the relevant institutions. In the long run, the capacity and quality of the medicine faculties and the other personnel educating institutions should be increased. Since the graduates of the regional universities have an advantage in adopting to the regional conditions, even for those students who came from outside the region, the probability of employing these graduates of the regional universities in the region will be high, providing a more permanent and economic solution to the problem of insufficient personnel.

It is a waste of scarce resources to increase the capacity and number of institutions while the bed occupation rate and accessibility of health services is low. The capacities and institution numbers should be increased when a permanent solution is found for health personnel problem, necessary equipment are provided for present establishments and opportunities of getting health services are created. At least for a certain period of time, no other new health institution should be set up and only those projects, which are in the investment program, should be given priority. In the plan; in the **Table 2.1.3.7** and **Table 2.1.3.8,** for raising the region to Turkey's standards, the required bed numbers additional to the present ones by provinces are given as indicative figures, provided that reasonable and

permanent solutions to the problems of personnel and the accessibility of the health services are made. So those numbers do not set priorities or underline the urgent needs.

Besides the above mentioned issues, the plan envisages the activation of first level health services related with increasing protective health services, especially organising vaccination companies against diseases, establishing mobile health teams in district centers, preventing extreme fertility, reducing baby and child deaths and organising "public education courses" for mothers or mother candidates and making the family planning services effective.

2.1.3.1. Summary of Current Situation

Approximately all of the first level health institutions in Turkey (health house, village health house and dispensaries) belong to the Ministry of Health. Out of the total number of 1180 hospitals, called as the second and third level health institutions, 727 hospitals are related with the Ministry of Health, 115 with the SSI (the Social Security Institution), 40 with the Medicine Faculties of Universities, and 42 with the Ministry of National Defence. Total bed number in the hospitals with the hospitals related to the other institutions reaches to 164,887. Only 1% of patient beds in the region belong to the private hospitals (M.H. 1998).

Comparing the basic health indicators of Turkey with that of the EAP Region, it is observed that there are significant problems in the provision of health services and in the use of these services.

Extreme fertility, high infant-mortality rate, realisation of births without any help of health personnel, low level of the utility of health services, migration of patients to the big cities and being unable to get service due to geographical and socio-economic factors appear as the basic health problems in the region.

According to the results of the Turkey Population and Health Research of 1998 (TPHR), while infant-mortality rate for Turkey in general is 42.7 per thousand, this rate for the region is 61.5 per thousand. In the TPHR of 1993 this rate is found as 60 per thousand in the region. One of the reasons of the failure in decreasing this rate is the migration of midwifes of the health houses from the region. One of the causes that affect baby deaths is low education level of mothers and the frequent births are also related with the same reason. It is observed that 7,500 babies have been dying annually without reaching to one year old in the region. Annual baby death number in Turkey is about 54,000 (0-12 month age). According to this result, 14% of baby deaths in Turkey is realised in the region each year. Social factors affecting these deaths are complex. (HÜNEE, TPHR, 1993; 1998; **Table 2.1.3.1.; Graph 2.1.3.1**).

Table 2.1.3.1: Change in the Fertility and Infant-Mortality in the Eastern Anatolia Region and Turkey for Years

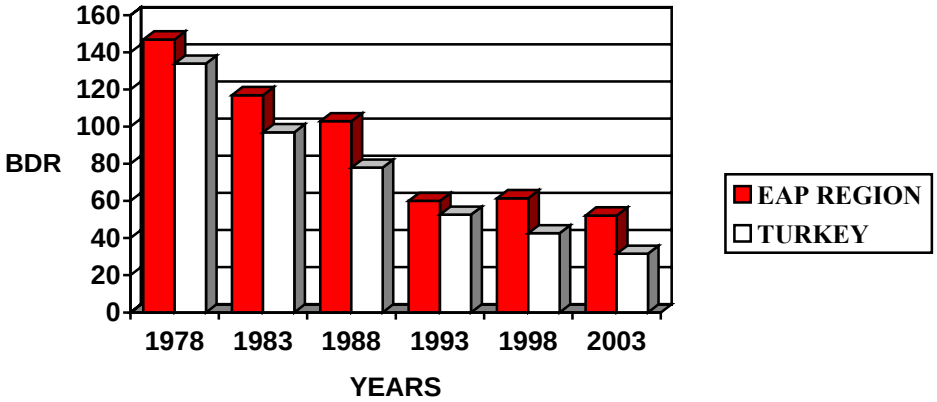
Years	Total Fertility Rate		Infant - Mortality Rate (‰)	
	Eastern Anatolia	Turkey	Eastern Anatolia	Turkey
1978	8.1	5.1	147.0	134.0
1983	7.2	4.3	117.0	97.0
1988	5.6	3.2	103.0	78.0
1993	4.6	2.7	60.0	52.6
1998	4.2	2.6	61.5	42.7
2003*	3.4	1.9	52.2	31.6

*Estimated

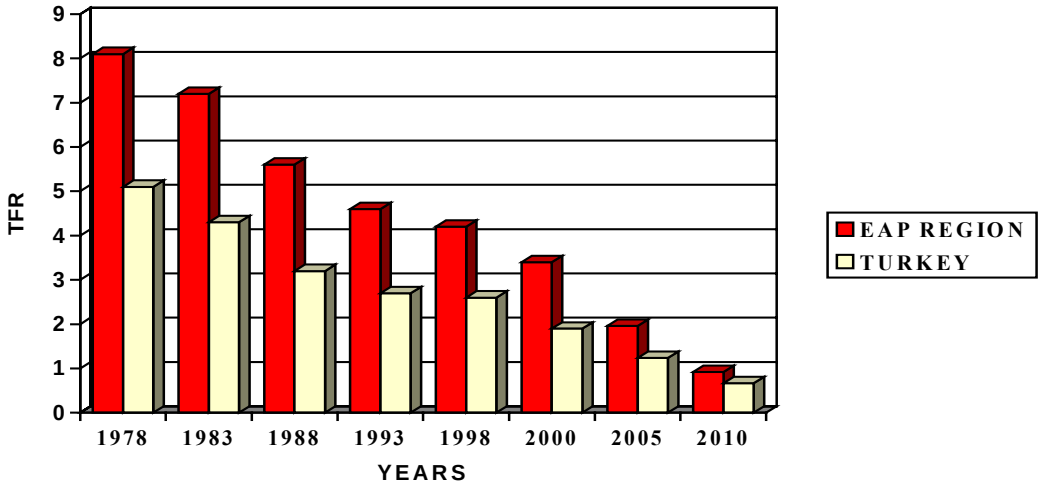
Source: H.Ü.N.E.E. Population and Health Researches; 1978,1983,1988,1993,1998.

Total fertility rate in the Eastern Anatolia Region is found as 4.2 according to data of 1998 (HÜNEE, 1998). This position indicates that fertility in the region is 60 % higher than the average of Turkey (**Table 2.1.3.1; Graph 2.1.3.1**). The highest fertility rate in the region is in Hakkari (7.4). It is followed by Bitlis with a rate of 5.9, Van with 5.5, Ağrı with 5.3. Elazığ, Malatya, Erzincan and Tunceli provinces have a rate of fertility level near to the average of Turkey's, which is 2,6 (HÜNEE, 1993,1998; Ministry of Health, 1996; SIS, 1995,1997; SPO, 1998; **Graph 2.1.3.2**).

Graph 2.1.3.1: Infant-Mortality Rate Trend in the Eastern Anatolia Region and Turkey



Graph 2.1.3.2: Total Fertility Rate Trend in the Eastern Anatolia Region and Turkey



According to results obtained from the data of the regional provinces related with health (**Table 2.1.3.2**), the number of health houses where protective services are provided in the form of giving the first level health services is relatively in a better shape in the region. Excluding Hakkari in the Van Sub-region, Tunceli in the Malatya-Elazığ Sub-region, and Iğdır in the Erzurum Sub-region, in other provinces the number of health house has increased in the period of 1992-1997. The province that has recorded the highest increase in the number of health houses is Erzurum. Malatya and Elazığ follow this province (Ministry of Health, 1998). The number of health houses in the region is sufficient and there isn't any problem in that respect. Furthermore, the rate of population having green cart is better than the average of Turkey (SPO, 1998). The averages of the regional provinces are lower than that of Turkey as to other data excluding these two indicators.

Table 2.1.3.2: Comparison of the EAP Region with Turkey with respect to Some Health Indicators

INDICATORS	EAP Region	TURKEY	Difference as Ratio
Natural population growth rate (0 %)	24.0	14.6	- % 64
The rate of regional population in total population of Turkey (%)	9.3		
Average household size (person)	6.49	5.60	- % 14
Total fertility rate (number)	4.2	2.6	- % 61
Infant-mortality rate (0%)	61.5	42.7	- % 44
Population per physician (person)	2.136	813	- % 97
Population per dentist (person)	11.114	5.287	- % 110
Population per nurse and midwife (person)	826	659	- % 25
Population per one health house (person)	10.031	11.700	+ % 8.5
Bed number per 10,000 peoples	15.1	19.8	- % 31
Bed occupation rate (%)	50.7	59.2	- % 14
BCG vaccination rate (%)	46.0	68.0	- % 32
Rate of population with sufficient drinking water (%)	65.0	77.0	- % 12
Rate of births at home by herself (%)	47.7	19.0	- % 151
Rate of women using modern family planning method (%)	26.3	34.5	- % 24
Rate of women using no methods (%)	57.7	37.4	- % 54
Unmet family planning need (%)	28.7	12.0	- % 139
Rate of population without social security in health (%)	51.8	35.5	- % 45
Rate of population with green card (%)	12.6	8.4	+% 50
Rate of patient migration from the region (%)	15.0	----	--------
Annual number of application to physician (%)	1.97	3.02	- % 53

Source: Ministry of Health, (1996); SIS, (1997); SPO, (1993-1998); Data of Provincial Health Directorates (1997);
Tokat, M. (1992-1996); BİGTAŞ, (1995); UNICEF, (1996); Ministry of Health, (1998); SSK, (1997); HÜNEE, (1993-1998); Ministry of Health, (2000).

According to the data of Provincial Health Directorates, a total number of 1,044 specialist physicians, 1703 practitioner physicians, 528 dentists, 699 pharmacists, 2,524 health officials, 4,218 nurses and 2,882 midwifes are providing service in the region in 1997. According to 1998 data there are 813 persons per physician in Turkey. Whereas, population per physician in the EAP region is above two times than that of Turkey.

The number of establishments giving fist level health services in the region such as health house, village health house, dispensary and Mother and Child Health centers is similar to that of Turkey. This situation indicates that there is a need for emergent measures

in personnel and equipment rather than in physical conditions of health institutions. Hospitals and other health institutions in province and district centers should be supported in terms of specialist physician and other personnel. Furthermore, for improving basic health services (mother and child health, vaccination, contagious diseases, chronic disease follows) empty cadres of practitioner physician and midwife should be filled in the first level health institutions.

According to 1997 data (Ministry of Health, 1997; SPO, 1998), there are 80 hospitals and 8,681 patient beds in the establishments giving second level health services in the region. Moreover, 1,750 patient beds of 10 military hospitals are not included in this number. According to 1997 data, it seems that the standards of the Eastern Anatolia Region are lower as compared with present patient beds (124,275) in Turkey in general. When compared with population, an additional 11,000 patient beds should be available. However, examining the data in the **Table 2.1.3.2**., the bed occupation rate is found as 50.7 %. For this reason, getting health service should be examined with numerical position of health personnel.

While active patient bed per 10,000 persons is 15.1 in the region, in Turkey this rate is 19.8. The same numbers with respect to cadre bed number are respectively 18.7 and 23.1. There are great differences between provinces in the region with regard to bed occupation rate. The bed occupation rate in provinces having Medicine Faculties (Erzurum, Malatya, Elazığ and Van) is above 60%. The rate is lower than 40% in the other provinces. This situation is directly related with the number of specialist physicians on service. There was an increase (25 %) in the bed number in the region in the period of 1992-1997, higher than that of Turkey. The same increase wasn't realised in the number of specialist physicians. 844 out of 1044 specialist physicians in the region work in four provinces that have Medicine Faculties. According to the requirements of the Province Health Directorates in 1998, there is an emergent need for 854 specialist physicians in the region (Province Health Directorates 1998).

64 % of total patient beds belong to the Ministry of Health, 20% to University Hospitals, 15% to SSI, and 1% to private establishments (SPO, 1998).

Protective health services given in the region are quantitatively and qualitatively lower than the average of Turkey. The rates of vaccination, food and water controls, family planning services, water for drink and use are insufficient due to limiting social, geographic and cultural reasons. There is a need for more resource transfer into the region. Present resources should be directed primarily to the productive and cost effective protective health services. To decrease environmental risks is important as much as improving protective health services. Cooperation between sectors should be developed and environmental health services should be enforced.

In the scope of protective health services, insufficiency in services of mother and child health, reproductive services, psychological health, unbalanced and insufficient

nourishment, mouth and tooth health, vaccination, control of contagious diseases, environmental health, first-aid and emergency treatment, work and worker health, protecting youngsters from dangerous habits, cause both important health problems and economic looses. Necessary regulations should be done to make these services expanded, continuous and effective by integrating them into the basic health service units.

7.2 millions individuals in Turkey had the right of treatment with green card by 1998. This number reached to 8 millions by 1999 (SPO, 1998) and 12.6 % of them is in the region.

As an indicator showing health service utility, "number of application to physician in a year" is 50% lower in the region than that of Turkey. While this number is 3.1 % in Turkey, it is 1.97 % in the region (Tokat, M. 1992-1996). While this number is reaching to 3 % in four provinces having Medicine Faculties, in the other provinces it is about 1% annually. Furthermore, in the region 15 patients out of 100 patients, who should be treated in bed, go to hospitals in the West (Pehlivan, E., Genç, M.F., 1998).

2.1.3.2. Projects in the Investment Program

When the health indicators of the Eastern Anatolia Region are compared with the average of Turkey (See **Table 2.1.3.2**.), the situation in the region becomes evident. Especially indicator of population per physician indicates the severity of the situation. Investments improving the health level are going on. However, looking at the **Table 2.1.3.4**, it is observed that these investments are not finished, although they have been started long ago.

Projects in the Investment Program of 2000 in the Eastern Anatolia Region are separated into three groups. The fist group is determined according to the number of health house, village health house and dispensary, the second group is defined by the number of beds in hospitals directly and the third one is determined according to lodgement number for health personnel.

There are a total number of 47 health houses and dispensaries, which are evaluated in the same group as they are institutions of treatment on foot, in the Eastern Anatolia Region in the Investment Program of 2000. 57.45 % of these investments are taking place in the Erzurum Sub-region. The share of Erzurum Sub-region is 51.15 % in the hospital investments in the Eastern Anatolia Region according to bed number. Its share in lodgement investments is 18.18 %. The place of 36.23 % of districts of Erzurum Sub-region in the level of development ranking is the sixth group. Development group of 24.64 % of districts is the fifth one. However, another important character of the Erzurum Sub-region is observed in the intensity of undeveloped districts. 45 districts in the whole Eastern Anatolia Region take the sixth degree of development level and 29 of these districts are situated in the Erzurum Sub-region. In ratio terms, 64.6 % of them is in the Erzurum Sub-region (**Table 2.1.3.3 and 2.1.3.4**)

Table 2.1.3.3: Distribution of Projects in the 2000 Investment Program According to Sub-regions

Sub-regions	Health House, Village Health House, Dispensary		Bed Number		Lodgement	
	Number	%	Number	%	Number	%
Erzurum Sub-region	27	57.45	1,030	52.15	20	18.18
Malatya Sub-region	10	21.28	485	24.56	20	18.18
Van Sub-region	10	21.28	460	23.29	70	63.64
Total	**47**	**100**	**1,975**	**100**	**110**	**100**

Source: SPO, 2000 Investment Program

In the **Table 2.1.3.4**, development level of districts is given and priority is set for the investments. In this context, as the districts in the sixth level of development are the least developed districts, it is necessary to give priority to these districts. For this reason, it is highly beneficial in determining the priority of investments according to the level of development.

Table 2.1.3.4: Projects in the 2000 Investment Program

Provinces	District	Develop-ment Level	Name of Project	Characteristic			Date of Start and Finish	Cost of Project (Million TL)	Estimated Expenditure until the End of 1999 (Million TL.)	The Year 2000 Investments (Million TL)
				Numb.	Bed	Lodge-ment				
AĞRI	Center	**4**	State Hospital	0	150	0	1993-2001	1,765,400	484,300	100,000
		5	Village Health House	6	0	0	1987-2000	225,150	185,100	7,500
AĞRI	Diyadin	**5**		0	0	0				
AĞRI	Doğubeyazıt	**6**		0	0	0				
AĞRI	Eleşkirt	**6**	State Hospital	0	30	0	1993-2000	566,900	546,900	50,000
AĞRI	Hamur	**6**	State Hospital	0	30	0	1991-2001	852,700	143,500	40,000
AĞRI	Patnos	**6**	State Hospital	0	50	0	1993-2000	1,,229,700	1174700	55000
AĞRI	Patnos	**6**	Health House (City Type)	1	0	0	1991-2000	112,200	42,750	7,500
	Patnos	**4**	Dispansery For Fight Against Tuberculosis (Contruct)	1	0	0	1993-2000	108,300	42,750	55,000
AĞRI	Taşlıçay	**5**	State Hospital	0	30	0	1993-2000	600,600	545,600	55,000
AĞRI	Tutak	**5**		0	0	0				
AĞRI	**Total**			**8**	**290**	**0**				
ARDAHAN	Center	**4**	Maternity Hospital	0	75	0	1997-2001	427,500	-	5,000
			State Hospital (additional construction)	1	0	0	1997-2000	71,250	-	5,000
			Health House	3	0	0	1997-2001	290,700	49,900	9,000
			Village Health House	2	0	0	1997-2001	315,000	21,300	10,000

			Public Health Laboratory (Construct)	1	0	0	1994-2001	292,100	-	5,000

Table 2.1.3.4: Projects in the 2000 Investment Program (Continued)

Provinces	District	Develop-ment Level	Name of Project	Characteristic			Date of Start and Finish	Cost of Project (Million TL)	Estimated Expense until the End of 1999 (Million TL.)	The Year 2000 Investments (Million TL)
				Numb.	Bed	Lodge-ment				
ARDAHAN	Çıldır	**6**	Health House (Village Type)	1	0	0	1991-2001	180,900	74,100	15,000
ARDAHAN	Damal	**6**		0	0	0				
ARDAHAN	Göle	**5**		0	0	0				
ARDAHAN	Hanak	**6**		0	0	0				
ARDAHAN	Posof	**5**		0	0	0				
ARDAHAN	**Total**			**8**	**75**	**0**				
BAYBURT	Center	**3**		0	0	0				
BAYBURT	Aydıntepe	**4**		0	0	0				
BAYBURT	Demirözü	**5**	Health Center	0	25	0	1999-2001	122,550	-	5,000
BAYBURT	**Total**			**0**	**25**	**0**				
ERZİNCAN	Center	**2**		0	0	0				
ERZİNCAN	Çayırlı	**4**		0	0	0				
ERZİNCAN	İliç	**4**		0	0	0				
ERZİNCAN	Kemah	**4**		0	0	0				
ERZİNCAN	Kemaliye	**4**		0	0	0				
ERZİNCAN	Otlukbeli	**4**		0	0	0				
ERZİNCAN	Refahiye	**4**		0	0	0				
ERZİNCAN	Tercan	**4**		0	0	0				
ERZİNCAN	Üzümlü	**4**		0	0	0				
ERZİNCAN	**Total**			**0**	**0**	**0**				
ERZURUM	Center	**2**	Maternity Hospital (Additional Construction)	1	0	0	1995-2001	486,900	277,500	10,000
ERZURUM	Aşkale	**4**		0	0	0				
ERZURUM	Çat	**6**	State Hospital	0	50	0	1995-2001	684,400	133,800	25,000
ERZURUM	Hınıs	**6**		0	0	0				
ERZURUM	Horasan	**5**		0	0	0				
ERZURUM	Ilıca	**4**		0	0	0				
ERZURUM	İspir	**5**		0	0	0				
ERZURUM	Karaçoban	**6**	State Hospital	0	50	0	1995-2001	845,600	219,200	40,000
ERZURUM	Karayazı	**6**		0	0	0				
ERZURUM	Köprüköy	**5**		0	0	0				
ERZURUM	Narman	**5**		0	0	0				
ERZURUM	Oltu	**4**		0	0	0				
ERZURUM	Olur	**5**	State Hospital Additional Construction	0	0	0	1997-2001	71,250	-	5,000
ERZURUM	Pasinler	**4**	State Hospital	0	50	0	1996-2001	370,500	-	5,000
ERZURUM	Pazaryolu	**5**		0	0	0				
ERZURUM	Şenkaya	**5**		0	0	0				

Table 2.1.3.4: Projects in the 2000 Investment Program (Continued)

Provinces	District	Develop-ment Level	Name of Project	Characteristic			Date of Start and Finish	Cost of Project (Million TL)	Estimated Expense until the End of 1999 (Million TL.)	The Year 2000 Investments (Million TL)
				Numb.	Bed	Lodge-ment				
ERZURUM	Tekman	**6**		0	0	0				
ERZURUM	Tortum	**5**		0	0	0				
ERZURUM	Uzundere	**5**		0	0	0				
ERZURUM	**Total**			**1**	**150**	**0**				
GÜMÜŞHANE	Center	**3**		0	0	0				
GÜMÜŞHANE	Kelkit	**4**		0	0	0				
GÜMÜŞHANE	Köse	**4**	State Hospital	0	30	10	1993-2000	539,900	489,900	5,000
GÜMÜŞHANE	Kürtün	**6**		0	0	0				
GÜMÜŞHANE	Şiran	**4**		0	0	0				
GÜMÜŞHANE	Torul	**4**		0	0	0				
GÜMÜŞHANE	**Total**			**0**	**30**	**10**				
MUŞ	Center	**4**		0	0	0				
MUŞ	Bulanık	**6**		0	0	0				
MUŞ	Hasköy	**6**		0	0	0				
MUŞ	Korkut	**6**		0	0	0				
MUŞ	Malazgirt	**6**		0	0	0				
MUŞ	Varto	**6**		0	0	0				
MUŞ	**Total**			0	0	0				
IĞDIR	Center	**4**	State Hospital (Additional Construction)	1	0	0	1998-2000	281,000	251,500	30,000
			State Hospital	0	150	0	1993-2000	1,045,700	980,700	65,000
			Village Health House	8	0	0	1987-2001	186,700	110,000	13,000
			Public Health Laboratory	1	0	0	1994-2000	387,000	342,000	45,000
IĞDIR	Aralık	**5**		0	0	0				
IĞDIR	Karakoyun	**5**		0	0	0				
IĞDIR	Tuzluca	**6**	State Hospital	0	30	10	1994-2000	769,100	739,100	30,000
IĞDIR	**Total**			**10**	**180**	**10**				
KARS	Center	**3**	State Hospital	0	250	0	1991-2001	5,044,000	1,826,700	100,000
KARS	Akyaka	**6**		0	0	0				
KARS	Arpaçay	**6**		0	0	0				
KARS	Digor	**6**		0	0	0				
KARS	Kağızman	**5**	State Hospital	0	30	0	198-2001	513,400	-	15,000
KARS	Sarıkamış	**4**		0	0	0				
KARS	Selim	**6**		0	0	0				
KARS	Susuz	**6**		0	0	0				
KARS	**Total**			**0**	**280**	**0**				
ERZURUM SUB-REGION	**TOTAL**			**27**	**1030**	**20**				

Table 2.1.3.4: Projects in the 2000 Investment Program (Continued)

Provinces	District	Develop-ment Level	Name of Project	Characteristic			Date of Start and Finish	Cost of Project (Million TL)	Estimated Expense until the End of 1999 (Million TL.)	The Year 2000 Investments (Million TL)
				Numb.	Bed	Lodge-ment				
BİNGÖL	Center	**4**	Hospital of Breath Deseases	0	100	0	1995-2001	2,536,100	7,300	25,000
			Health House (Village Type)	2	0	0	1992-2001	215,200	75,500	40,000
			Health House (Village Type)	3	0	0	195-2001	397,600	0	25,000
			Village Health House	1	0	0	1995-2001	39,200	-	7,500
BİNGÖL	Adaklı	**6**		0	0	0				
BİNGÖL	Genç	**6**	State Hospital	0	30	10	1993-2000	692,600	642,600	50,000
BİNGÖL	Karlıova	**6**	State Hospital	0	30	0	1999-2001	314,000	-	5,000
BİNGÖL	Kığı	**4**		0	0	0				
BİNGÖL	Solhan	**6**		0	0	0				
BİNGÖL	Yayladere	**5**		0	0	0				
BİNGÖL	Yedisu	**6**		0	0	0				
BİNGÖL	**Total**			**6**	**160**	**10**				
ELAZIĞ	Center	**2**	State Hospital (Additional Contruction)	0	150	0	1996-2001	1,332,500	157,900	25,000
			Health House (Village Type)	1	0	0	1991-2001	229,400	79,800	40,000
ELAZIĞ	Ağın	**3**		0	0	0				
ELAZIĞ	Alacakaya	**5**		0	0	0				
ELAZIĞ	Arıcak	**6**		0	0	0				
ELAZIĞ	Baskil	**5**		0	0	0				
ELAZIĞ	Karakoçan	**4**		0	0	0				
ELAZIĞ	Keban	**4**		0	0	0				
ELAZIĞ	Kovancılar	**5**		0	0	0				
ELAZIĞ	Maden	**4**		0	0	0				
ELAZIĞ	Palu	**5**		0	0	0				
ELAZIĞ	Sivrice	**4**		0	0	0				
ELAZIĞ	**Total**			**1**	**150**	**0**				
MALATYA	Center	**2**	Birth and Child Care House	0	125	0	1999-2000	605,100	541,100	35,000
MALATYA	Akçadağ	**4**		0	0	0				
MALATYA	Arapkir	**4**		0	0	0				
MALATYA	Arguvan	**5**		0	0	0				
MALATYA	Battalgazi	**4**		0	0	0				
MALATYA	Darende	**4**		0	0	0				
MALATYA	Doğanşehir	**4**	State Hospital	0	50	10	1993-2000	605,100	541,100	35,000
MALATYA	Doğanyol	**6**		0	0	0				
MALATYA	Hekimhan	**4**		0	0	0				
MALATYA	Kale	**6**		0	0	0				
MALATYA	Kuluncak	**5**		0	0	0				

Table 2.1.3.4: Projects in the 2000 Investment Program (Continued)

Provinces	District	Develop-ment Level	Name of Project	Characteristic			Date of Start and Finish	Cost of Project (Million TL)	Estimated Expense until the End of 1999 (Million TL.)	The Year 2000 Investments (Million TL)
				Numb.	Bed	Lodge-ment				
MALATYA	Potürge	**6**		0	0	0				
MALATYA	Yazıhan	**6**		0	0	0				
MALATYA	Yeşilyurt	**3**		0	0	0				
MALATYA	**Total**			**0**	**175**	**10**				
TUNCELİ	Center	**3**	Village Health House	3	0	0	1987-2001	81,225	58,425	16,000
TUNCELİ	Çemişgezek	**4**		0	0	0				
TUNCELİ	Hozat	**4**		0	0	0				
TUNCELİ	Mazgirt	**5**		0	0	0				
TUNCELİ	Nazimiye	**5**		0	0	0				
TUNCELİ	Ovacık	**5**		0	0	0				
TUNCELİ	Pertek	**4**		0	0	0				
TUNCELİ	Pülümür	**4**		0	0	0				
TUNCELİ	**Total**			**3**	**0**	**0**				
MALATYA-ELAZIĞ SUBREGION	**Total**			**10**	**485**	**20**				
BİTLİS	Center	**4**	State Hospital	0	100	0	1991-2001	1,238,300	442,700	60,000
			Village Health House	1	0	0	1992-2000	1,000	-	1,000
			Dispansery	1	0	0	1993-2002	1,567,000	-	1,000
BİTLİS	Adilcevaz	**4**	State Hospital	0	50	10	1991-2000	1,960,225	1,905,225	55,000
BİTLİS	Ahlat	**4**		0	0	0				
BİTLİS	Güroymak	**5**	State Hospital	0	50	10	1991-2000	1,657,840	1,602,840	55,000
BİTLİS	Hizan	**6**	State Hospital	0	50	0				
BİTLİS	Mutki	**5**	State Hospital	0	50	10	1991-2000	1,933,000	1,878,000	60,000
BİTLİS	Tatvan	**4**	Village Health House	1	0	0	1987-2001	133,950	-	10,000
BİTLİS	**Total**			**3**	**300**	**30**				
HAKKARİ	Center	**4**	Health House (Village Type)	1	0	0	1991-2001	116,850	42,750	20,000
HAKKARİ	Çukurca	**6**		0	0	0				
HAKKARİ	Şemdinli	**6**	State Hospital	0	30	10	1991-2000	1,090,730	1,075,730	15,000
HAKKARİ	Yüksekova	**5**		0	0	0				
HAKKARİ	**Total**			**1**	**30**	**10**				
VAN	Center	**3**	Health House (Village Type)	1	0	0	1992-2001	480,400	24,400	55,000
			Health House	5	0	0	1992-2001	103,000	3,200	15,000
VAN	Bahçesaray	**6**	State Hospital	0	30	10	1991-2000	642,800	592,800	50,000
VAN	Başkale	**6**	State Hospital	0	50	10	1991-2000	1,002,000	957,000	45,000
VAN	Çaldıran	**6**	State Hospital	0	25	10	1991-2001	517,000	175,200	45,000
VAN	Çatak	**6**		0	0	0				
VAN	Edremit	**5**		0	0	0				

Table 2.1.3.4: Projects in the 2000 Investment Program (Continued)

Provinces	District	Develop-ment Level	Name of Project	Characteristic			Date of Start and Finish	Cost of Project (Million TL)	Estimated Expense until the End of 1999 (Million TL.)	The Year 2000 Investments (Million TL)
				Numb.	Bed	Logemen				
VAN	Erciş	**4**		0	0	0				
VAN	Gevaş	**5**	State Hospital	0	25	0	1996-2001	644,100	42,750	15,000
VAN	Gürpınar	**6**		0	0	0				
VAN	Muradiye	**6**		0	0	0				
VAN	Özalp	**6**		0	0	0				
VAN	Saray	**6**		0	0	0				
VAN	**Total**			**6**	**130**	**30**				
VAN SUB-REGION	**TOTAL**			**10**	**460**	**70**				
EAP REGION	**TOTAL**			**47**	**1975**	**110**				

Source: R.T. S.P.O. 2000 Investment Program

* Taken from the Study of SPO "İlçelerin Sosyo-ekonomik Gelişmişlik Sıralaması.1996" (Ranking of Districts in Socio-economic Development Level 1996) .

2.1.3.3. Project Proposals

I. Name of Project: Project of Preventing Extreme Fertility

Reason: The fertility rate of the region is 60 % higher than that of Turkey. Ağrı and Muş in Erzurum Sub-region, Bingöl in the Elazığ-Malatya Sub-region and Van, Bitlis and Hakkari in the Van, Sub-region have high fertility rates. Extreme fertility rate is one of the most important factors affecting the health indicators negatively. Hakkari possesses the highest fertility rate (with a total fertility rate of 7.4). The most important factor influential in fertility is education level of woman. Primary school graduation decreases the fertility in women 33 %, secondary and high school graduation 50 %, and university graduation 67 % (HÜNEE, 1983,1988). Literacy rate for women in the region is about 50 %. In the provinces with higher fertility rates the literacy rate is even lower. 47.7 % of births in the region is realised without any assistance from health personnel. This rate is 19 % in Turkey (HÜNEE, 1998). Extreme fertility and births taking place in insufficient health conditions are accepted as determining factors in the mother and child deaths.

In the region, new policies in employment of midwifes in villages should be developed. One of the significant factors limiting health services related with fertility has been the worsening situation in employment of health personnel, primarily midwifes, in the first level health institutions in the region since the 1990's. 90 % of village health houses not having any midwife and 28 health houses being closed (Province Health Directorates, 1998) could be evaluated as an indication of malfunction of birth services.

Family planning need in the region is a matter that should be immediately taken into consideration. Education projects should be prepared for all provinces of the region, primarily for provinces that are attraction centers of the sub-regions, and mothers and candidates of motherhood should be passed from serious education courses by means of "public education courses". Especially, in health houses of the provinces of Ağrı, Iğdır, Hakkari, Muş, Bingöl, Bitlis, Van and Ardahan, family planning services should be given effectively. This shortcoming should be treated in the first period of the plan.

Furthermore, increase the school enrolment rate of females will be the most important strategy regularising fertility in the future.

Date of Start and Finish **:** Starting from 2001

Implementing Authority **:** Ministry of Health

Location **:** All provinces, giving priority to Ağrı, Iğdır, Hakkari, Muş, Bingöl, Bitlis,Van, Ardahan

II. Name of Project: Project of Increasing Manpower in Health

Reason: It is possible to follow the situation of the Eastern Anatolia provinces with regard to health personnel in the **Table 2.1.3.5**. According to data of 1998, person number per specialist physician in all provinces is below the standards of Turkey. Provinces with a higher standard than Turkey are Gümüşhane, Bayburt, Malatya, Elazığ and Tunceli related with practitioner physician. The number of dentists is lower than the average of Turkey in all provinces. The number of health personnel such as health officials, midwifes and nurses is in a better position than the other specialist groups.

Emergent measures should be taken for employment of health manpower in the region. Financial encouragement is particularly important for the first period. For the second period, fixed cadres application could be initiated. Payment difference envisaged by the 375 numbered Decree in the Force of Law is insufficient. Personnel working in the region must be paid higher salaries and the attraction of the regional employment should be increased. Giving additional points in the Examination of Specialisation in Medicine for practitioner physicians working in the provinces within the influence scope of Sub-regions could be considered as another regulation for increasing attraction. There is a shortage of health personnel in all three sub-regions. The solution could be found only with the improvement of social infrastructure of the region. In the Eastern Anatolia Region there is a great shortage of specialist physicians. Physicians don't want to go to the East. Insufficiency of practitioner physicians is also high, although they are in the scope of compulsory service. The number of practitioner physician required in the region is given in the

Table 2.1.3.6.

Table 2.1.3.5: Number of Person per One Health Personnel in the Eastern Anatolia Region (1998)

Provinces	Specialist Physician	Practitioner Physician	Dentist Physician	Nurse	Health Official	Midwife
Ağrı	20,263	3,820	51,784	2,018	2,859	3,504
Erzincan	5,602	1,880	15,562	979	1,291	2,001
Erzurum	2,781	1,692	19,406	885	1,354	2,335
Gümüşhane	6,416	1,413	13,999	1,540	1,555	1,510
Kars	9,499	2,936	16,149	1,149	2,084	1,210
Muş	30,477	5,926	64,001	2,896	3,699	5,517
Bayburt	9,058	1,329	24,910	1,582	1,602	2,430
Ardahan	9,893	1,919	18,372	9,186	1,568	1,261
Iğdır	7,652	2,237	14,538	1,118	2,237	976
Erzurum Sub-region	**11,293**	**2,572**	**26,525**	**2,373**	**2,028**	**2,305**
Bingöl	8,696	2,730	19,566	1,021	1,210	1,765
Malatya	3,483	1,904	10,450	856	1,485	1,075
Elazığ	2,658	1,067	9,599	770	1,364	1,197
Malatya-Elazığ Sub-region	**8,023**	**1,698**	**12,300**	**794**	**1,293**	**1,128**
Tunceli	17,254	1,092	9,585	529	713	474
Bitlis	13,063	3,692	42,456	1,742	2,830	3,174
Van	5,051	2,814	29,335	1,220	2,658	3,165
Hakkari	19,940	3,848	73,115	1,556	2,150	3,848
Van Sub-region	**12,685**	**3,451**	**48,302**	**1,506**	**2,546**	**3,396**
Eastern Anatolia Region	**10,667**	**2,574**	**29,042**	**1,558**	**1,922**	**2,276**
TURKEY	**1,934**	**1,528**	**4,936**	**935**	**1,585**	**1,563**

Source: SIS

In the provinces of Elazığ and Tunceli of the Malatya-Elazığ Sub-region per-capita practitioner physician is higher than the average of Turkey. However, the requirement for practitioner physician will increase according to expectations of population growth after 2005, and according to the assumption that the provinces shall reach to the average of Turkey. In most of the provinces in the Erzurum Sub-region there is a requirement for more practitioner physician even to reach the average of Turkey in 2000.

Only Bitlis will be able to reach to the average of Turkey in the year 2000 in the Van Sub-region. Hakkari and Van provinces will need much more practitioner physicians to reach the average of Turkey. However, the requirement for physicians for 2020 for all three provinces is much higher. Appointments of physicians to the region won't solve the problem. It is necessary to provide the necessary social infrastructure to the Eastern Anatolia for making the physicians enjoy doing their jobs.

Table 2.1.3.6: Estimated Practitioner Physician Number in the EAP Region For Years

PROVINCES	Year 2000 Practitioner Physician Number	Year 2005 Practitioner Physician Number	Year 2010 Practitioner Physician Number	Year 2015 Practitioner Physician Number	Year 2020 Practitioner Physician Number
Ağrı	130	282	299	315	327
Erzincan	172	162	171	177	187
Erzurum	334	530	559	583	595
Gümüşhane	84	89	93	98	104
Kars	130	179	187	195	207
Bayburt	56	57	60	64	66
Ardahan	77	70	73	77	81
Iğdir	79	86	89	94	99
Muş	111	271	286	303	322
Erzurum Sub-region	**1173**	**1726**	**1817**	**1906**	**1988**
Bingöl	85	140	143	149	159
Elaziğ	349	331	349	371	384
Malatya-Elaziğ	372	541	592	638	673
Tunceli	60	56	62	69	76
Malatya-Elazığ Sub-region	**866**	**1068**	**1146**	**1227**	**1292**
Bitlis	98	197	198	200	204
Hakkari	58	138	143	148	152
Van	188	478	499	519	537
Van Sub-region	**344**	**813**	**840**	**867**	**893**

Note: Bingöl and Tunceli will reach to the average of Turkey in 2000 with a number below the present number of practitioner physicians. The reason for this is the decrease in projected population done for the total population.
Note: Demand in Erzurum, Malatya and Elazığ belongs to population projection.

Date of Starting and Finish : Starting from 2001

Implementing Authority : Ministry of Health and Local Administrations

Location : All provinces, giving priority to Muş, Ağrı, Hakkari, Tunceli and Bitlis

III. Name of Project: Project of Increasing the Number of Health Institutions with and without Bed

Reason: According to the 1997 data, there are 585 health houses in service in the region. According to the data of Province Directorates by January 1999, 90 % of village health houses of the region is closed due to lack of midwives. Furthermore, 28 health houses in the region are not in service because of the

lack of personnel. Urban and rural health houses of the region are at a sufficient level with respect to number. But, their equipment are not enough. There is an increasing trend in the number of health houses during the 1990s. 11.2 % of all health houses is situated in the region according to the 1997 data. In case this increasing trend continues, the number of health houses in the region will reach to 633 in 2000, and 708 in 2005. As to the result of population projection, the population of the region will constitute 7.3 % of the population of Turkey in 2005. In this situation, new investments will not be necessary in establishing health houses, but for equipment.

Hospital investments related to the Ministry of Health in the region are as follows: 22 hospitals with 25-50 beds in 22 districts, and the construction of 8 hospitals with 75-200 beds are going on. It is determined that sufficient increases will be realised in the projections related with treatment institutions with bed and the first level health institutions. For instance, the number of beds, which is 8,681 at present, will rise to 10,701 in 2005 and 12,187 in 2010, provided that this trend continues.

There are differences between provinces with regard to treatment institutions with bed. Most of the hospitals belongs to the Ministry of Health. Universities and SSI are other institutions that own health facilities with bed. Although specialist physician problem is not so serious in the hospitals in big centers, the bed occupation rate in small settlement units is very low due to the lack of specialist physicians. Approximately 7 % of total patient beds in Turkey (124,275) is in service in the region. There are great imbalances with respect to bed numbers and bed occupation rates among the provinces of the region. Hospitals in small settlement units are in an idle position due to the lack of personnel (particularly specialist physician) and equipment.

Incentives should be given for private hospital construction in province centers such as Elazığ, Malatya and Erzurum. Necessary regulations for this purpose should be done.

It is necessary to make these centres function by urgent measures at the beginning of the first period of the plan. There is no need for new investments without making these centres function. It is necessary to connect district hospitals having low bed occupation rate to province centers in the region. Legal regulation change is not required for this organization. Specialised physicians in cadres of the Ministry of Health could be appointed temporarily to district hospitals by rotations within the provinces.

Looking at the investment program in the region, the bed numbers to be finished latest until the year 2005 are determined. However, the number of beds are still below the standards compared with population. In the **Table 2.1.3.7** the bed numbers envisaged to be completed until the year 2020, on the basis of national averages, are given.

Table 2.1.3.7: Proposed Bed Numbers for the Provinces in the Eastern Anatolia Region (Additional to the Present)

PROVINCES	2000*	2005	2010	2015	2020
Ağrı	**290**	**286**	**296**	62	43
Erzincan	0	0	18	26	37
Erzurum	**150**	0	0	0	0
Gümüşhane	**30**	10	15	19	21
Kars	**280**	16	30	30	45
Muş	**0**	**367**	**347**	62	71
Bayburt	**0**	**85**	**90**	13	11
Ardahan	**75**	**7**	**28**	15	15
Iğdır	**180**	**26**	**30**	17	19
Erzurum Alt Sub-region	**1,005**	**297**	**378**	**245**	**307**
Bingöl	160	0	0	0	25
Malatya	**175**	**325**	**323**	214	151
Elaziğ	**150**	0	0	0	0
Tunceli	**0**	**34**	24	26	28
Malatya-Elazığ Sub-region	**485**	**359**	**347**	**240**	**204**
Bitlis	**300**	**27**	**27**	9	13
Van	**130**	**251**	**251**	77	69
Hakkari	**30**	**187**	**170**	17	17
Van Sub-region	**460**	**489**	**427**	**103**	**99**
EAP	**1,950**	**1,145**	**1,152**	588	610

* The bed number of 2000 is the bed number in the Investment Program of 2000. The number for coming years is determined according to the aim of reaching to the standard of Turkey in the first ten years, on the basis of population size created by annual population growth rates.

Note 1) The end of the dark field indicates the year when provinces will reach to the standard of Turkey.

Note 2) As a data base **"Table 2.1.3.9.** Present Bed Numbers of the Provinces in 1998, Total Bed Number Proportioned with Population Increase for Reaching the Standards of Turkey in the years after 2000" is used.

It is aimed in the table that provinces will reach to the standard of Turkey at the fist phase. For this reason it is suggested that these provinces should reach the standard of Turkey in 2010 at the latest. As seen in the table, Ağrı province requires the highest number of beds. However, military hospitals are not indicated in the table. There is a military hospital in Ağrı with 200 beds[1]. Even when this hospital is taken into consideration, the need is not met. The cost of envisaged bed numbers is calculated in terms of 2000 Investment Program data. In this way, the necessary expenditure proportional to bed number is found as well.

The investment requirements of the third level health establishments (University Hospitals) should be met immediately. Started investments should be accomplished until the first two years of the first period. Together with these infrastructural efforts, it is necessary to provide the favourable conditions for the qualified manpower in the region, by paying incomes of rolling funds of the hospitals of Faculty of Medicine in time, abolishing in-advance taxes to the Ministry of Finance, taking necessary measures for paying taxes after earning the money, and increasing payment levels for specialists. This will be an important motivation, securing the regional and institutional attraction. University hospitals in Erzurum, Malatya, Elazığ and Van should especially be made attractive centers. The level of "difficulty of development payment" put by the 2914 numbered Law of High Education Personnel should be increased for specialists who will work in the third level centers.

There is a necessary potential for establishing of Traffic, Orthopaedics and Oncology hospitals in Malatya. A Hospital of Breathing Diseases could be set up in Erzurum. Furthermore, Centers for Research and Development could be established in Erzurum, Elazığ and Malatya.

Another limiting factor in the third level treatment institutions is malfunctioning of transfer chain. Primarily in SSI, patients are transferred to the Western centers instead of university hospitals. A compulsory transfer chain will prevent patient migration to a great extent.

The services of mouth and tooth health is at a very low level in the region. According to economic regulation of treatment services, still in use, most of the tooth treatment costs are not paid by the state. In this respect, dentists, since they work in their private clinics, don't prefer to work in the region because of the low economic level of the population. There is only one Faculty of Dentistry in Erzurum among the regional provinces and the number of dentists are relatively high in the province. Patient migration occurs from the region. To establish a Faculty of Dentistry in the universities in Malatya and Van will meet the requirement to some extent.

[1] Other military hospitals are located in: Malatya; 200 beds, Elazığ 100 beds, Erzincan; 200 beds, Erzurum; 600 beds, Ağrı; 200 beds, Ardahan; 100 beds, Sarıkamış; 100 beds, Tatvan; 100 beds, Van; 100 beds, Hakkari (mobile);100 beds

Mother and Child Health Centers should be supported in the provinces of Erzurum, Malatya-Elazığ and Van Sub-regions and Mother and Child Health Centers should be established in big districts.

Date of Start and Finish **:** Continuously starting from 2001

Implementing Authority **:** Higher Education Board (HEB), Ministry of Health

Location **:** All provinces

Cost **:** Total costs are given in the **Table 2.1.3.8.** according to bed number with the prices of 200

Table 2.1.3.8: Total Cost According to Proposed Bed Number (With the Prices of 2000, Millions TL.)

PROVINCES	2000	2005	2010	2015	2020
Ağrı	1,450,000	1,427,602	1,481,497	311,497	214,826
Erzincan	0	0	90,000	128,895	182,602
Erzurum	750,000	0	547,805	451,134	225,567
Gümüşhane	150,000	0	0	96,672	107,413
Kars	1,400,000	75,000	150,378	150,378	225,567
Muş	0	1,834,927	1,732,515	311,497	354,462
Bayburt	0	425,000	450,000	64,448	53,706
Ardahan	375,000	35,000	141,948	75,189	75,189
Iğdır	900,000	127,965	149,448	85,930	96,672
Erzurum Sub-region	**5,025,000**	**1,482,699**	**1,890,867**	**1,675,640**	**1,536,003**
Bingöl	800,000	0	0	0	125,000
Malatya	875,000	1,627,457	1,616,715	859,302	655,218
Elazığ	750,000	0	0	0	0
Tunceli	0	162,413	118,154	128,895	139,637
Malatya-Elazığ Sub-region	**2,425,000**	**1,789,869**	**1,734,869**	**988,198**	**919,855**
Bitlis	15,000,00	133,983	133,983	42,965	64,448
Van	650,000	1,253,910	1,253,910	386,686	343,721
Hakkari	150,000	935,102	849,172	85,930	85,930
Van Sub-region	**2,300,000**	**2,446,061**	**2,134,564**	**515,581**	**494,099**
EAP	9,750,000	5,718,629	5,760,301	3,179,419	2,949,957

IV. Name of Project: Project of Increasing Protective Services

Reason: Declaration of insufficiency of physical environmental conditions as well as intestinal diseases and infections (parasites) are observed to be high in the region. Typhoid, shigellosis, summer diarrhoeas, and similar intestinal infections could cause epidemics in settlement areas where unhygienic environmental conditions and polluted drinking and using waters are found.

That is way, Hepatitis A could be seen extensively. Furthermore, because of low socio-economic life conditions, it is estimated that tuberculosis is widespread in the region although its dimension is unknown. There are insufficiencies in the reports of diseases. To realise the investments with regard to the improvement of environmental physical conditions in the first period of the plan will contribute significantly to the solution of the health problems. Reaching at least 75 % in population accessing to clean drinking and using water, should be aimed. Moreover, for disinfecting waters meticulous works of district governments and health institutions are needed. Vaccination campaigns continues against diseases preventable with vaccination. It will be suitable to continue these vaccinations for reaching to the national level.

It is necessary to establish mobile health service teams and strengthen the present health infrastructure for eliminating the difficulties in accessing to health services, primarily in protective health services. For this reason, it is necessary to give importance to completely equipped ambulance services. Furthermore, projects in transportation vehicles suitable to road conditions and emergency health services could be considered, where they are required. These teams could practise the emergency birth events, treatments and vaccination services.

It will be extremely useful to organise helicopter service to emergency events in winter months when roads are closed in Erzurum, Bingöl, Muş, Ağrı, Kars, Van, Bitlis, Hakkari. For providing this organisation, it would be appropriate to make a protocol between the Ministry of National Defence and Ministry of Health.

Date of Start and Finish **:** Continuously starting from 2001

Implementing Authority **:** Ministry of Health

Location **:** All provinces

V. Name of Project: Project of Increasing Accessibility of Health Services

Reason: There are a lot of factors affecting health services. These factors are difficulty in transportation, economic reasons, scattered settlement areas and the inadequate social security coverage. Among these factors inadequate social security coverage is one of the most important bottlenecks in the regional health issues. 12.6 % of people having green card is located in the region. Despite this, almost half of the population doesn't posses any social security. For this reason the number of consulting a physician in a year accepted as an indicator in utility of services is low.

As a strategy green card regulation should be continued. This strategy will strengthen the third level health institutions (hospitals) in the region. This

regulation could reduce the patient migration causing economic losses from the region to the West. This loss is 15 % even in the provinces having a Faculty of Medicine (Pehlivan, E., and Ark, 1998).

Date of Start and Finish : Continuously starting from 2001

Implementing Authority : Ministry of Health and Ministry of Economy

Location : All provinces

Table 2.1.3.9: Current Bed Numbers of Provinces in 1998, Total Bed Number Proportioned with Population Growth for Reaching the Standard of Turkey in Years After 2000

Provinces	Current Bed Number In 1998	Necessary Total Bed Number For Reaching to the Average of Turkey in 2000	Necessary Total Bed Number For Reaching to the Average of Turkey in 2005	Necessary Total Bed Number For Reaching to the Average of Turkey in 2010	Necessary Total Bed Number For Reaching the Average of Turkey in 2015	Necessary Total Bed Number For Reaching to the Average of Turkey in 2020
Ağrı	250	1,023	1,059	1,121	1,184	1,227
Erzincan	621	604	608	640	666	702
Erzurum	2,895	1,903	1,989	2,099	2,189	2,234
Gümüşhane	325	331	335	350	370	391
Kars	375	685	670	700	730	776
Muş	360	937	1,016	1,074	1,136	1,207
Bayburt	50	206	215	226	238	249
Ardahan	165	258	262	275	290	305
Iğdır	100	318	322	335	352	372
Erzurum Sub-region	**5141**	**6,264**	**6,477**	**6,821**	**7,156**	**7,463**
Bingöl	410	503	524	537	559	595
Malatya	1,337	1,835	2,030	2,223	2,395	2,526
Elazığ	2,130	1,149	1,244	1,310	1,392	1,439
Tunceli	175	187	208	232	258	286
Malatya-Elazığ Sub-region	**4,052**	**3,674**	**4,006**	**4,303**	**4,604**	**4,846**
Bitlis	385	735	739	743	752	765
Van	1,240	1,704	1,787	1,871	1,948	2,017
Hakkari	150	496	518	537	554	571
Van Sub-region	**1775**	**2,935**	**3,044**	**3,151**	**3,255**	**3,353**
Eastern Anatolia Region	**10,593**	**12,872**	**13,528**	**14,275**	**15,014**	**15,663**
TURKEY	**136,309**	**140,303**	**149,996**	**159,218**	**167,824**	**175,992**

- Only Public Hospitals are Considered.

Table 2.1.3.10: Strategies to be Implemented in Health Sector

BOTTLENECKS (LIMITING FACTOR)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011-2020)	
Extreme Fertility	Adult male and female education, family planning, increasing the school enrolment rate of female children		Ensuring socio-cultural development of the region	All provinces, primarily Hakkari, Van, Bitlis Bingöl, Ağrı, Muş,
Insufficiency of Finance	Resource transfer to the region in the scope of basic health services	Encouragement for private hospitals	Extending private hospitals	All provinces, Private hospitals in provinces not having a Faculty of Medicine
Insufficiency in the number of specialist, practitioner, physician, dentist, midwife, nurse, health official	Financial incentives, improving regulation, giving additional points in ESM (TUS) for physicians	Fixed cadre regulation	Fixed cadre regulation	All Sub-regions
Limited social security	Extending Green Card regulation	Consciousness raising on service utility	Extending social security system	All provinces
Transportation difficulty in accessibility of service	Strengthening mobile health services (112 emergency)	Equipment of winter transportation vehicles, helicopter, etc.	Special health projects where needed	Non-central provinces in three sub-regions

		in the centers of sub-regions		
Physical equipment insufficiency of establishments	Equipment of hospitals with 50-100 beds and health houses	Developing the first and second level health services, raising public consciousness	Removing equipment insufficiencies in all institutions	All provinces
Manpower and finance issues of Faculties of Medicine	Arrangement of regulation for financial incentives to specialist physicians	Supporting the third level health institutions financially	Monitoring implementations	Erzurum, Malatya, Elazığ, Van provinces

Table 2.1.3.10: Strategies to be Implemented in Health Sector (Continued)

BOTTLENECKS (LIMITING FACTOR)	STRATEGIES TO BE IMPLEMETED			LOCATION
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011-2020)	
Social problems of the region's health personnel	Strengthening public/private schools for basic education of children of personnel in the region	Investment in social and cultural fields	Socio-cultural investments	All provinces
Problems of management	Mandatory choosing of provincial health administrators among public health specialists	Giving autonomy to state hospitals, abolishing private examination physicianship	Monitoring implementation and executing necessary administrative measures	All provinces
Public health and protective health services	Preparing inventories of provinces on environmental problems Preparing inventories of each province on experienced physical and moral diseases Providing widespread, continuous, effective service by integrating to basic health units	Updating inventories and monitoring them	Updating	All provinces
Forming multidisciplinary health policies	Choosing modern policies in health services	Providing continuity	Providing continuity	
Insufficiency of environmental infrastructure	Supplying enough drinking and usage water	Making developments in solving sewerage problems	Making developments in solving sewerage problems	All provinces

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2.1.4. WOMEN AND FAMILY

2.1.4. Woman and Family

Family structure, distribution of power and authority in family, place and status of woman in family and society are heritage of centuries in the region and they are not easy to change independent from social and economic life. Strategies aimed at solving the problems of woman and family took place in VIII. Five Year Development Plan, in Istanbul Declaration of Habitat II and in many national and international documents in almost the same way. Important issue for the region in that respect is to speed up the implementation of these strategies and measure of their scope. It could be easier and quicker to implement the strategies in urban areas than rural. As the region urbanize, as demand increase for women's labor force and for trained and qualified labor force in the market, status of women in family and society will increase as the time passes.

In addition to enhancement of women's status dependent on economic development, in order to increase women's consciousness and obtain improvement in the status of women, Plan foresees following measures; emphasizing parent's education, raising girl child school enrollment, reserving quota for girls in RPBS (Regional Primary Boarding Schools), increasing the number of multi-programmed High School, taking extra measure to provide grants for female university attendants, forming skill development courses for women, providing counseling services for course graduates in finding job or establishing their own business, providing extra credit support for woman entrepreneurs, providing credit in continuos succession for informally organized women by activating credit and support mechanisms, establishment of Multi-Purpose Society Centers (MPSC) on the basis of participatory demands in urban and in some rural areas and establishment of woman shelter and protection centers by civil society organizations for women exposed to violence and needs protection.

2.1.4.1. Summary of Current Situation

The situation of woman and family can not be analyzed independent from the region's general, social, economic and cultural situation. Solution of the region's problem in general is necessary but insufficient for the solution of the problems regarding woman and family.

Literacy rate in the region is considerably below Turkey's average. This situation displays rather more importance for women. Literacy rate level of women in certain provinces is half or less than half of men's rate.

School enrollment rate in EAP region is lower than the other regions. It is worse for the case of women. In addition to low level of girls' school enrolment, one of the first things to be forsaken is the girls' education in the case of family's low socio-economic status,.

The level of women's participation to educational courses is not sufficient. However, their rate of participation to training courses is higher than to cultural courses.

Women who are participating to economic life as a worker in rural areas, because of the lack of education and vocational skills, can not participate to production in urban

areas where they have migrated to because of many reasons. The employment of women in the sectors of industry and service is hardly observed.

Cases like tradition of bride's price, non-legal marriage, polygamy, unregistered women and children are still widespread. Value pattern of the region affects the practise of family planning negatively.

2.1.4.2. Problems and Suggested Solutions

Problems regarding woman and family in EAP region and recommendations for them are followings;.

a) Problems Regarding Education

Literacy rate in the region is considerably below Turkey's average. The rate of literate women is less than that of literate men. This rate is half of men in the provinces of Ağrı, Bingöl and Bitlis. It decreases to one third in the province of Hakkari.

In terms of school enrollment rates there is an clear unbalance between men and women in the region. As education level increases the level of unbalance gets larger against girls.

Lack of education not only prevents women from participation to economic life it also prevents them from performing their responsibilities effectively in social life. This problem appears in many spheres of life like child raising, nutrition, and home economy, participating to social organisations and political participation.

To eradicate unbalances in education depending on gender, importance should be given to parent's education. Public institutions, non-governmental organisations should study on informing people about the education of girls. Mass media should be encouraged on broadcasting these issues.

Some precautions can be taken such as reserving quota for girls in Regional Primary Boarding School (RPBS), increasing the number of multi-programmed High School, providing grants for girls who continue universities,
to increase the school enrolment rates.

In addition, literacy courses should be widespread for women and for their participation to social and political life and patriotism, education of woman and man is necessary.

b) Traditional Structure/Unequal Dispersion of Authority in the Family

Socio-cultural structure and traditional division of labour in families in the Region cause to restrict woman's life with home and to stay out of economic, social and political life.

Fertility rate in the Region is 60 % higher than Turkey in general. Polygamy is fairly widespread and the rate of legal marriage is low.

Bride's price practices, which are very widespread, effect marriages negatively.

All of the society should become conscious to decrease the effects of authoritarian applications and traditions, which prevent woman's prestige in family and society. In this issue, formal and informal educational institutions, mass media, public and civil society organisations have important roles.

It is also necessary to give importance to family planning services in the Region. Moreover, special observation should be done on the applications of the code of civil law rules in the Region.

General Directorate of Woman's Affairs should do joint researches with universities of the Region to determine present situation.

The effectiveness of non-governmental organisations should be increased. Local organisations, people's education centers and non-governmental organisations should do joint studies. Encouragement of the regional activities of non-governmental organisations, which are organised at national level, will contribute to the development of local non-governmental organisations.

The body of the lawyers and non-governmental organisations should make arrangements for psychological counselling and free advocacy for women who are exposed to violence.

c) Problems Related With Integration to Economic Life

Some problems (lack of education, biased attitudes) which prevent women's participation to economic life were discussed in above sections. Other than these, financial restrictions, lack of knowledge about job opportunities and lack of employment create obstacles for women's participation in active working life.

Training courses in different subjects for women should be widespread and courses should be arranged regarding to employment opportunities. For woman entrepreneurs, raw material, instruments, financial credits and marketing opportunities should be provided for increasing the rate of participatory demand to the courses.

Besides, Economic Development Agency (EDA) which is proposed to be established to provide counselling services and finance for entrepreneurs in the Region, must contribute economically for the activities of education of woman labour.

To increase the amount of Halk Bank credits for women, will contribute women's efficiency in economic area. The development of micro-credit mechanisms for women will be very useful for deprived woman who hardly reach to commercial bank credits.

2.1.4.3 Project Proposals

Many projects related with woman and family can be found in Education and Health sectors chapters. They won't be repeated here. (see. Chapter 2.1.2, Project Nr:1,10,16,17,20 and Chapter 2.1.3, Project Nr:1)

Project 1: Multi-Purpose Society Centers

Reason: To promote woman's position in the Region, the efforts should be towards facilitating women's perception of their status and determining their problems. For this purpose, Multi-Purpose Society Centers (MPSC) as in SAP Region, should be established in East Anatolian Region. These centers (MPSC) are useful for women to come together, to perceive their problems, to have the power to express themselves, to learn basic knowledge about everyday life (reading-writing, hygiene, family planning, child care, home economics etc.) and to gain skills for earning money. These centers also include health program for polyclinic services and mobile health services.

MPSC's main targeting group is women who live in rural areas and Gecekondu areas in cities. Vocational courses in MPSC's should be determined regarding to local characteristics, local and regional needs and requirements of participants. For MPSC's development in East Anatolian Region, a pilot project should be done primarily in Van. When we think about rapid increase in the population of Van, it will be better to perform this project for women who immigrate from rural to urban area. This will accelerate their adaptation to urban life. Depending on consequences of this pilot project, MPSCs can be widespread in urban and rural areas in the Region.

MPSCs should be established and managed with coordination of local administration and non-governmental organisations. Since non-governmental organisations are limited in the Region, the importance should be given nation wide organisations to participate to the activities of MPSC's. It seems possible to get technical and financial support from international organisations to begin the pilot project.

Start and Completion Date of the Project **:**Beginning from 2001

Implementing Agencies **:**Local Administrations
Ministry of National Education
Non-Governmental Organisations
Volunteers

Place of Implementation **:**All Provinces primarily Van

Project 2: Micro-Credit and Support Mechanisms

Reason: Even though the educational activities towards women have great importance in the Region, it is no sufficient to provide women's integration to economic life. This situation has negative effects on participatory demand on courses. For this purpose, a new financial and support system should be established besides commercial bank credits to provide support for small scale activities by the leadership of Economic Development Agency and local administrations. India and some other countries established this type of financial systems and became very successful.

Basic characteristic of the system is not being directed to individuals but devoted to groups organised formally and informally and depending on uninterrupted guarantee between group members. This institution, which shouldn't be working on profit basis, besides the credits with low interest rate, should also get in kind support such as materials and instruments for the development of production processes in some desired areas. Public and private banks, some local institutions such as Chamber of Commerce should take a part in the system. Non-governmental organisations and volunteers from local people could play role in observation and monitoring activities of the system.

Preparing a feasibility study will be useful for the system. The size of the groups, which will take credit, the amount of the credit and reimbursement conditions, should be determined in this sense.

It seems possible to provide support from international organisations for this project.

Start and Completion Date of The Project **:**2001-2002 (Feasibility Study)
2002-2005 (Application)

Implementing Agencies **:** Local Administrations
Economic Development Agency
Non-Governmental Organisations
Volunteers
Chambers of Professions

Place of Implementation **:** All of the Region

Project 3:Woman Support and Solidarity Project

Reason: Establishment of woman shelter and protection centers will be very useful for women who are exposed to violence. Some programs should be taken place in these houses for women to acquire some knowledge and skills.

In addition to this, for counselling and free advocacy for women, some arrangements are necessary too.

Start and Completion Date of The Project **:** Beginning from 2001

Implementing Agencies **:** Local Administrations
Bar's
Non-Governmental Organisations

Place of Implementation **:** All of the Region

Table 2.1.4.1: Summary of Woman and Family Project

Name of Project	**Place**	**Period**	**Implementing Agency**
MPSC	Van Other Provinces	2001-2003 2003-2010	Ministry of Education Local Administrations Civil Society Institutions NGO's Ministry of Health
Foundation of Finance Out of Bank	General	2001-2005 (Feasibility Study) 2002-2005 (Establishment	Economic Development Agency or alternative establishment Local Administrations Civil Society Institutions, Volunteers, Chambers of Professions,
Project of Woman Support and Solidarity	General	2001-2020	Local Administrations, Bar's, Civil Society Institutions

Table 2.1.4.2: Strategies to be Implemented in Woman and Family Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011-2020)	
Geographic Obstacles/ Infrastructure Problems	Making Studies and investments related with EAP Main Plan	Continuing investments and other implementations regarding plan.	Continuing implementations	All of the Sub-regions
Insufficient finance and credit	To increase credit amounts for woman entrepreneurs by Halk Bank.	Forming new funds and guidance services to support small entrepreneurs and especially woman entrepreneurs.	To support big investments	All of the Sub-regions
Difficulties in raw material and marketing	Determining the opportunities for marketing and raw material and speed up to improve these issues To support cooperatives	Rearranging border trading for improving economic situation of the Region's people. To develop transportation	Monitoring implementations	All of the Sub-regions
Lack of paid work and low opportunities for part-time work	To continue efforts to increase the present capacity	Trying to make small enterprises become widespread, To bring new policies providing woman to participate in working life including works in which mainly man works.	To develop financial and social policies to remove obstacles for women who want to have their own job. To remove the discrimination against women, realising necessary educational and financial regulations.	All of the Sub-regions
Terrorism and Migration	Providing people's return to the village	To support activities preventing unemployment and increasing agricultural fertility in rural areas.	To increase the Region's economic growth rate.	All of the Sub-regions
Insufficiency in vocational education/ Insignificant rate of qualified labour	To develop vocational education regarding to employment areas	To develop vocational education, to support small entrepreneurs who participate skill courses	To continue implementations	1.st and 2.nd Periods: All of the Sub-regions 3rd Period: Erzurum, Van, Elazığ, Malatya
Underdevelopment of a culture of woman's entrepreneurship	To inform women about entrepreneurship	To encourage woman to take risks, to make business at home To develop social security system in the Region	To give counselling service to women to have the capacity to work on national and international level	All of the Sub-regions
Problems in Education	To increase the rate of school enrolment of girls. To open courses for public education. To open multi-purpose society centers.	To increase the numbers of RPBS and multi-programmed High School. To reserve quota for girls. Cooperation of all public institutions to improve the woman's education.	To provide cooperation among all of the institutions to improve the educational level.	All of the Sub-regions

Table 2.1.4.2: Strategies to be Implemented in Woman and Family Sector (Continued)

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011-2020)	
Traditional Structure of the Region /Inequal dispersion of authority in the family	Through non-governmental organisations, mass media; to make women's consciousness about the implementations preventing women from having higher status in society. To activate the centers of family counselling, family health etc. Ensuring cooperation between General Directorate of Woman's Affairs, Family Research Centre and Universities.	To make efforts to prevent from describing woman only with 'home', Ensuring cooperation of provinces and non-governmental organisations to prevent early age marriages. Acting of public institutions and non-governmental organisations to change biased ideas related with women. Besides, to establish Woman Research Centres in Universities.	Forming a consciousness of getting equal responsibilities of man and woman in the family. To direct woman to the jobs which bring income for providing equal dispersion of the authority.	All of the Sub-regions
Lack of Non-governmental Organisations	To concentrate on improving educational level of the women	Creating shelters and guesthouses for women who exposed to violence. Providing them free advocacy by non-governmental organisations and bars.	Working cooperatively non-governmental organisations with local administrations	All of the Sub-regions
Lack of consciousness from social and political aspects	With the aim of developing a consciousness about women's participation to every aspect of social life, realising some activities such as conferences, seminars, symposium, etc. To increase the contribution of woman branches of political parties.	To widespread organisations for developing gender culture. To eliminate unbalances in mass media between rural and urban area.	Establishment of a management under General Directorate of Woman's Affairs to solve problems of EAP Region's women.	All of the Sub-regions

2.2. AGRICULTURE

2.2. AGRICULTURE

The precondition for development in the EAP Region is the improvement of crop production, and particularly animal husbandry. Topography, altitude and climatic conditions make the Region suitable for animal raising. Since the geographic conditions would not change in the plan period, this situation will continue in the future. On the other hand, relative distance of the Region from gravity centers of the domestic market, and to the main import and export gates, limits the development of the Region's industry with the industries that are based on local raw materials, targeting local and regional markets. That is why, the development of industry in the Region depends on the development of crop production and animal husbandry, as well. Development of these two sectors will, on the one hand, increase the raw material supply for the industry, and on the other hand, generate higher income per capita in the rural areas, creating a market expansion for the regional industry.

This plan envisages the improvement and controlled use of meadow and pasture areas that have low yield due to the pressure of excessive grazing, improvement of animal breeding, increase of the number of product varieties, widening of the cultivation of fodder and forage crops, taking care of irrigation to increase yield, reduction of the fallow areas, encouragement of contracted farmers model in animal raising and fodder and forage crops, privatiszation of artificial inseminate and grafting services under the control of the Ministry of Agriculture and Rural Affairs, improvement of poultry and beekeeping, aggregation of lands, soil protection in dams and ponds for a sustainable development and the affectivity of the publication services.

The Region is rich in many natural and artificial dams and rivers, and therefore has a big potential in fishery. In the plan, it is envisaged to extend cage and pond fishing and utilizing the part of the fresh fish left over from the regional demand in the fishery processing plants, exporting the production to other regions or provinces.

The Region has 7.7 % of forest resources of the country but three-fourth of energy forests in the Region are low quality. It is planned to improve these forests, first of all by completing surveying and registration of forest area, by undertaking tree plantations and erosion control, by provision of new energy forests to villages located in and adjacent to forests, by giving right to benefit from these forests under the control of "Rural Cutting Regulation System" to local villagers, by development of under-forest products, and by the management of forests according to renewed management plans.

The main objective of the EAP Plan, in the long run, is to save the economy of the Region from dependence on agriculture, which generates relatively lower value added per labor compared to industry. However, in the context of the location of the Region and its present and potential comparative advantages, it is necessary to develop the regional agriculture and particularly the animal husbandry sector first, in order to achieve this objective.

2.2.1. Water and Soil Resources

2.2.1.1. Summary of the Current Situation

The most important problem of the Eastern Anatolia Region regarding soil resources is the inadequate level of detailed maps and soil. Therefore, detailed planning and projection work in the Region is rather difficult.

Regional soil assets are not being utilized in accordance with their natural capacities and features. Required land use planning for the Region has not been done so far. This has resulted in wrong land use, increased degradation, decreased yields, and erosion. 17 % of cultivable land, and about 45 % of uncultivable land are facing water erosion problem, which results in filling of dams and minidams with sand and sediment in addition to the loss of soil. Moreover, about 13542 hectare of land in Iğdır and in its Aralık district are facing the problem of wind erosion.

Agricultural enterprise are small scale and fragmented because of division of land as a result of inheritance. The number of enterprises in the Region has reached to 454,118, of which 11.9 % is less than 1 hectare, 46.2 % is between 1-5 hectares, 22 % is between 5-10 hectares, and 18.3 % is between 10-50 hectares. There are a total number of 2,250,650 plots owned by the enterprises. Optimum farm size (25-30 hectares) in the Region constitutes approximately 10 %. Solution to this problem lies in land aggregation and legal rehabilitation. Land aggregation work that has been conducted in the Region so far covered only 3,636 hectares. The area of land in need of aggregation is approximately 1.9 million hectares.

Not enough ponds are found in pasturelands to supply animals with drinking water. General Directorate of Rural Affairs has established 291 ponds for animals. These ponds can only supply water needs of 306,483 big and 967,367 little animals.

About 5.6 % of lands under cultivation and 30.2 % of the lands that are not suitable for cultivation has stone problem.

In the areas which have microclimatic features and are suitable for intentive agriculture (Iğdır) and in the irrigated areas, about 290,667 hectares of land has water logging (drainage), and 168,270 hectares of land has salinity and sodium problem. Only 24,194 hectare of these lands is suitable for cultivation (**Figure 2.2.1**).

Economically 1,218,921 hectares of land can be irrigated. Presently 625,410 hectares of this is irrigated and remaining 593,511 hectares has irrigation possibility (**Figure 2.2.2**).

Due to problems in the management of the water resources, irrigated lands are left to fallow. On the other hand, water shortages as well as high operating expenditures are created because of unproductive irrigation practices and growth of unsuitable crops.

Because farmers do not know very well about planning of irrigation time (timing and volume of irrigation water) and method (according to water quality, soil characteristics

and crop type), quality and yield decrease in plant production; in addition, water is used inefficiently.

Farmers are poorly educated, and they cannot utilize the irrigation facilities properly, and this results in loss of irrigation systems, which costed tremendous amount of labor, money and time.

2.2.1.2. Project Proposals

I. Name of Project: EAP Detailed Soil Survey and Mapping Work

Justification: No soil survey that reflects exact picture of soil potentials and richness of the Region is available. The soil survey map provided by the General Directorate of Soil and Water is rather old and undetailed. Detailed soil surveys were done in 1966-71 and were revised in the 1980s. The responsibility of the General Directorate of Soil and Water is restricted and since 1984, it has been working under the General Directorate of Rural Affairs in the form of 2-3 departments with limited staff.

Soil survey and mapping is not precise enough for investment services. Due to this reason, determination of areas with high priority cannot be possible in land use planning and transformations between uses.

The project envisages to realize urgently the detailed mapping and survey of the Region during the first 5 years application period of the EAP Master Plan, covering all provinces of the Region, using Geographic Information System and Tele-perception techniques. For reaching this objective, the General Directorate of Rural Affairs must consider this issue and the General Directorate of Soil and Water must be reestablished

Start-Finish Date **:** 2001-2005

Implementing Authority **:** General Directorate of Rural Affairs

Implementation Area **:** All Provinces

II. Name of Project: EAP Land Use Planning Work

Justification: The soils in the Region are not used according to natural capability and properties. No land use plans were prepared for the Region. Although, Class V, VI and VII lands must be reserved to pastures and forests, 497,157 hectares and 7290 hectares were opened to dry agriculture and irrigated agriculture, respectively, because of wrong land use. In the same way, pastures are established on 1,304,446 hectares of land suitable for normal cultivation. In conclusion, 1.8 million hectare lands of the Region are not evaluated properly.

Misuse of the land results in soil degradation, increases erosion, and decreases the yield. That is why, water erosion problem is faced in 17 % of lands appropriate for culture, and in 45 % of the land not suitable for cultivation. Agricultural yield has fallen and dams and lakes are being filled by sediments. If the present trend continues, erosion grading will move to excessive and very excessive degrees, dams will not be able to complete their expected age due to sediment fillings, marginal lands will increase fast, pasture lands will continue to be opened to use for crop cultivation.

By this study, soil use strategies will be determined suitable for capacity and property of the Region, plans for land use will be prepared at the level of basins and/or sub basins.

This land plans to be prepared at the level of basins and sub basins will be put into practice, beginning with Erzurum Sub-region in which misuse of lands is more common; during the EAP Master Plan's 2001-2010 period along with another project, "the Eastern Anatolia Irrigation Basins Rehabilitation Project," which is still in progress, under the common responsibility of the Ministry of Forestry, the General Directorate of Rural Affairs and the Ministry of Agriculture and Rural Affairs and within an integrated project approach.

Start-Finish Date **:** 2001-2010

Implementing Authority **:** General Directorate of Rural Affairs

Implementation Area **:** 2001-2005 Erzurum Sub-region

2001-2010 All Provinces

III. Name of Project: Land Aggregation Works

Justification: Approximately 50 % of the agricultural farms in the Region have an area of 1-5 hectares and generally are made up of five plots.

Because farms are small in size and fragmented, production cost is increased, the use of new agricultural techniques is hindered, and this leads to inefficient use of lands from physical and economical aspects.

Aggregation of small, divided and scattered pieces of lands into optimum plot size taking the ecological and socio-economic conditions of the Region into account, has a great importance in terms of the cost of irrigation investments in agricultural areas to be newly opened to irrigation.

It is planned to complete the land registration work and aggregation of agricultural lands currently irrigated or to be opened to irrigation during the first 10-year-period (2001-2010) of application of the EAP Master

Plan. Aggregation of dry agricultural areas, on the other hand, is among the projections for the period of 2010-2020 in the EAP Master Plan.

Performing the service of land aggregation by the General Directorate of Rural Affairs (the old General Directorate of Soil and Water), which has an experience and accumulated knowledge on this issue, will be advantageous from economic and technical aspects.

Start-Finish Date **:** 2001-2010

Implementing Authority **:** General Directorate of Rural Affairs

Implementation Area **:** 2001-2010 Irrigated Lands and Lands to be Opened to Irrigation
2010-2020 Dry Agricultural Areas

Cost **:** 400 Millions TL/hectare (Intra-field Develop.)

IV. Name of Project: Development of Irrigated Agricultural Lands in the EAP

Justification: Activities of the General Directorate of State Hydraulic Works and the General Directorate of Rural Affairs for the development of irrigated agriculture have a great importance for the regional agriculture (**Figure 2.2.2** Irrigation Projects).

The Region has 1,218,921 hectares of land, which can be economically irrigated. At present 625,410 hectares of this land is being irrigated and rest 593,511 hectares of land has potential to be irrigated. Annually 8625 hectares of land is opened for irrigation and if this trend continues it will take 68 years to open all land for irrigation.

Payback period of irrigation investments is very short. According to the international average, irrigation increases the yield by 5-6 times, whereas this increase under Turkish conditions is only 2.6 times. In other words, 593,511 hectares of irrigated land under this project will produce as much as 1,543,285 hectares of dry land, besides enriching the product variety .

Irrigation investments require 1020 million TL/hectare for the irrigation by ponds and 400 million TL/hectare for surface irrigation in 1998 prices.

There are a total number of 33 irrigation projects in the Investment Program, 16 in Erzurum, 13 in Malatya-Elazığ and 5 in Van Sub-region. Out of these projects, 28 are tendered projects under implementation; whereas, the remaining 5 projects are included in the investment program but not yet put on tender. The projects yet to be tendered include Gümüşhane-Yukarı Kelkit-Sadak Irrigation, Bingöl-Genç, Elazığ-Konatlı, Tunceli-Akpazar and Tunceli-Çemişgezek projects. Since the Internal Rate of Return for these 5 projects are above 9 %, it would be beneficial

to put them on tender. These numbers do not include small projects undertaken by the General Directorate of Rural Affairs

The list of projects in the Investment Program is given in the **Table 2.2.1**. The area to be irrigated is 446,288 hectares and the investment cost is 2,021,521 billion TL in 2000 prices. Out of this investment cost, 513,882 billion TL has been spent before the end of 1999 and 28,652 billion TL has been allocated in the 2000 Program. Estimated monetary realization by the end of 2000 is just 27 %. These projects are planed to be materialized by the end of year 2005. However, if their allocation of the year 2000 level continues, it would take 52.6 years to complete them. Therefore, in order to complete these projects by 2005, the allocation level has to be increased by 11 times on the basis of the allocation level in 2000 Program.

Four projects in the Investment Program for which the level of monetary completion reaches to the extent of 85 %, can be accepted as materialized. A total of area of 101,459 hectare land will be irrigated by these four projects (**Table 2.2.1**). Excluding these four projects, irrigation activities are being carried out on 322,119 hectares area. Three projects with an Internal Rate of Return close to zero are in the Program. These are Gümüşhane-Koruluk, Elazığ-Kuzova and Van-Erciş-Pay irrigation works. These projects cover an area of 26695 hectares, with 187.408 billion TL total cost, 26.177 billion TL spending until the end of 1999 and 2,810 billion TL allocation for the year 2000. Monetary completion rate by the end of 2000 will be 15.5 %.

If priority is not given to these 3 uneconomical projects, the area under investment covers 396,883 hectares of land, and if the 4 projects on which most of the work has been completed are also excluded, the remaining area under investment covers 295,424 hectares of land.

Table 2.2.1: Irrigation Projects in the Investment Program (2000)

Project Name	Irrigation Land (Ha)	Internal Rate of Return (%)	Start-Finish Date	The Year 2000 Prices, (Billion TL.)			
				Total	Expenditure Till the End of 1999	2000 Allocation	Estimated Realization at the End of Year 2000 (%)
I. ERZURUM SUB-REGION							
1) Ağrı, Yazıcı	37,076	7.1-6.1*	1991-2004	117,877.3	12,866.2	1,900	12.5
2) Erzincan II. Stage **	32,321	---	1964-2001	91,393.6	84,278.6	1,115	93.4
3) Erzincan-Çardaklı	5,063	4.5	1990-2001	36,155.8	18,614.1	1,000	54.3
4) Erzurum-Kuzgun-Daphan I. Stage	42,375	13.4	1984-2004	116,159.1	49,650.1	1,445	44.0
5) Erzurum-Demirdöken 1. Stage	11,676	3.8	1986-2002	50,694.1	22,927.9	145	48.1
6) Erzurum-Hınıs 1. Stage	19,312	9.0	1995-2005	76,898.6	192.3	145	0.4
7) Erzurum-Pazaryolu	740	2.9	1995-2002	20,281.3	190.3	145	1.7
8) Erzurum-Palandöken	12,038	---	1997-2004	46,548.9	5,209.6	145	11.5
9) Gümüşhane-Koruluk Irrigation	3,302	0.0(0.2)	1989-2001	45,114.6	20,223.3	1,450	48.0
10) Gümüşhane-Yukarı Kelkit-Köse Irrigation	4,198	5.0	1991-2003	53,489.3	9,390.6	1,700	20.7
11) Gümüşhane-Yukarı Kelkit-Sadak Irrigation	5,208	9.6	1998-2004	29,249.6	0	100	0.03
12) Gümüşhane-Bayburt Aydıntepe-Çayıryolu II. Stage	22,710	16.4	1993-2004	149,129	8,173	2,300	7.0
13) Kars-Selim	5,237	6.5	1994-2002	28,565.4	9,105.6	1,600	37.5
14) Muş-Hınıs Ulusu	7,615	10.9	1976-2002	28,395.9	13,057.2	610	48.1
15) Ardahan-Çıldır II. Stage	14,400	10.9	1976-2002	36,292.4	16,400.6	850	47.5
16) Iğdır **	45,798		1966-2003	283,960.3	255,497.3	1,400	90.5
Sub Total	**269,069**			**1,210,205.2**	**253,878.8**	**17,350**	**22.4**
II. MALATYA-ELAZIĞ SUB-REGION							
1) Bingöl II. Stage **	5,305	---	1976-2001	27,722.4	22,972.9	715	85.5
2) Bingöl-Gözeler	1,572	2.8	1991-2002	18,656.8	2,968.9	650	19.4
3) Bingöl-Genç	1,170	---	1998-2003	8,341.9		70	0.8
4) Elazığ-Kozova Lift irrigation	21,909	0.0(0.4)	1991-2004	89,834.0	5,377.1	1,000	7.1
5) Elazığ-Kanatlı	4,911	8.5	1998-2004	21,993.4		0,1	0.0
6) Malatya-Sultansuyu **	18,035	10.7	1984-2001	36,583.1	33,436.7	450	92.6
7) Malatya-Çat	21,464	0.0(0.2)	1984-2001	118,507.4	78,286.8	3,320	68.9
8) Malatya-Darende-Gökpınar	6,061	9.2	1991-2001	22,074.3	3,036.3	300	15.1
9) Malatya-Yoncalı	12,045	15.3	1994-2005	96,313.5	2,651.1	570	3.3
10) Malatya-Kuruçay	10,606	11.5	1994-2004	39,470.2	1,755.4	685	6.2
11) Malatya-Kapıkaya	3,662	3.7	1994-2003	36,233.3	850.6	400	3.5
12) Tunceli-Akpazar	3,129	16.5	1995-2003	10,486.5		1	0.01
13) Tunceli-Çemişgezek	5,224	13.9	1995-2003	34,987.3		1	0.0
Sub total	**114,993**			**561,204.1**	**151,335.8**	**8,162.1**	**28.4**

Table 2.2.1: Irrigation Projects in the Investment Program (2000) (Continued)

Project Name	Irrigation Land (Ha)	Internal Rate of Return (%)	Start-Finish Date	The Year 2000 Prices, (Billion TL.)			
				Total	Expenditure Till the End of 1999	2000 Allocation	Estimated Realization at the End of Year 2000 (%)
III. VAN SUB-REGION							
1) Bitlis-Ahlat-Ovakışla	2,810	11.7	1995-2001	15,983.7	2,869.4	1,000	24.2
2) Hakkari-Yüksekova	9,142	2.8	1993-2004	47,632.3	4,309.5	750	10.6
3) Van-Engil II.Stage	15,000	---	1976-2001	58,683.6	50,750.6	365	87.1
4) Van-Karasu	17,700	9.3	1986-2001	75,352.3	50,161.2	665	67.5
5) Van-Erciş-Pay	17,574	0.0(0.09)	1993-2005	52,459.5	576.7	360	1.8
Sub Total	**62,226**			**25,011.4**	**108,667.4**	**3,140**	**44.7**
EAP REGION	**446,288**			**2,021,520.7**	**513,882.0**	**28,652.1**	**27.0**

* Internal Rate of Returns (IRR) of Yazıcı 1. and II. Stage Irrigation

**Projects which are almost complete

Note: No data has been obtained from the SHW for the 5 projects for which no IRR is given in the table

Source: SPO, 2000 Investment Program (Ankara: SPO, 2000)

Excluding the 3 projects with lower internal rate of return, the total cost of 30 projects in the year 2000 prices is 1,684,984 billion TL. Total amount of money spent until the end of 1999 is 479,532 billion TL and the allocation for 2000 is 23,542 billion TL. The amount to be spend after the year 2000 is 1,181,910 billion TL. Estimated monetary realization by the end of the year 2000 is 29.9 %. If the amount allocation is maintained at the level of the year 2000, it will take 50.2 years to complete these projects. To accept the completion date as 2005 as seen in the Program is not a realistic approach for these projects. A more realistic approach is to take the next 10 years as the timeframe for the completion of these projects. An annual allocation of 119,191 billion TL is required in order to achieve this. In other words, excluding the 3 projects with lower internal rate of return, the remaining 30 projects would require 5 times more investment allocation during 10 years time, on the basis of the allocation for the year 2000. If allocations are maintained at that level, approximately 30 thousand hectares of land can be opened for irrigation.

Some depots are not included in the above mentioned costs. Total cost of Kuzgun and Hacılar Dams (for the irrigation of Erzurum – Kuzgun, and Malatya-Darende-Gökpınar, respectively) and their Hydroelectric Power Plants is 41,453 billion TL in the year 2000 prices. 18,545 billion TL had been spent by the end of the year 1999, and 3,200 billion TL has been allocated for the year 2000, for these facilities. It will be necessary to allocate an amount of 19,709 billion TL for them after the year 2000.

Aforementioned costs do not include the In Farm Development Services (IFDS). In order to get ultimate benefits from the irrigation projects it is necessary to emphasize the IFDS. Finance required for the IFDS is about 10 % of the total irrigation costs. This amounts to 168,498 billion TL, excluding 3 projects with low internal rate of return.

New projects are being suggested for the period 2011-2020 in the **Table 2.2.2**. From these projects, 3 rehabilitation projects, which have high IRRs and require lower finance, could start even before 2010. Excluding the rehabilitation projects, the remaining projects cover a total irrigation land of 133,576 hectares and have an investment costs of 170,959 billion TL in the year 2000 prices. There is also a need for 19,967 billion TL for the IFDS.

Alpaslan II Dam and Muş Plain Irrigation Project that will utilize the Alpaslan II Dam are not included in **Table 2.2.1** and **2.2.2**. The project, which is important for both irrigation and energy production, is under preparation at the moment and must be completed before 2010.

Excluding three projects with low IRR, if the projects in the **Table 2.2.1** and **Table 2.2.2** are completed, a total area of 530,459 hectare can be opened for irrigation. Including projects previously opened for irrigation and included in the **Table 2.2.2** as Rehabilitation projects, that means all the area that could be economically irrigated will be opened for irrigation.

Start-Finish Date : 2001-2020

Implementing Authority : General Directorate of State Hydraulic Works

Implementation Area : The Entire Region

Table 2.2.2: New Irrigation Projects Proposed

Project Name	Irrigation Area (Hectares)	Internal Rate of Return (%)	Investment in the Year 2000 Prices (Billion TL.)	
			Irrigation Investment (SHW)	In-Field Development Services (GDRA)
I. ERZURUM SUB-REGION				
1) Ağrı-Patnos II. Stage	18,458	16.1	22,403.5	3,675.6
2) Erzincan Sulaması, Rehabilitation	22,724	13.3	2,429.4	0
3) Erzurum-Hınıs II stage	24,613	10.8	33,433.0	1,502.1
4) Erzurum-Kuzgun-Daphan II. Stage	27,605	8.2	6,566.0	5,928.2
5) Erzurum-Demirdöken II. Stage	474	5.9	1,223.4	64.3
6) Erzurum-Aşağı Pasinler II. Stage	8,419	5.1	17,224.4	994.3
7) Ağrı-Eleşkirt Sulaması Rehabilitation	3,200	5.3	787.9	0
8) Bayburt, Aydıntepe-Çayıryolu II. STAGE	10,348	16.8	9,508.6	1,909.5
9) Bayburt Aydıntepe Çayıryolu II. Stage	18,609	10.8	29,533.6	3,589.9
10) Kars-Kağızman-Pakpaj irrigation	1,768	16.0	3,394.2	150.1
11) Kars-Digor, I. Stage	11,200	7.5	14,321.9	795.9
12) Kars-Akkaya II. Stage	3,627	5.6	5,518.1	37.7
Sub Total	**125,121**		**143,126.7**	**18,947.6**
II.MALATYA-ELAZIĞ SUB-REGION				
1) Elazığ-Hatunköy	3,544	8.8	6,760.3	391.3
2) Elazığ- Komatlı	4,911	8.5	21,071.5	628.5
Sub Total	**8,455**		**27,831.8**	**1,019.8**
III. VAN SUB-REGION				
1) Erciş Sulaması Rehabilitation	2,660	14.7	653.9	
EAP REGIONS TOTAL *	**133,576**		**170,958.5**	**19,967.4**

* Excluding Rehabilitation Projects

Source: General Directorate of State Hydraulic Works (SHW), Irrigation Master Plan, Annual Revision, 1995. (Ankara: SHW, 1995).

V. Name of Project: Soil Conservation Works at Watersheds of the EAP Dams and Ponds

Justification: It is not possible to say that the soil preservation services have been effective in the Region, except the services provided by the "Eastern Anatolia Water Basin Rehabilitation Project" in Adıyaman, Elazığ and Malatya during the last few years.

62 % of soils in the Region is subject to various degrees of erosions, because of this, a large amount sediment has deposited in the regional lakes and ponds by means of river water carrying them, reducing the economic life of these projects undertaken with large investments. For instance, Medik Dam was filled up due to severe sedimentation during 1972-1982. Similarly Keban dam is endangered with filling from sediments, because deltas formed at the mouths of Murat Perisuyu and Munzur are important sources of sediments. If necessary measures are not taken, the dams and ponds in the EAP Region will reach their economic life before the projected time.

The project, under the joint responsibility of the Ministry of Forestry, the General Directorate of Rural Affairs, and the General Directorate of State Hydraulic Works, envisages taking necessary steps to prevent severe erosion and sedimentation to protect the dams and ponds of the Region, by growing of green belts (areas) around these establishments, and controlling of sediments by various physical and biological methods and tree plantation at the banks of nearby streams under pressure of active erosion as a first step.

Implementation of aforementioned services for the Region in general have been aimed for completion during first 10 years (2001-2010) of the EAP Master Plan.

Start-Finish Date **:** 2001-2010

Implementing Authorities **:** General Directorate of Rural Affairs

General Directorate of State Hydraulic Works

Ministry of Forestry

Implementation Area **:** Water Basins of Regional Dams and Ponds

VI. Name of Project: Improvement Works of Stony Agricultural Lands

Justification: The problem of stones in soil is found in 5.6 % of arable land and 30.2 % of non-cultivable lands.

The problem of stones in soils hinders work of soil preparation and harvesting by harming machinery and creates obstacles in getting the economic production.

The project aims to eradicate stone problem in 5.6 % of the arable land, by starting from the area with moderate stone problem during the 2001-2006 period, and spreading it throughout the Region during the 2010-2020

period by cleaning of stones at depth of 0-30 cm so as to get effective work from agricultural machinery and tools.

The work to be carried out under the responsibility of the General Directorate of Rural Affairs with participation of farmers includes the collection of stones from farming lands and arrangement of contour series and stone cordons according to conditions of climate, soil, and slope gradients. The costs of removing stones found on surface is 80 million TL/hectare and removing of buried stones costs 120 million TL per hectare in the year 2000 prices. These costs may appear to be expensive at first glance. However, it will be clear that the costs are not too high since the formation of functional contour series from collected stones will

- Remove difficulties to sow and harvest soils which are erect in nature
- Prevent the surface flow and erosion,
- Result in formation of natural terraces if the soil is ploughed in the same direction for 2-3 years and these terraces are the most efficient measures to prevent erosion.

Start-Finish Date **:** 2001-2010

Implementing Authority **:** General Directorate of Rural Affairs

Implementation Area **:** The Entire Region

VII. Name of the Project: Construction of Drinking Water Ponds for Small Animals in Pasture Lands

Justification: Sufficient number of drinking water ponds for small animals are not available in the Region. General Directorate of Rural Affairs constructed 291 water-drinking ponds for animals in the Region rich in herds, and if the number of animals is taken into consideration, this number is far from enough. Animals are forced to travel long distances to quench their thirst, which ultimately results in lowering their weight and yield.

The project, will be undertaken by the General Directorate of Rural Affairs by giving priority to places with widespread pasture farming of animals and at dense population areas of animals such that one pond will be constructed after every 1.2 km distance. The finance of the project can also be contributed by the “Pasture Law Fund.”

Clean and healthy drinking water to animals will also result in reduction of diseases mainly spread through water.

Start-Finish Date : 2001-2020

Implementing Authority : General Directorate of Rural Affairs

Implementation Area : The Entire Region

VIII. Name of the project: Wind Erosion Control Work at Aralık District of the Province of Iğdır

Justification: Wind erosion problem is being faced by 13,542 hectare of land in the Aralık district of the province of Iğdır. This problem is spreading in the area particularly due to widespread feeding of "Ebu Cehil" tree leaves to animals and digging these trees from their trunk in order to use their wood as fuel. If the erosion is not controlled in a short period of time, it will increase with the passage of time and reduce animal husbandry and agricultural activities of the local people, with negative repercussions on the socio-economic problems.

Necessary measures should be taken for the provision of alternative fuel to the local people, for the implementation of agriculture-forest plantation system in the area, and for controlling the erosion. Windbreaks should particularly be constructed, path breaks should be created and a crop rotation system allowing continuous green covering of lands (at places with irrigation opportunity) should be implemented.

The project envisages the extension of soil protection activities on 3,000 hectares of land by the Iğdır Provincial Directorate of the General Directorate of Rural Affairs, to 13,542 hectares of land subject to wind erosion problem, in the first 2001-2006 period of the EAP Master Plan. The objective is to adopt the methods used in taking the KARAPINAR erosion under control in the past.

Start-Finish Date : 2001-2006

Implementing Authority : General Directorate of Rural Affairs

Implementation Area : Aralık District of Iğdır Province

IX. Name of Project : EAP Drainage and Land Improvement Work

Justification: A drainage system needs to be set up in those parts of the Region where intensive farming can be performed (Iğdır) and other irrigation lands in a total area of 290,000 hectares. It is due to this reason that farming is done only in 25,000 hectares of this land and the rest of the area is not suitable for profitable farming.

In order to bring these water logged areas back to farming system, necessary soil amendment work, with construction of parallel open and closed drainage systems and their improvement by eradication of salinity and sodium problem is important

The project envisages minor amendments on soils not suitable for farming due to topography, in the drainage and improvement works, to be carried out during 2001-2006 period in Iğdır, Muş and Erzincan provinces, construction of underground and surface drainage systems during 2006-2010 period and the extension of these activities to lands with similar characteristics in the provinces of Ağrı, Bitlis, Elazığ, Erzurum, Gümüşhane, Bayburt, Hakkari and Van during 2011-2020 period.

Start-Finish Date **:** 2001-2020

Implementing Authority **:** General Directorate of Rural Affairs

Implementation Area **:** Agricultural Land Affected by Salinity and Alkalinity

X. Name of Project: Formation of Irrigation Associations

Justification: As has been generally true for Turkey, irrigation network created by the General Directorate of State Hydraulic Works has problems like insufficiencies in implementation and maintenance, high cost with lower irrigation efficiency, inappropriate planting scheme and higher costs of irrigation.

"Irrigation Associations" formed in some irrigation networks in Turkey are successfully performing the work to get rid off these difficulties.

The project envisages that the management, maintenance and operation services of the irrigation network in the EAP Region that have been undertaken by the General Directorate of State Hydraulic Works until today should be transferred to the "Irrigation Associations," which will be formed by the farmers in a democratic structure during 2001-2006 period.

Formation of Irrigation Associations must be encouraged by the General Directorate of State Hydraulic Works (GDSHW). These associations should be supported at the beginning, and after they turn into active organizations, they must get control services from the GDSHW.

Start-Finish Date **:** 2001-2006

Implementing Authority **:** General Directorate of State Hydraulic Works
Irrigation Associations

Implementation Area **:** Present and Future Irrigation Networks

Figure 2.2.1 Agricultural Areas

Figure 2.2.2 Irrigation Projects

2.2.2. Crop Production

2.2.2.1. Summary of the Current Situation

18.9 % of the soils in the Region are composed of land suitable for farming (Class I, II and III), 11 % of the soils are partially suitable for farming (Class IV soils), 65 % of soils are composed of land not suitable for farming (Class V, VI and VII), and the rest 5.1 % of lands are the soils where no cultivation is done at all.

The Region has 485,920 agricultural enterprises. Out of these, 32.6 % is 0-20 decare large, 28.6 % is 20-50 decare large, 20.9 % is 50-100 decare large, and the rest 17.9 % is 100- 500 decare large. About 11.7 % of regional farms are engaged in crop farming, 3.8 % in animal husbandry, and 84.5 % of the farms are engaged in both animal and crop farming.

Agro-ecological conditions and socio-economic structure of the Region affects crop cultivation, production and yields negatively. Yet it is true that the production potential of the Region is not being utilized sufficiently.

Generally irrational use of soil assets, misuse of soil, insufficient agricultural inputs, (use of fertilizer, agricultural chemicals, agricultural machinery-tools and irrigation etc.), dominance of poor yielding local varieties, unavailability of certified seed to the required extent and traditional farming practices are the reasons of low level of productivity, yield, product variety and income.

2.2.2.2. Master Plan of the Crop Production

Present conditions of Eastern Anatolia shows that conservation of important soil sources is not being done rationally along with the misuse of soil according to class and capability. Animal husbandry is the basis of the regional agriculture, which is facing deficiency in feed, and no cropping design to get rid of this is being reflected under the present system.

500 000 hectares class VI and VII land in the Region, that is not suitable for cultivation, should have been covered with pastures. However, these are used to grow very low yielding cereals (wheat, barley), which is leading to the creation of a serious erosion problem. Use of land in such a faulty way is intensive in the provinces of Erzincan, Gümüşhane, Bayburt, Elazığ and Tunceli.

At present, over 86 % of cultivable land, cereals are grown in a cropping scheme of wheat, barley and fallow. The largeness of fallow lands left out every year in this system amounts to 31.9 % of the cultivable land or 875,899 hectares. The agro-ecological conditions of the Region make it possible to reduce fallow lands. In this connection, especially in Elazığ, Erzurum and Gümüşhane with average rainfall of 450 mm, the area should be shifted to cultivation of fodder and forage crops (Hungarian vetch, sainfoin, etc). The provinces of Bayburt, Erzincan, Malatya Iğdır and Van with less than 450 mm of precipitation, cropping scheme of fallow-fallow-wheat or barley is being in practice. In other words, under this system one crop is obtained in three years. If in this cropping scheme one fallow year is replaced with a yielding year, it will help in reducing the fallow

areas. If fodder and forage crops are integrated here at cereal cultivation lands (which are undertaking practice of rotation cultivation system), it is possible to reduce fallow lands to the extent of 10 %.

Possible product variety and sowing area, prepared by taking into account the present product variety and sowing area of 2,749,061 hectares of agricultural land of the Region, and agro-ecological conditions and the needs of the Region, are given in **Table 2.2.3**, in a comparative way.

Table 2.2.3: Present and Future Design of Farm Crops in the EAP

Crop	Present Crop Design		Future Crop Design	
	Sown Area (Hectares)	%	Sown Area (Hectares)	%
Wheat	1,082,653		543,431	
Barley	405,749		227,207	
Total of Cereals	**1,488,402**	**54.1**	**770,638**	**28.0**
Chickpea	45,128		72,800	
Lentils	4,587		34,850	
Beans	23,495		37,150	
Total of Edible Grain Legumes	**73,210**	**2.7**	**144,800**	**5.3**
Sugar beet	70,601		65,180	
Potato	23,912		41,247	
Sunflower	5,603		6,800	
Tobacco	7,712		6,250	
Industrial (Cash crops) Crops	**107,828**	**3.9**	**119,477**	**4.4**
Clover	109,379		770,482	
Sainfoin	63,953		352,800	
Vetch	30,420		174,800	
Silage maize	---		86,657	
Red clover	---		82,868	
Forage grasses	---		48,035	
Total of fodder and forage crops	**203,752**	**7.4**	**1,516,047**	**55.1**
Fallow	875,869	31.9	198,099	7.0
Total of land area	**2,749,061**	**100.0**	**2,749,061**	**100.0**

Note: Arable farming lands of the Region amounts to 4,634,168 hectares (class I-IV soils). The table gives projections of the present and future sowing areas of farm crops in this area.

The most important observations from the table are the effective reduction in the cereal crops and fallow lands in the possible crop design, while they are being replaced by the fodder and forage crops, increasing from 7.4 % to 55 %, and including crops like silage maize, red clover and forage grasses.

Present crop production conditions dominated by lower variety value crops resulting from the use of traditional methods needs to be replaced with modern techniques in future cropping design of cultivation by introduction and provision of higher yielding fodder and forage crops as given in **Table 2.2.4,** in a comparative way.

Table 2.2.4: Present and Future Crop Production Quantities in the EAP Region (Tons)

Crop	Present Condition	Future Production	Changes (%)
Wheat	1,652,004	1,507,349	-8,8
Wheat	624,256	741,949	18,9
Lentils	4,333	40,610	837
Chickpea	42,188	97,900	132
Beans	36,475	88,075	141
Potato	391,597	1,385,010	253
Sunflower	2,890	9,520	229
Pastures meadows and fodder & forage crops	5,171,256	18,311,100	354

Notes: 1) Present and futures productions quantities of pasture meadows and fodder & forage crops have been estimated by taking total soil of the Region as base.

2) No change is being observed in the yields of sugar beet and tobacco therefore both of these have not been given a place in the table.

In the future projection quantities, the most important factor is the increase in the amount of production of fodder and forage crops. If the present animal population is taken into consideration, the roughage needs of the animals of the Region amounts to 15 million tons, whereas available quantity is 6 million tons. That means there is a shortage of 9 million tons of roughages, which is posing a major threat to the development of animal husbandry in the Region. Projected 18 million tons of fodder and forage crops from pastures are above the present roughage demand of the Region. However, even if the number of present animal stock stays at its current level, one should not neglect the fact the number of cultured animals will increase and they will need more roughage compared to local breeds in the future.

Another important output of the **Table 2.2.4** is that there is no significant decrease expected in the volume of cereal production, despite the reduction envisaged in the cereal sown area. The reason is that, cultivation at marginal lands would be stopped and modern agricultural technology would be applied, which would result in increasing the yield to 250 kg/decare.

The distribution of approximately 18 million tons of fodder and forage crops production projections given in the **Table 2.2.4** according to the provinces is given in the **Table 2.2.5.**

Table 2.2.5: Projection of Pastures-Meadows, Fodder and Forage Crops in EAP Region

Provinces	Sources and Production of Roughage (Ton)					
	Fodder and Forage Crops (FFC)	Pastures (P)*	Meadows (M)*	Class VI. and VII. Lands	P+R+FFC	Total
ERZURUM SUB-REGION						
Ağrı	572,090	162,750	588,521	146,588	1,323,361	1,469,949
Erzincan	349,800	21,240	316,485	426,273	687,525	1,113,798
Erzurum	959,625	419,580	690,984	886,178	2,070,189	2,956,367
Gümüşhane	183,301	23,425	74,614	308,806	281,340	590,146
Kars	425,000	267,300	1,065,631	36,293	1,757,931	1,794,224
Bayburt	150,750	19,807	82,503	198,886	253,060	451,946
Ardahan	173,550	364,500	587,529	12,665	1,125,579	1,138,244
Iğdır	148,000	7,560	97,150	5,975	252,710	258,685
Muş	432,000	381,820	451,451	154,125	1,265,271	1,419,396
Total	**3,394,116**	**1,667,982**	**3,954,868**	**2,175,798**	**9,016,966**	**11,192,764**
MALATYA SUB-REGION						
Bingöl	127,640	207,360	201,204	357,917	536,204	894,121
Elazığ	452,400	346	133,286	166,867	586,032	752,899
Malatya	493,900	1,399	483,363	278,153	978,662	1,256,815
Tunceli	170,038	5,117	55,447	792,913	230,602	1,023,515
Total	**1,243,978**	**214,222**	**873,300**	**1,595,850**	**2,331,500**	**3,927,350**
VAN SUB-REGION						
Bitlis	353,020	44,755	114,044	81,052	511,819	592,871
Hakkari	118,950	54,000	194,751	223,640	367,701	591,341
Van	910,450	289,510	659,401	147,432	1,859,361	2,006,793
Total	1,382,420	388,265	968,196	452,124	2,738,881	3,191,005
General Total	**6,020,514**	**2,270,469**	**5,796,364**	**4,223,772**	**14,087,347**	**18,311,119**

* Calculated on the basis of the assumption that the yield of pastures and meadows will increase by 80 %, with the application of fertilizers and weedicides, and lifting of early, late and heavy grazing,.

Table 2.2.5 shows that yield from fodder and forage crops, and pasture –meadows in the provinces of Erzurum, Van, Kars, Ağrı, Muş, Ardahan and Malatya is higher compared to other provinces, and thus, it is necessary to give priority to these provinces for the activities related to the development of animal husbandry.

Management principles have not been fulfilled in a proper way, in the pasture-meadow lands of the Region. Law no.4342 passed in 1998 for implementation and administration of pasturelands brings novelties in the protection and improvement of such farms. If this law is brought into life, it will help prevent threats to these and result in adding to increase of yield level in a significant way. Moreover, Pasture Fund created after this law would become an important source of funding for the development of pastures, fodder, and forage crops.

Ecological features of the Region are the most important factor that hinders the cultivation of vegetables and fruits in the Region. However, the micro climatic pockets of the Region, which look like small islands, do have a potential for the cultivation of these crops.

Vegetable farming is mainly based on domestic production for meeting family needs by growing local varieties. Priority should be given to the development of vegetable farming for the market in the Region in the provinces of Elazığ, Erzincan, Iğdır and Malatya, that have a relatively mild climate. Especially the Iğdır Plain, with its well developed irrigation infrastructure and climatic features, has a big potential for cultivation of summer vegetables such as tomato, pepper, eggplant and cucumber. After evaluation of vegetable potential of the Iğdır Plain for cultivation of vegetables, food-processing units (tomato paste, and drying etc) will be encouraged for the Region. Presently vegetable production which is being done under tunnels, glass or plastic houses in small scale has the possibilities of their wider popularisation in micro-climatic areas of the region. Tunnel vegetable farming is a labor-intensive activity, which will meet the out of season vegetable needs of the Region that is far away from main production centers besides its contribution to employment.

Fruit farming is generally done by growing fruit trees at the borders of the farms. Single fruit gardens are limited. Not all of the trees make use of cloned scions in their make up.

Improvement in fruit farming depends on the cultivation in single fruit gardens having high quality, high yielding fruit tree varieties that have marked demand. In this context, the climates and land of areas lying in the axis of Erzincan-Gümüşhane are suitable for the growth of cherry and sour cherry in single fruit gardens. Production of apple and pear should also be obtained in the same area within the same approach.

Sixty four percent of Turkish apricot is obtained from the Region. Main problem of apricot production is the insufficient number of drying establishments, availability of large amount of sulfur in dried apricots of the Region and the consequent hurdles in the export of these products. The solution of the problem lies in the installment of enough number of modern machines employing modern and latest techniques of apricot drying.

Increasing grape gardens in the provinces of Erzincan and Elazığ and extending the cultivation of grapes in Lake Van catchment area will result in increase of product.

Walnut is an important fruit type of the Region. However, yield per tree is very poor. The yield can be increased by the help of quality variety and cultural techniques.

Almond cultivation in the province of Bingöl and pistachio cultivation in the provinces of Bingöl, Bitlis, and Hakkari are also very important.

2.2.2.3. Project Proposals

I. Name of the Project: Rational Use of Lands Which are not Suitable for Farming in the Eastern Anatolia Region

Justification: Eastern Anatolia has a total land area of 15,564,396 hectares. Its distribution based on land capability classification suggests 4,634,168 hectares of land is suitable for farming (in class I-IV) and 110,930,228 hectares of land (in class V, -VII) is not suitable for farming in general.

In these marginal areas which are roughly 11 million hectares and not suitable for cultivated farming, there is low quality pasturelands, besides cereal production on 496,034 hectares with ver low productivity (100 kg/decare in every two years), with traditional methods.

These lands, that are composed of low quality pastures with 15-20 % of plant coverage and are not suitable for cultivated farming, are subject to cultivation of wheat and barley on 500,000 hectares of land, that affects the serious problem of soil erosion in an adverse way.

The project envisages the elimination of crops like wheat and barley on the soils that have very low yields, and thus, unsuitable for farming, which is a main factor behind the erosion problem. These crops will be replaced by artificial pasture lands containing clover, sainfoin, crested wheat grass, smooth brome, blue couch grass and sheep wool, etc.

The project requires 500,000 hectares of land for artificial pasture creation, with a total investment cost of 10,000 billion TL (20 million TL for one hectare). With full implementation of the project 150-350 kg/decare of dry hay yield and 1 250 000 tons of dry hay/per annum is expected.

Supporting the small farmers, who are going to be affected by the project, in kind and in cash (Pasture Fund, support of the World Bank) and ensuring their participation to the project is necessary for the success of the project.

Start-Finish Date : 2001-2011

Implementation Authority : World Bank Small Farmers Support
Ministry of Agriculture and Rural Affairs
General Directorate of Rural Affairs
Civil Society Organizations
General Dir. of Land Cadastre and Registry
Farmers' Organizations

Implementation Area : Elazığ, Erzincan, Erzurum, Gümüşhane, Bayburt and Tunceli

II. Name of Project: Project for Utilization of Fallow Lands

Justification: 31.9 % (875,869 hectares) of farmland out of 2,749,061 hectares of agricultural land in the Region is left for fallow every year. A wheat-barley fallow sowing scheme is being practiced in these fields for a more rational use of the soil potential of the Region. However, taking into account the climatic conditions and total annual precipitation, it is possible to include fodder crops like Hungarian vetch, clover, sainfoin into the sowing system. In addition, it is possible to include crops like chickpea and lentils along with Hungarian vetch and sainfoin. The priority must be given to class I-II-III farmlands of the Region, with a total annual precipitation above 450 mm.

Under the light of these criteria, the aim of the project is to reduce the level of fallow land, which is 31.9 % at present, to the level of 9 % in the Region.

It is estimated that with the implementation of the project, the Region will produce approximately, 3,355,000 tons clover (dry hay), 1,152,000 tons sainfoin (dry hay) and 547,000 tons Hungarian vetch (dry hay) along with increased yield of 36,000 tons of lentils and 55,000 tons of chickpea.

Start-Finish Date **:** 2001-2011

Implementation Authority **:** Ministry of Agriculture and Rural Affairs

Implementation Area **:** All Provinces

III. Name of Project: Project for Determination, Limitation, Improvement and Management of EAP Meadow-Pasture Areas

Justification: According to 1997 Rural Affairs Soil and Water Resources Inventory, there are 9,008.14 hectares of pastureland in the Region. However, 10 % of the regional pasture lands are good, 40 % are average or average weak and 50 % are poor or very poor in quality.

It is of great importance to eradicate the roughage shortage as one of the major bottlenecks before the development of regional animal husbandry, along with determination and limitation of pasture-meadows in the Region, developing their yields and compositions.

Moreover, rehabilitation of pasturelands will contribute significantly to the activities for taking the serious erosion problem of the Region under control. In the framework of these objectives and in the spirit of an integrated project approach, the determination, limitation, improvement activities and if necessary the creation of artificial pastures must be done urgently.

Pasture Law No. 4342 would constitute the infrastructure (finance and methods) in that project. However, it is necessary to procure some services from the private sector, particularly in registry, determination and limitation activities, and ensure the participation of the farmers' organizations in the rehabilitation activities, in order to speed up the implementation phase.

Start-finish dates : 2001-2020

Implementing Authorities : Ministry of Agriculture and Rural Affairs
Civil Society Organizations
General Dir. of Cadastre and Land Registry
Farmers' Organizations

Implementation Area : All Provinces

IV. Name of Project: Cultivation of Fodder and Forage Crops at Sugar Beet Cultivation Areas in the EAP

Justification: Sugar beet is grown over an area of 70,000 hectares under irrigated conditions in the Region. Sugar beet is cultivated under three years cropping scheme of sugar beet-wheat-wheat, on these areas.

The aim of the project is; Eliminating the first year of wheat in hard climatic areas of the Region on which sugar beet is grown, replacing it with the cultivation of Hungarian vetch or barley + vetch; while in the moderate climatic areas shifting to cultivation of fodder and forage crops like silage maize, sorghum and Sudan grass etc contributing to the eradication of shortage in the roughage for animals in the Region.

Start-Finish Date : From 2001

Implementing Authorities : Ministry of Agriculture and Rural Affairs
Provincial Directorate of Agriculture
Ministry of Industry and Trade
Regional Agricultural Research Institutes
Ziraat Bank (Agricultural Bank of Turkey)

Implementation Area : Cultivation of Hungarian vetch, and barley + vetch mixture, at provinces of Ağrı, Bayburt, Bitlis, Erzincan, Erzurum, Gümüşhane, Kars and Van, and cultivation of silage maize, sorghum and Sudan grass in provinces of Elazığ, Malatya, Muş and Iğdır.

V. Name of Project: Contractual Potato Seed Cultivation Project

Justification: The most important element in the potato seed production is to produce virus free seed free from aphid populations.

The area, thanks to its high altitude, dominant winds and agro-ecological conditions, place a natural control upon the population of aphids.

The Erzurum-Bayburt axis in the EAP Region, because of its high altitude and areas facing Balkan winds, especially Bayburt, provide the optimum conditions for the cultivation of potato seed.

The aim of the project is; Activating the potential existing in the province of Bayburt, in order to produce virus free seed through the "Contractual Potato Seed Production Model," in an integrated manner covering processing and marketing activities.

The project, that is envisaged to be realized by the private sector enterprises, will meet the seed demand generated by potato cultivation on an approximately 24,000 hectares of land in the Region, while marketing its products to other parts of the country as well.

Incentives and supports to motivate the private sector would be a critical factor for the success of this project which will contribute to the solution of the employment problem in the Region.

Start-Finish Date **:** It Will Start From 2001

Implementing Authority **:** Private Seed Organizations

Implementation Area **:** Province of Bayburt

VI. Name of Project: Vegetable Production in EAP Under Tunnels

Justification: The EAP Region has many constraints for production of vegetables. It is away from many of the vegetable production centers of country with general cultivation base of cabbage, tomato and pepper mostly done for domestic consumption in home gardens.

Vegetable cultivation is generally done by traditional techniques using poor yielding local seed varieties.

The Objectives of the Project are; to start and popularize vegetable production under tunnels in micro climatic areas of the Region, with the aim of early and late supply of vegetables to the market, to contribute employment through this labor-intensive activity, to attract private seed firms to the Region by starting the utilization of hybrid seeds and to increase product variety.

Start-Finish Date	**:** Starting from 2001
Implementing Authority	**:** Provincial Directorate of Agriculture Private Firms Providing Input to Agricultural Sector Farmers' Organizations
Implementation Area	**:** Micro Climatic Areas of all Provinces

2.2.3. Animal Husbandry

2.2.3.1. Summary of the Current Situation

As the general practice under conditions of Turkey, farming is done in the form of small establishments in the Eastern Anatolia as well. Most of these establishments contain 1-5 cattle heads that are raised under extensive conditions. 81.2 % of these establishments are involved in the production of animal products and crop production together; whereas 7.6 % of them are involved in only with animal husbandry (SIS, 1991).

Cattle Wealth

The cattle wealth reduced to 2,241,307 in the EAP Region in 1997, by a 15.6 % decrease compared to 1991. 5 % of these belong to cultured breeds, 31 % are cultured hybrids, and 64 % are poor yielding local breeds (SIS, 1991,1997). The most important factors leading to this decrease in the number of livestock are the dependence of village animal husbandry in the Region upon pastures, and abandonment of the pastures for a while because of terror and migration.

Sheep and Goats Wealth

Considerable number of sheep and goats are found in the Region as well. 31 % of sheep are found in this Region and their number approached to 9,347,807 in 1997. During the same year, number of goats was 1,274,357 (SIS, 1997). Especially the sheep raising activities based on pastures have been affected advarsely due to terror and migration from the area as has been the case for the cattle.

Poultry Wealth

Poultry farming has developed rapidly in Turkey during the last few years; however, no parallel development is observed in the EAP Region. About 5.7 % of national poultry is located in the Region. This is 11 % for turkey, 12.5 % for ducks and is 39.7 % for goose (SIS, 1997). Integrated sheds for broiler production, feed units, slaughterhouses and chains for transportation and marketing in the poultry farming is observed only in Erzurum, Elazığ and Erzincan under the auspices of a foundation company.

Beekeeping

About 14.5 % (581,573) of honeybee combs in Turkey are located in the Region with a production of 7,801 tons of honey during 1997. Amount of honey per comb during 1997 was 13.4 kg and was a little less than the average of Turkey, which is 15.8 kg (SIS, 1997).

Breeding Possibilities of Animal Races

High quantity of local cattle population (63.4 %) found in the Region shows that the potential of breeding in the Region is high.

Natural and artificial insemination activities are being provided by the Provincial and District Directorates of Agriculture. Number of milk cows inseminated in that way in

the Region is 4.3 % and this number is insufficient. Insufficient artificial insemination is mainly because of the inadequate number of veterinary doctors, the faults and failures in organization, terror, transportation and communication difficulties, along with poor knowledge of farmers.

Use of Pastures, Feed Production

Pastures constitute 39 % of the existing land in the Region. A significant part of these pastures are destroyed, unproductive, and open to soil erosion.

There are 7 sugar, 2 oil and 12 flourmill plants in the Region, contributing to fodder and forage production. Mostly fresh sugar beet dreg and molasses are being produced in the Region, while there is no dry sugar beet dreg production.

Problems of Disease Control

There are two Animal Diseases Research Institutes in Elazığ and Erzurum For the analysis of material being sent by the offices of the Provincial and District Directorates of Agriculture in the EAP Region.

Worms and parasites widespread in the Region are, on the one hand, leading to very important economic losses, and on the other hand, creating an obstacle before the activities of the breeding and other improvement methods for the creation of high yielding animal wealth.

Animal Products

Generally total production of animal products and average yield per animal in the Eastern Anatolia Region are at low levels.

In the production of meat, both the number and the body weight of animals are very important. Body yield of cattles in 1997 was 148.1 kg. This value is less by 11 and 52 kg from the average of Turkey and the World, respectively.

Milk yield per milk cow is 1,217 liter/year, which is less by 377 liters/year from the average of Turkey and 783 liters/year from the average of World. Comparing this yield level to the average European yield level of 5000 liters/year is significant in indicating the level of yield..

Manufacturing Industry in the Animal Husbandry Sector

Agro-industries, which are the main elements in the development of the animal husbandry sector, have not been sufficiently developed in EAP provinces. The industries providing input to animal husbandry and the industries processing animal products, have not been established and spread out in the Region. That is because of inadequate animal husbandry infrastructure as well as the low level of general development of the Region.

There are 33 fodder and forage plants (658 000 tons/year), 13 meat-producing plants (100,716 tons/year), 15 dairy farms (122,290 tons/year), working in the Region (SIS, 1997).

2.2.3.2. Problems and the Proposals for Solution

The EAP is a suitable region for animal husbandry in terms of climate, and geographic conditions. Therefore, most of the producers make their living traditionally from animal husbandry and related economic activities.

If we take natural conditions and availability of animal wealth on the basis of species into consideration, it is observed that for milk production Malatya, Elazığ, Erzincan, Kars, Ardahan and Muş, for production of red meat Erzurum, Erzincan, Kars, Elazığ, Malatya, Van and Ağrı, for sheep farming Ağrı, Van, Muş and Erzurum, and for goat farming Muş, Bingöl, Bitlis and Van lead in the region. For poultry farming Elazığ, Malatya, Erzincan and Erzurum, for goose farming Ardahan and Muş, for duck and turkey farming Muş are in the frontline. Honeybee farming is mainly done in the provinces of Erzincan, Erzurum, Kars, Bingöl and Gümüşhane with a good potential. Therefore, these fields of activity should be given priority in these provinces and necessary arrangements should be done for obtaining higher yields.

Costs of mixed feed, medicines and other services are particularly very expensive for the animal husbandry in the Region. Production of fodder and forage crops are limited and the lack of production of ingredients like vitamins and minerals in the Region, results in high costs in the production of mixed feed.

In the animal husbandry enterprises 65-70 % of the inputs is feed. Therefore, minimization of feed prices would bring big gains. This necessitates, first of all, an increase in the production of quality roughage (fodder and forage crops) in the Region. In that way, on the one hand, the roughage would be procured at relatively lower prices, and on the other hand, the demand for dense feed would decrease. Indeed, cattle farming in countries with a developed animal husbandry sector is mainly based on roughage. For the provision of cheap dense feed, there must be an integration between animal farmers and the industry. Contracted production model of the Turkish Development Foundation (TKV) can be suggested to reach this objective.

In order to get higher yields from farming units, local breeds should be replaced with culture breeds and hybrids. That is because culture breeds and hybrids have higher capability to take benefit from feed, resulting in higher body weight and milk yields.

From the angle of cattle raising, the ratio of bred culture breeds and hybrid breeds is 36 %. There is almost no culture breed in sheep and goat. Though the local breeds are appropriate to regional conditions and have combined features, they have genetically lower potential, even under optimum conditions, and it is not possible to raise their yield beyond a specific limit (for instance, 1217 liter/year milk and 148 kg of body yield). For this reason, to raise potential of animals for higher yields, and increase ratio of animal products, besides provision of enough animal feed, replacement of local breeds with cultured breeds is also necessary. The negative situation of the improvement activities mentioned above is mainly due to the inadequate level of artificial insemination.

Presently artificial insemination services in the Region being provided by the Provincial Directorates of the Ministry of Agriculture and Rural Affairs cannot be carried out effectively due to insufficient personnel and equipment. The problem can be solved by

transferring these services to the private entrepreneurs where the Ministry assumes the controlling services.

Another negative factor in animal husbandry is the problem of shelter. Almost no cattle, sheep, and goat animal shelters are found in the Region. Available shelters are the most important obstacle in production of healthy and yielding animals. For this reason, along with animal breeding development, activities directed to improving animal shelters are also very important. Construction of modern plants is particularly important in that improvement activities. It seems to be possible to minimize the shelter costs through open or semi open animal raising applications in the areas that have suitable climatic conditions.

Provision of hybrid chicken is very important for poultry farming. There is no breeding enterprise in the Region to supply baby chicken to egg and broiler establishments. If one poultry breeding enterprise is constructed for each of the two sectors, it will help both in the encouragement of production and the reduction of baby chicken costs. For this reason, breeding enterprises should be constructed in the provinces of Malatya, Elazığ, Erzincan and Erzurum, where there is an appropriate infrastructure.

Suitable marketing conditions should be provided for turning the animal husbandry into a more attractive sector. Therefore, integration of producers with industry is very important. Contracted animal husbandry seems to be an appropriate model for this integration. It would be beneficial to include not only the meat and milk enterprises but also the industrialists of the Region into the model. Moreover, this model should also have a scope covering the possibilities of development and popularization of cultured breeds. For this reasons, the industrialists participating in this model should be provided with tax rebates, and the producers should be given certain incentives. In the long run, farmers partially trained under the contracted model structure, will form Farmers' Organizations by getting together, and this will help in both reduction of costs and increase in marketing possibilities.

Extending the poultry farming through "Contracted Animal Raising" model in Elazığ, Erzincan and Erzurum, practiced by a foundation company in the Region to the other enterprises, would contribute a great deal to the development of the regional animal husbandry. This model is important with its elements like provision of services such as health, and farmers' education services, reduction of input costs, marketing guarantee, etc. Malatya, Kars, Van and Muş, where there is an appropriate infrastructure, should be given priority in the implementation of this model.

Another advantage of contracted animal husbandry is that industrialist is directly purchasing the farmer's products at the place of production, and supplying them to the market as finished products. Industrialist must create cold chain in this circulation. Otherwise, the products will be perished,.

Generally, animal husbandry in the Region is based on small family enterprises having 1-5 animals. In the short run such small family enterprises should be integrated with contractual animal husbandry model; but in the long run credits and incentives to be provided to this sector should be directed to middle and big sized farms having 50-100 cattle heads.

2.2.3.3. Ongoing Projects

Review of work in the provinces show that there are now 59 projects related to animal husbandry being undertaken in the Region. An important part of these projects is being carried out by the Provincial Directorates of Agriculture and the rest is under the responsibility of the Social Support Foundations, Cooperatives, Special Administrations of Provinces and some private organizations.

In the Evaluation of the ongoing projects, the projects which support the farms at appropriate scale, bring a structural change in the animal husbandry sector, and the projects in which production and marketing are integrated, is given priority. Therefore, these projects should go on.

8 projects that should be given priority in terms of above mentioned criteria, out of the total number of 59 ongoing projects, are as follows.

Name of Project : Integrated Animal Products Organized Industrial Zone
Province : Elazığ
Implementing Authority : IAHOIZ, Entrepreneur Organization Directorate

Name of Project : Elazığ Fattening Organized Industrial Zone (Feasibility)
Province : Elazığ
Implementing Authority : Elazığ Fattening Organized Industrial Zone Entrepreneur Organization Directorate

Name of Project : Project for the Development of Pastures, Fodder and Forage Crops and Animal husbandry
Province : Muş
Implementing authority : Provincial Directorate of Agriculture

Name of Project : Project for Distribution of Hundred Pregnant Heifers and Farming Credit to Unemployed Agricultural Engineers and Veterinary Doctors
Province : Van
Implementing Authority : Provincial Directorate of Agriculture

Name of Project : Project of 200 Milch Cattle Heads (100 families X 2 cattle/family) Under Partners Ownership and Cheesery with 5 tons/day Capacity
Province : Erzurum-Horasan
Implementing authority : Provincial Directorate of Agriculture

Name of Project : Sheep Farming Improvement Project
Province : Gümüşhane
Implementing Authority : Social Help and Solidarity Encouragement Foundation

Name of Project : Fattening Cattle Development Project
Province : Gümüşhane
Implementing Authority : Provincial Directorate of Agriculture

Name of Project : Project for Sheep Farming to Attract Return to Villages
Province : Van
Implementing authority : Provincial Directorate of Agriculture

The ongoing projects in addition to the aforementioned projects are supporting small scale family enterprises that would not contribute to the development of the regional animal husbandry much.

2.2.3.4. Project Proposals

I. Name of Project: Privatization of Artificial Insemination and Vaccination services

Justification : The process of artificial insemination carries great importance in the process of replacement of low yielding local breeds with high yielding hybrid breeds. Presently process of artificial insemination is at very low level of development because of deficiency of trained staff, vehicles and equipment. The effectiveness of these services within the present structure should not be expected. Moreover, animal vaccination services under the present set up are below the need of the livestock. To provide and run these services effectively with veterinarians and technicians serving in the public sector seems to be impossible.

The objective of the Project is to transfer artificial insemination and vaccination services currently provided by the public sector to the private sector. At the first stage, in order to prevent the insemination of sperms from unknown sources, the private sector would be provided with sperm from known specific pedigree by the public sector. However, in order to get success in the project, the private hospitals, clinics and treatment centers giving service of veterinary doctor would be licensed for artificial insemination and vaccination and the enterprises interested in, would be given support of credit.

Moreover, in the provinces in which the project will be implemented, the Ministry of Agriculture and Rural Affairs must leave these activities and just assume the responsibility of controlling the effectiveness of the service.

Start-Finish Date : 2001-2005

Implementing Authority : Ministry of Agriculture and Rural Affairs
Private Organizations

Implementation Area : All Provinces

II. Name of Project: Improvement of Animal Sheds and Establishment of Sperm Production Centers

Justification: Genetic capacity of the existing animals in the Region is very low. In order to improve the genetic potential, it is necessary to use quality sperms. A center with this objective must be established for production of quality sperms. The center must provide appropriate genetic combinations to the area at the same time. Hybrid making works under this project, will give way to breeding activities in the Region. There are a few firms engaged in the production of sperms in Turkey, but there is no firm engaged in the this activity in the Region. In these enterprises, male sheds are not composed of animals selected as a result of semen control, and thus, their level of yield is not known completely. Moreover, until today, the use of import of cultured breeds in the improvement works has not been proven effective for the Region.

The aim of the project is; Establishment of a unit for production of sperms through units of male shelters/sheds by diluting dosage, freezing and storage.

Survey of the project, construction of buildings, purchase of machinery and equipment will be completed in the 2001-2005 period. Establishing of male sheds, taking yields for selection and hybridization will be done during the 2006-2010 period of the project. Moreover, parallel to new sperm production and stocking activities, breeding activities will start. Public and private sector organizations working in the Region will be provided with quality sperm.

Start-Finish Date **:** 2001-2005, 2006-2010

Implementing Authority **:** Universities of Kafkas, Yüzüncü Yıl and Atatürk

Implementation Area **:** Kars, Van, Erzurum, Muş

III. Name of Project: Egg Poultry Development Project

Justification: Egg farming is done in a few provinces in a limited number, which is unable to meet the requirements of the Region. Therefore, egg is brought to the Region from other places. In order to meet fresh egg demand of the local people, it is planned to construct 40 poultry farms with at least a capacity of 15,000 chicken each, in Elazığ and Erzincan. Feed requirements of these farms can be met at first stage by renting feed factories working with low capacity in the Region, without additional investment. The products in excess of the need will be stored in cold storages.

During the second period (2006-2010), both increasing the number of such establishment in these provinces and developing new establishments in the neighbor province (through contracted model or Farmers' Organizations) will be provided. This organization aims at both decreasing the costs and a more proper marketing of the products.

Start-Finish Date **:** 2001-2010

Implementing Authority **:** Ministry of Agriculture and Rural Affairs
Universities
Private Sector

Implementation Area **:** Elazığ, Erzincan.

IV. Name of the Project: Meat Poultry Development Project

Justification: As is the case for poultry farming for egg production, the broiler production is organized in a few provinces. Broiler production does not take place outside these provinces; hence the consumers cannot get fresh meat and they have to consume easily contaminated frozen foods. Solutions that come out during the transportation and marketing are leading to the contamination.

In this connection, it is planned to establish 30 model farms with a capacity of 10.000 head/farm shed in the provinces of Malatya, Iğdır, Hakkari and Van. Feed needs of these farms during the first period of 2001-2005 will be met from raw material procured in wholesale by renting present feed mills. Slaughterhouses will be constructed adjacent to farmhouses. The authority responsible for establishing of the contracted model, will also organize the marketing of the products in the province and the region, as well as outside the region and the country.

Start-Finish Date **:** 2001-2005

Implementing Authority **:** Ministry of Agriculture and Rural Affairs
Universities
Private Sector

Implementation area **:** Malatya, Iğdır, Van, Hakkari.

V. Name of Project: Project for Development of Egg Poultry Farms

Justification: Although, the private firms have, though a limited, participation in broiler production, they have no participation in breeding activities in terms of egg production, and in models integrating the producers. In order to eradicate this problem, at least one egg poultry breeding farm must be established in the Region. This farm will also meet the incubation

demand of enterprises raising turkey, duck, goose, quail and other poultry birds. The projects aims at establishing incubation houses (with a capacity of 100,000/month output), and linked to this, chick production hatcheries (14 x 15,000 capacity). Moreover, a feed unit will also be established in order to meet chick's mixed feed demand.

Survey work of the project, construction of buildings for production, and provision of required equipment will be completed during the 2001-2005 period. Between the 2006-2008 years, after the assembly of the procured equipment, purchase of animal sheds and incubation activities will start and to provide high yielding healthy egg hybrids to the producers of the Region.

Start-Finish **:** 2001-2008

Implementing Authority **:** Ministry of Agriculture and Rural Affairs
Universities
Private Sector

Implementation Area **:** Elazığ, Ardahan, Kars, Muş

VI. Name of Project: Milk Cow Development Project

Justification: Milk cow enterprises should be transformed into medium size enterprises in the Region, instead of the small family enterprises comprising of 1-5 animals that are dominant currently**.** Combined breeds, which better fit to the natural conditions and more productive in terms of milk yield, should be raised in these farms. Moreover, the quality roughage needs of these farms should be provided either from production on their own land or on rented lands. The organization established for undertaking the work will purchase mixed feed as raw material in wholesale, which will be cheap, and process it into the required form by renting the available feed mills. By renting of the existing establishments (both milk and meat), animal products will be more easily marketed after being processed.

Taking into consideration these aims, the milk cow development projects will be implemented by exploiting the natural and available potential in the provinces of Elazığ, Erzincan, Van, Kars, Ardahan and Muş. During the first period of the project in the aforementioned provinces, 40 farms each having a capacity of 20 animals will be established. For this purpose, after the project survey and the construction of buildings, purchase of animals and production of their roughage requirements should be undertaken in this period.

During the 2nd period (2006-2010), these projects will be transferred to milk cow raisers unions. Present industry establishments will be integrated with Milk Producers Associations or the Milk Producers Organizations will enter into industrial activities themselves. For this

reason, feasibility of milk and feed mills, commissioning of factory buildings by purchase of necessary machinery and equipment are envisaged.

In the third period (2011-2020), efforts to increase milk yield by increasing the capacity of animals (average 40 heads) in farms and raising the organizational level of milk producers associations will be carried out along with marketing within and outside the country. In order to achieve this objective survey should be done to increase the capacity before construction of linked buildings and materialization of animal purchase. Market organization activities targeting a broader area should be conducted and implemented. Cold storage depots and transportation vehicles must be provided in this connection.

This investment project in question will be realized under the guidance of the local universities and offices of the Provincial Directorates of Agriculture affiliated with the Ministry of Agriculture and Rural Affairs integrated with private sector organizations (producers associations, private firms, or contractual model integrating private firms with regional farmers).

Start-Finish Date **:** 2001-2020

Implementing Authority **:** Ministry of Agriculture and Rural Affairs

Universities

Private Sector

Implementing Area **:** Elazığ, Erzincan, Van, Muş, Kars, Ardahan

VII. Name of Project: Fattening Cattle Development Project

Justification: The Region currently preserves its position as a provider of fattening cattle materials. The Region has a comparative advantage relative to other regions in terms of roughage resources. However, sale of cattle without gaining weight, results in an important economic loss for the Region. On the other hand, the products consumed in the Region are imported particularly from the other regions. In order to face this loss along with increase of income of regional farms, fattening cattle husbandry must be improved to the level of countries where the animal husbandry is developed. In order to achieve this objective; barns with at least 50 animals capacity, sources of roughage and concentrated feed for the optimum feeding, modern slaughter houses where the produced meat is processed and marketed are required. For this reason, meat cattle production programs will be implemented during the first five years in the provinces of Malatya, Erzurum, Erzincan, Elazığ, Kars, Ağrı, Hakkari and Van, where there is potential in terms of both feed production and slaughterhouses. To achieve this, it is envisaged to establish 160 farms

each having 50-100 heads. During the first five years (2001-2005), roughage will be produced on own or rented lands. Quality mixed feed will be prepared under control in hired existing feed plants by combining raw material purchased in wholesales through the unions at lower prices. When the animals will reach to required meat level, they will be slaughtered in the hired slaughterhouses and the meat will be converted into products for sale.

During the years 2006-2010, the farmers interested in meat cattle will be organized into Meat Cattle Farmers' Organizations for a more effective operation. As a result, either the feed mills and slaughters will be integrated with these associations or these producers' organizations themselves will enter into manufacturing industry in the direction of their economic benefits.

During the years 2011-2020, these associations will increase their production capacity through increasing the number and capacity of meat cattle farms in the current provinces as well as by extending their membership to neighboring provinces. As such, umbrella organizations formed out of this interaction will be able to market the products in both domestic and foreign markets.

Start-Finish Date : 2001-2020

Implementation Authority : Ministry of Agriculture and Rural Affairs
Universities
Private Sector

Implementation Area : Malatya, Erzurum, Erzincan, Elazığ, Van, Kars, Ağrı and Hakkari

VIII. Name of Project: Sheep Raising Development Project

Justification: Although the Region is rich in pastures and meadows, due to activities of terrorists during the last few years, and abandonment of plateaus connected to that, there has been a significant reduction in the sheep population. Moreover, most of the present races are made up of low yielding ones. Another issue is the marketing of products obtained under unhealthy conditions, especially milk. It is planned that in order to eliminate this negative situation and create a model to get animal products under hygienic conditions, the sheep farming will be integrated with cattle farming (with minimum of 500 animals). At least 20 of such units will be undertaken for implementation. One of the sections of these units will collect wool for marketing. For realizing the project objective in the first period (2001-2005), the Sheep Farmers' Organizations will be formed in the provinces of Van, Muş, Kars, Erzurum, Erzincan, Ağrı, and Bingöl which have a potential. These associations will use breeds, namely "İvesi" and "Akkaraman" and engage themselves in the selection and pure line breeding, along with raising of yielding animals in the units. Roughage

needs of animals will be met from pastures when climatic conditions and vegetation are appropriate, while during the season with unfavorable pasture production, roughage needs would be met from production on their own or rented lands or the feed purchased from the wholesaler. Mixed feed would be procured at a lower price in a similar way through wholesale purchases. In order to bring use of milk in healthy form and offer it to a broader market every farm will contain small dairy product plants.

During the 2nd period (2006-2010), animal sheds suggested in the Master Plan will be supported and activities will be done within the framework of production centered on breeding of available animals, along with production of lambs available for slaughtering. In order to carry out these and similar activities successfully, the sheep raisers will be organized under the banner of various associations as well.

Fattening units with at least 300 sheep capacity will be established for intensive fattening of male sheep or female sheep not meant for breeding. Thus, sale of lambs at the end of every season at lower prices will be stopped and the farmers will gain economic benefits.

Similarly, farmers' organizations or private companies will establish cold storage facilities at appropriate places to enforce market power of the producers.

Start-Finish Date **:** 2001-2010

Implementing Authority **:** Ministry of Agriculture and Rural Works
Universities
Private Sector

Implementation Area **:** Kars, Erzurum, Erzincan, Ağrı, Bingöl, Van and Muş

IX. Name of Project: Beekeeping Development Project

Justification: The EAP Region has a heterogeneous climatic and natural structure. This formation is very encouraging for beekeeping in various parts of the Region. Beekeeping is done in the Region based on natural pollination, whereas it must involve modern technology and organizational work for a better yield.

Experienced small farmers should be encouraged by increasing the number of combs during the 2001-2005 period. Besides protection of regional honeybee breeds, high yielding breeds should be introduced through undertaking of breeding work.

The regional fauna suitable for honeybee farming must be identified and the migration map of honey producers of the Region should be prepared. Moreover, problem of honeybee diseases should also be solved by taking proper care; more proper maintenance and pollination programs should be

applied and the marketing opportunities of the farmers should be developed. In order to achieve these objectives, the project envisages the establishment of Honeybee Farmers' Organizations or contracted producers model.

During the years 2006-2010, besides formation of Contracted Farmers' Organizations, main honeybee production centers, establishment of equipment workshops, and increasing of present capacities, better packing systems for the honey products should be introduced and these products should be taken to larger markets (both outside the Region and abroad) in accordance with the interests of the farmers producing these products.

Start-Finish Date **:** 2001-2010

Implementing Authority **:** Ministry of Agriculture and Rural Affairs
Universities
Private Sector

Implementation Area **:** Bayburt, Gümüşhane, Erzincan, Bitlis, Van, Bingöl and Kars

X. Name of Project: Turkey Raising Development Project

Justification: In order to diversify the animal products, turkey raising must also be developed in the Region, particularly to benefit from the existing natural structure. Thus, at least 20 turkey breeding farms, each of which with a minimum capacity of 5000 heads, are proposed in the provinces of Bingöl, Ağrı, Ardahan, Kars and Muş. Feeds for them will be purchased in wholesale; while the need for the the slaughterhouses will primarily be met by renting.

Start-Finish Date **:** 2001-2005

Implementation Area **:** Muş, Bingöl, Ağrı, Ardahan and Kars

Implementation Authority **:** Ministry of Agricultural and Rural Affairs
Universities
Private Sector

2.2.4. Fisheries

2.2.4.1. Summary of the Current Situation

The EAP Region has a big potential for fishery due to the existence of numerous natural and artificial lakes, and a number of rivers emanating from the Region. In addition to natural production through capture fishing, artificial production is also performed in the Region through cultivation of trout and carp.

The share of fresh water fishing of the EAP Region in Turkey was about 43 % during the 1996-1998 period. This quantity is very high, when compared with the population of the Region, but if the areas of water resources are considered, the production is insufficient. Although there are many economic fish species in the Region, only a small number of species is captured. Moreover, the fish species harmony in the regional waters is not ideal, from the viewpoint of the fishery biology. There is a lack of knowledge about fishing. Some sources are benefited below capacity, whereas others are fished severely.

The amount of annual artificial fish production in the Eastern Anatolia in the overall Turkish production shows a decreasing trend. However, this is a result of the higher production levels of the other regions. Especially the rapid development of expensive sea fishes such as gilt-head bream and bass at the Aegean shores have an important role in the decrease in the share of the Region.

If the problems of communication, finance, cold storage facilities, breeding sheds and provision of fish spawn in the EAP Region are solved, an important development in the fishery sector can be observed. However, the main input to the active farms in the Region is the fish feed, which is met from the fish feed being produced in the factories located in the Aegean and Marmara Regions, and in Elazığ, and Erzurum. In order to provide quality feed at appropriate price, regional factories must be given priority and encouraged in that direction. Appropriate feed must be produced according to age and species in existing and planned feed plants in the EAP Region.

2.2.4.2. Project Proposals

I. Name of Project: Identification and Development of Stocks of Fishery in the Eastern Anatolia Region and Supporting Rational Fishing

Justification: Basic limnological research and studies pertaining to the identification of stocks of fishery in most of the natural lakes, dam lakes, ponds and small dam lakes have not been carried out in the EAP Region.

During the first period of the Master Plan (2001-2005), the water stocks will be identified along with the identification of most appropriate current and new fish species with economic value through limnological research. Moreover, the fishermen will be trained on the new water resources, economic fishing techniques, tools and fishing seasons.

During the 2006-2020 period of the Master Plan, new fish species appropriate to the Region will be introduced in order to enrich the water

resources following the results of the limnological research, fishery services will be organized on the basis of river basins and water resources, along with pointing out places for sport fishing and giving importance to rafting.

The project will be under the joint responsibility of the Ministry of Agriculture and Rural Affairs and the General Directorate of State Hydraulic Works, and it will be undertaken in a way to cover all the water resources of the Region.

Start-Finish Date **:** 2001-2010

Implementing Authority **:** Ministry of Agriculture and Rural Affairs
General Directorate of State Hydraulic Works

Implementation Area **:** All Sub-regions

II. Name of Project: Caged Fishing

Justification: The Region has a number of natural lakes and dam lakes that are suitable for caged water fishing. Caged water fishing presents a great potential in the development of culture fishing in the Region. Raising trout for 6 months in the lakes (October-March) should be popularized. Average of 30-day-old fish spawn, left in caged water and fed intensively, produces fish that can be marketed in a short period of time.

Project envisages establishment of a 10 tons/year capacity caged fishery plant and an annual production of 38,600 tons trout, taking into consideration 1 % of the total area of the lakes, dam lakes, and ponds for the caged water fishing.

The potential number of caged trout fishing plants by water basins, the quantity of fish production, the employment generation capacity and the annual income values are given in the **Table 2.2.6**.

Table 2.2.6: Projection of Caged Trout Raising in Water Basins of the EAP Region

Water Basin	Number of Plants with a Yield Capacity of 10 Tons/Year	Total Annual Production Tons/Year	Employment (Persons)	Income * (in the Year 2000 TL. Prices)
Euphrates	2,707	27,670	8,121	27,070 billion
Tigris	191	1,910	573	1,910 billion
Kura-Aras	578	5,780	1,734	5,780 billion
Van Lake	388	3,880	1,164	3,880 billion
EAP Total	**3,864**	**38,640**	**11,592**	**38,640 billion**

* Based on the prices of the year 2000, producers' income is taken as 1,000,000 TL for 1 kg of trout.

Project will contribute to the socio-economic development of the Region with its employment capacity of 10,000 people and income generation of 38,640 billion TL.

Taking into account the total investment cost of the project, 38640 billion TL per establishment, the plants could payback their costs within a year.

However, to get the project implemented, proper credit incentives must be provided to the producers to meet the initial investment costs.

Project is envisaged to start particularly in the Euphrates Water Basin area during the 2001-2005 period, and to extend to the other water basins thereafter.

Start-Finish Date **:** 2001-2020

Implementing Authority **:** Private Enterprises

Implementation Area **:** All Sub-regions

III. Name of Project: Pond Fishing

Justification: The quantity of fish to be produced through pond fishing by taking the advantage of five rivers in the scope of the EAP, is calculated by taking 10 % of the flow values of the rivers. The calculations have been undertaken only for trout, as the water quality of rivers in the Eastern Anatolia Region is much more appropriate to their cultivation. In selecting the project locations, factors such as land sliding, flood, overflow, and every kind of pollution; seasonal reduction of water flow or drying of rivers must be considered. It has been estimated that 901 tons of fish per year will be harvested from river basins of the EAP Region.

Taking the project prepared for family enterprises with a 20 tons/year capacity by the Ministry of Agriculture and Rural Affairs and the General Directorate of Agricultural Development as a basis, it is possible to construct 50 such farms in the Region, depending on the quantity of production.

Investment cost per establishment will be 3 billion 200 million TL which means a total investment cost of 160 billion TL.

The potential number of pond trout fishing plants by water basins, the quantity of fish production, the employment generation capacity and the annual income values are given in the **Table 2.2.7**.

Table 2.2.7. Projection of Fish Raising in Water Basins of the EAP

Basins	Number of Plants with a Yield Capacity of 10 Tons/Year	Total Annual Production Tons/Year	Employment (Persons)	Income * (The Year 2000 TL. Prices)
Euphrates	23	443	102	443 billion
Tigris	18	328	75	328 billion
Çoruh	3	49	12	49 billion
Van Gölü	2	31	7	31 billion
Kura-Aras	4	50	13	50 billion
EAP Total	**50**	**901**	**210**	**901 billion**

* Based on the prices of the year 2000, producers would earn 1,000,000 TL/ kg.

Project is envisaged to start first in the Euphrates Water Basin area during the 2001-2005 period, with credit support to the producers.

Start-Finish Date **:** 2001-2020

Implementing Authority **:** Private Sector

Implementation area **:** All Sub-regions

IV. Name of Project: Production of Fish Spawn

Justification: Depending on the prepared scenarios, the target to reap 150 ton per year carp and 40 tons per year trout through aforementioned projects of cage or closed water fishing, and rearing of fish in catchment areas of rivers seems to be possible. The most critical factor for reaching this production volume for closed water/caged fish farming and catchment area or pond fish farming is to meet the spawn requirement.

According to 1997 statistics for Turkey in general, there are 150 million unit/year of annual trout and one million unit/year of annual carp spawn production in Turkey.

It is widely accepted that, carp is marketed when it achieves the weight of 1 kg and trout is marketed when it achieves the weight of 200 grams. Accordingly, the annual requirement of the Eastern Anatolia Project Region is 155 million carp spawn and 200 million trout spawn. If we consider that about 10 % of spawn are lost before reaching a specific age, 218 million of carp and 170 millions of trout spawn are needed for the caged and pond fishing planned in the EAP Region.

A small number of establishments deal with trout spawn production in the EAP Region. The most important of which is established by the 9th Regional Directorate of the SHW in Elazığ near the Keban Dam Lake.

This establishment has an annual capacity of 8 million spawn. However, it is now producing only 6 million spawn annually. Considering the requirement for the caged and pond fishing is 218 million per year of trout and 170 million of carp spawn, there is a need for 11 trout spawn and 9 carp spawn production plants, each with an annual capacity of 20 million spawn.

It is projected that spawn producing centers can be established by giving priority to Elazığ, Erzurum and Van. Parallel to the increasing demand for spawn, the application will be enlarged in the plan period (2001-2020).

Start-Finish Date : 2001-2020

Implementation Authority : Ministry of Agriculture and Rural Affairs
General Directorate of State Hydraulic Works
Private Sector

Implementation Area : Erzurum, Elazığ and Van

V. Name of Project: Processing Industry for Fishery

Justification: According to the figures given by the State Institute of Statistics (SIS) in 1997, 27,013 tons of fish was reaped through fresh water fish capturing (53.5 % of the fresh water capture in Turkey), and 1,124 tons from fresh water farming (2.5 % of the total artificial production of Turkey), adding up to a total production of 28,137 tons of fishery in the EAP Region.

It is not possible to reach to the desired level of water product consumption just with the fresh consumption. Thus, besides fresh consumption of the fish caught, a part of the fish will be processed by the fishery processing plant to be established in the Region for supplying the consumers in the Region and the country.

Small scale plants for the production of fish powder will be established, in order to utilize the waste of processed and fresh fish consumption. Besides fish powder, the factory will also produce meat powder, dried powdered blood and meat bone powder obtained from the animal raw materials, providing a new source of employment for the regional population. Considering that the water products production target of the EAP is realized and if we accept that in order to approach the international standards 20 % of the production must be consumed fresh, 22 % as frozen, 14 % processed as canned, 29 % used in Industry, and 15 % in other areas, then there is a need for the establishment of a large number of fish preservation and processing in the EAP Region.

Three centers are envisaged for the establishment of processing industry in the scope of the EAP. Taking the amount and type of fish produced in

the Region into account, it is planned to establish carp processing plant in Elazığ and its surrounding, trout processing plant in Erzurum and pearl mullet processing plant in Van. The establishment, during the periods when they do not process special fish, can also process other fish products and shelled water animals. Since these processing units can also process snails and frogs, depending on the season and following the rules, will increase the productivity and revenue of these plants.

The plant planned for Elazığ should be designed for "Chilling and Freezing" and "Ready Made Food Products." One part of carp after cold treatment will be processed and the other will be frozen. These products will be transported to other provinces of the Region and to the other regions during the months of lower production, generating an economic value. The muscles of the dried fish will be minced to produce fish balls, croquette and souses.

In the trout processing plant to be established in Erzurum, the fish will be both frozen fresh and processed by fuming. Moreover, the processing unit should also support the production of ready-made products such as frozen trout fillets, produce croquets, etc.

One processing plant, for processing 15,000 tons of pearl mullet caught annually in Van, will be established in this province. Via this processing unit, on the one hand, the pearl mullet will be popularized outside Van, and on the other hand, the fish will be utilised more properly during the rush periods. Under the framework of this establishment, red caviar from the eggs of pearl mullet, croquette, both simple and crumbled with bread, fish meatballs and a number of other fish products will be produced. At the caviar-processing unit, carp eggs from Elazığ plant will also be used. The high level of demand for "Carp Caviar" in the domestic and foreign markets supports the feasibility of this scenario.

Since the body parts such as head, internal organs, skeleton, skin, and the rest will mainly be obtained from pearl mullet from Van and fish caught through caged fishing in Karakaya and Keban Dam Lakes, it is planned that the processing plants in these locations will also have an additional unit for the production of fish powder and fish oil.

Establishment of fisheries processing industry will start during the 2001-2005 period, depending on the existing and increasing production volumes. What is targeted is to extend this application to other places throughout the plan period.

It is naturally envisaged that the private sector will be provided with the necessary incentives and assistance to cover the investment cost of the facilities.

Start-Finish Date **:** 2001-2020

Implementing Authority **:** Private Sector

Implementation Area **:** Erzurum, Elazığ, Van

2.2.5. EAP Agricultural Research and Farmers' Training Services

Though the natural conditions of the Region bring a certain degree of limitation upon the agricultural production potential, another important factor leading to low productivity, in both crop production and animal husbandry, is the use of insufficient traditional techniques by the regional farmers.

Economic utilization of the existing agricultural production potential of the Region will be possible by increasing the yield per land in crop production and productivity per animal in the animal husbandry.

Under this objective, it is important to identify products most appropriate for the Region and sub-regions, suitable plant and animal types along with identification of varieties and breeds, evaluation of their genetic potential, and their exploitation in most appropriate way by taking into consideration of poor agricultural inputs such as quality, seed, fertilizer, mechanization, agricultural chemicals and quality animal feed, etc., all of which is needed to be provided at the best suitable level.

In that context, It is of great importance, that all the relevant data should be identified by agricultural research which is carried out for application, that these information should be transferred to the farmers, and that the utilization of the state of the art agricultural technologies in the Region should be ensured.

As is known, the agricultural research and publication activities are under the responsibility of the Ministry of Agriculture and Rural Affairs and these services are not being provided to the Region effectively. This is mainly because the personnel working in the research and publication activities are not adequate in terms of quality and quantity, in addition to the instability in the personnel structure. Given its current structure and approach, the Ministry under consideration is not expected to bring a solution to this problem.

Project Proposal

I. Name of Project : Project Package for EAP Agricultural Research and Development

Justification: It will be beneficial to strengthen Agriculture Faculties in the present universities and integrate them with their respective region by providing finance to them on the basis of "Agricultural Research and Agricultural Publications Project Packages" that would explore practical ways to train the farmers and solve their problems effectively. Moreover, this approach

will contribute very much to performing such services that the Ministry could not provide effectively.

In this context, it is envisaged that the "Agricultural Research and Development Project Package," prepared by the Agriculture Faculty of Atatürk University in the Erzurum Sub-region, the Agriculture Faculty of Fırat University in the Malatya Sub-region, and the Agriculture Faculty of Yüzüncü Yıl University in the Van Sub-region by obtaining the cooperation of the Ministry of Agriculture, should be implemented under the supervision of the State Planning Organization (SPO), in order to avoid duplications created

Start-Finish Date	**:** 2001-2010
Implementing Authority	**:** Agriculture Faculty of Atatürk University Agriculture Faculty of Fırat University Agriculture Faculty of 100. Yıl University
Implementation Area	**:** All Sub-regions
Source of Finance	**:** State Planning Organization

2.2.6. Forestry

2.2.6.1. Summary of the Current Situation

About 7.7 % of the national forests are in the EAP Region. 71.7 % of the regional forests is poor yielding, out of which 24.3 % is small forests and 75.7 % is fuel wood forests in quality. (**Figure 2.2.1**).

Distribution of forest lands by the provinces is not balanced either. While the provincial surface area covered by forest is 29.4, 23.8 and 26.7 %, respectively in Bingöl, Gümüşhane and Tunceli; this ratio is 0.84 % in Ağrı and 0.04 % in Iğdır (the General Directorate of Forest, 1998).

The ownership of regional forests has not been defined fully and guaranteed legally. This situation is affecting the forestry activities and the people-forestry relationships in a negative way. While 68 % of the national forests in general has been defined and land registry process has been completed, only 6 % of the forests has been defined and subjected to land registry in the EAP Region by the end of 1998. Low level of completion of land registry creates bottlenecks in the activities regarding the reforestation, erosion control, improvement of pastures and establishment of energy forests.

Although the duration of a large number of forestry management plans has ended in 1992, inventory of forests has not been completed yet, and the forestery management is being done with advance reports. The forest development plan need to be revised, with an emphasis on the determination of the quality, quantity and growth of forests. As the regional forests are subject to destruction, the forests in the provinces within the scope of the EAP are needed to be administered using modern techniques and inventories need to be completed using infrared air photography, separating oak types for necessary management planning.

There are big water basins in the scope of the EAP, like Euphrates Basin, Van Lake Basin and Aras Basin. Activities for controlling erosion and overflow in these water basins and the necessary reforestation and erosion control activities for conservation of economic life of the dams, are not performed at a sufficient level. In addition to the above mentioned benefits, reforestation work in the Region will also contribute to the regulation of general water production of water basins and to meeting the demand for wood as fuel. Only 8 % of the potential forest area in the Region has been reforested up to date.

Firewood production of the Region should be increased, and poplar sowing should be encouraged, which will become a source of additional income to the villagers.

78 % of energy forests in the scope of the EAP are poor quality forests. Rehabilitation, improvement, conservation and enlargement of the poor quality energy forests, will not only increase the employment opportunities in the Region but also contribute to the solution of the firewood problem of the Region.

Region is rich in biological varieties. Local protection and sustainability of the biological variety, that is rich in terms flora and fauna, will contribute a lot to the reforestation activities to be undertaken in the Region in the future. In this context, 1 National Park, 1 Natural Park, 1 Nature Conservation Area and 14 Wild Life Protection

Areas should be protected and increased in terms of number as well as area. This would contribute to the hunting tourism in the Region as well (**Figure 2.2.2**).

The Region has a total number of 13 rest and recreation areas (280 hectares) within the forests. Widening of recreational spots of the Region and development of such facilities and services at places near the cities gaining a position of attraction center (like Erzurum, Malatya and Van) and condensation of forests in such locations constitute another dimension along which the forestry should be developed.

The Region is rich in bushes, thorny herbs and mushrooms. Evaluation of these under-forest products and using forest areas for multiple objectives, would provide the forest villagers with products that have economic value other than wood raw material. In that context, it is necessary to create a healthy inventory of the under-forest products and to evaluate these resources with appropriate methods by paying attention to sustainability.

2.2.6.2. Project Proposals

I Name of Project: Forest Demarcation and Land Registry Project

Justification: The total forest area demarcated and registered in overall Turkey by 1998 is 14,089,145 hectares, forming 68 % of the forestland in Turkey. Whereas, the EAP Region has 1,723,558 hectares of forestland and the land that has been demarcated and registered is only 102,223 hectares, forming 6 % of the total.

Low level of completion of land registry creates bottlenecks in the activities regarding the reforestation, erosion control, improvement of pastures and establishment of energy forests. Land registry work should be undertaken urgently by employing enough number of land registry technicians, in order to eliminate disparities among the regions in this field and pursue reforestation activities in an organized way.

However, it is necessary to purchase some services from the private sector in order to realize the application in a short period of time, considering the shortages of public personnel in the Region.

The forest services will be given in more productive way, forest–public relation will improve, problems pertaining to the property rights will be minimized and legal forestry wealth will be identified as a result of the realization of the project.

Start-Finish Date **:** 2001-2020

Implementing Authority **:** Ministry of Forestry

Implementation Area **:** All sub-regions of the project application area with a priority given to the provinces of Bingöl, Bitlis, Elazığ, Erzincan, Gümüşhane, Hakkari, Malatya and Tunceli.

II. Name of Project: Project for Reforestation, Erosion Control and Pasture Improvement in EAP Region

Justification: About ¾ of the soil in the scope of the EAP is facing various kinds and degrees of soil erosion. Forestation plans of Region must be given special importance. Erosion control and pasture improvement activities should be given priority in the water catchment basins of the dams in order to increase economic life of the dams in the area. The reforestation, erosion control and pasture improvement activities carried out in the Region are of great importance in terms of meeting the fuel wood need, along with the other functions such as regulating the general water production of the water basin, controlling soil erosion, opening new employment opportunities to the local people and developing the animal husbandry.

According to the reforestation macro plan studies, the areas that can be socially and technically reforested, forms 5,412,159 hectares of the land in Turkey. The reforestation work done in Turkey up to date amounts to 1,727,449 hectares (Konukçu, 1999). Whereas, the EAP Region has 623,334 hectares of land with reforestation potential, out of which reforestation activities are completed only over 49,145 hectares of land (AGM.1998).

Reforestation, erosion control, and pasture improvement activities will be a source of employment for the rural workforce of the Region. In the reforestation with labor-intensive techniques, the reforestation over one hectare of land needs 90 work days, one hectare of pasture improvement needs of 15 work days and control of erosion in one hectare needs 140 work days (ANON, 1998). Considering these figures, this project will be able to reduce the employment problem in the Region.

Start-Finish Date **:** 2001-2020

Implementing Authority **:** Ministry of Forestry

Implementing Area **:** Though all the provinces are in the scope of the project: priority will be given to Ağrı, Elazığ, Erzincan, Gümüşhane, Kars, Malatya and Tunceli in reforestation and to Erzurum, Malatya and Tunceli in erosion control activities.

III. Name of Project: Project for Renovation of the EAP Forest Management Plans

Justification: Total forest area of the provinces in the scope of the EAP is 1,723,588 hectares. The duration of most of the management plans for reforestation of these forests have finished in 1992. However, due to various reasons, new inventories of these forests have not been completed, and the forestry management is being done with preliminary reports.

The forest management plans need to be revised, with an emphasis on the determination of the quality, quantity and growth of forests. As the regional forests are subject to destruction, the forests in the provinces within the scope of the EAP are needed to be administered using modern techniques and inventories need to be completed using infrared air photography, separating oak types for necessary management planning..

Start-Finish Date **:** 2001-2005

Implementing Authority **:** Ministry of Forestry

Implementing Area **:** All Sub-regions

IV. Name of Project: Forest–Public Relationship and Establishment of Energy Forests

Justification: The relationship of people living in forests and neighboring areas with surrounding forests has two negativities. One of them is continuous heavy grazing of animals on surrounding forests by villagers, and the grazing of newly sprouting trees, which is widespread in the Region.

Using the forest wood without permission for heating purposes as fire wood, especially by villagers living in and around the forests, resulting in their increased destruction can be counted as the second negative effect of the people on forests.

About 78 % (974,892 hectares) of energy forests in the EAP Region are poor in quality and reducing with every passing day. In order to stop this trend, it is necessary that the local energy forests be improved, protected and new energy forests be established and the right to benefit from these energy forests be given to local villagers under the control of the state through the "Rural Cutting Order System" which is the objective of the project.

Moreover, via the improvement and renovation of the local forests, the project will increase the employment and income opportunities for the local people and also satisfy the need for the firewood.

Start-Finish Date **:** 2001-2020

Implementing Authority **:** Ministry of Forestry
ORKÖY

Implementation Area **:** All Sub-regions

V. Name of Project: EAP Under-Forest Products Project

Justification: It is possible to introduce new products, other than using the forests for fire wood, with an economical value and income generating capacity through the evaluation of under-forest products and multiple use of forest areas by the villagers living in and around the forests. This is also a good way of creating positive effects in terms of forestry protection. Drogue is obtained from under-forest plants in raw form and most of it is exported abroad. These results in reaping of lower benefits. It is important to conduct studies for the development of processed drogue (like essential alkaloids) instead of raw drogue. People try to obtain income from low priced raw drogue and this leads to over-utilization of the nature, which is not consistent with the "sustainability" principle in the exploitation of the natural resources.

The aim of the Project is; Making inventory of the under-forest products to define their economic value, collecting plants from the nature in the most appropriate form, encouraging their culture when it is necessary, and provision of credit in this respect, and conducting marketing research.

Implementation of project will result in provision of income and employment opportunity to the villagers, through products other than firewood. Moreover, culture of some plants will be encouraged, ensuring the acquisition of endemic plants.

Start-Finish Date **:** 2001-2010

Implementing Authorities **:** Ministry of Forestry
Ministry of Agriculture and Rural Affairs
ORKÖY

Implementation Area **:** All Sub-regions

2.2.7. Agricultural Projects Under Feasibility Study

In addition to the project proposals given in the context of the agricultural sector of the EAP Master Plan, the list of the projects for which feasibility studies are carried out in the Region are given in the **Table 2.2.8**.

Table 2.2.8: Agricultural Projects Under Feasibility Study

Location of Proposed Project	Feasibility Studies of the Agricultural Sector
ERZURUM SUB-REGION	
Ağrı	- Green House Farming
Ardahan	- Caged (Closed Water) Fish Farming - Cattle Raising
Bayburt	- Cattle Raising
Erzincan	- Production of Vegetable Seedlings
Erzurum	- Potato Seed Production - Production of Seed of Leguminous Fodder and Forage Crops
Iğdır	- Production of Fruit Saplings
Gümüşhane	- Production of Fruit Saplings
Kars	- Milk Cattle Raising - Production of Seed for Fodder and Forage Crops - Production of Mixed Feed
MALATYA SUB-REGION	
Bingöl	- Sheep and Goat Raising
Tunceli	- Fresh Water Fish Farming
VAN SUB-REGION	
Van	- Cultured Fish Farming - Large Scale Greenhouse Farming

Table 2.2.9: Strategies to be Implemented in Soil and Water Resources Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Water erosion	Cooperation among related organizations to identify and apply the necessary measures	Preparing plan and conducting studies pertaining to the administration of pastures	Pastures improvement work	All sub-regions
	Soil conservation practices on farm lands under cultivation and preventing cultivation on class V, VI, and VII lands	Forestation, popularization of fodder and forage crops cultivation	Monitoring of implementations	
Wind erosion	Publication activities guiding farmers	Extending the education of farmers	Extending the education of farmers	
Stone problem	Necessary technical and crop measurements	Farmers education or training	Continuation of implementation practices	Iğdır (Aralık)
	Accelerating the stone cleaning project	Extending the stone cleaning project, ensuring participation of farmers to application	Continuation of implementation practices	All sub-regions (Giving priority to Erzurum, Kars, Iğdır, Ağrı, and Van)
Drainage and salinity	Application of cleaning water and improvement materials	Implementation of irrigation projects along with surface and underground drainage system	Continuation of implementation practices	All sub-regions (Giving priority to Muş, Iğdır, Erzincan)
	Informing farmers about agricultural techniques and agricultural measures	Extending the education of farmers	Extending the education of farmers	All sub-regions

Table 2.2.9: Strategies to be Implemented in Soil and Water Resources Sector (Continued)

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Agricultural Profile	Determination of optimum farm size	Extending land aggregation work	Legal measurements to stop excessive land division	All sub-regions
	Development of relationship among respective organizations, training of qualified staff and allocation of adequate resources	Supporting the formation of cooperatives	Supporting of the formation of cooperatives	
Misuse of agricultural lands	Development of plans for land use work in catchment or sub catchment areas	Implementation of infrastructure work and incentive applications to realise planning decisions	Continuation of implementation practices	All sub-regions
Unstable flow regime in the rivers	Plantation of river catchment areas, cleaning and improving river beds	Construction of dams and ponds	Continuation of implementation practices	All sub-regions
Development of water resources and management	Increasing irrigation areas	Ensuring farmers participation and establishment of irrigation associations and cooperatives	Continuation of implementation practices	All sub-regions
	Training of farmers about water consumption and effective use of water	Formation of information base for the conservation of water resources and their quality	Continuation of implementation practices	
	Training villagers about the protection of water resources in the process of agricultural activities	Informing farmers	Continuation of farmers education	

Table 2.2.10: Strategies to be Implemented in Crop Production Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Using agricultural land in accordance with "Land Use Capability Class"	Identification of V-VI-and VII class soils not suitable for cereal cultivation and pilot work by undertaking steps for conversion to artificial and natural pastures in these lands	Establishing of artificial and natural pastures by conversion of lands not suitable for cereal cultivation and providing support to farmers so that they may not have loss in income	Taking lands not suitable for cereal cultivation farming, to marginal lands	Erzurum and Van sub-regions
Farm sizes	Concentration on title-deed and cadastral works	Completion of title-deed and cadastral works		
	Pointing out of lands to be grouped starting from irrigated lands and the lands to be irrigated and implementation of basic work	Implementation of "grouping of land" project	Extending the land aggregation practice in the region in general	All sub-regions
		Legislative arrangements to prevent division of agricultural lands into small parts		
Utilization of land potential of the region	Marking those areas with precipitation over 450 mm engaged in dry agriculture and engaging in demonstrative work with the aim of introducing chickpea, lentils and barley+vetch in the rotation schemes being undertaken in the area	Spreading the practices of utilization of the fallow lands	Observing the implementations and taking necessary precautions	All sub-regions

Table 2.2.10: Strategies to be Implemented in Crop Production Sector (Continued)

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Crop pattern and variety	Research and popularization studies and work with aim for introduction of fodder and forage crops (like Sudan grass, sorghum and maize) in three years rotation being undertaken in sugar beet production areas	Popularization of farmer practices	Follow up and carrying out necessary adaptations	Areas with appropriate agro ecological conditions
	Encouragement and popularization for potato Seed production	Continuation of practices	Continuation of practices	Erzurum, Bayburt, Erzincan
	Performing agricultural research studies related to new fruits, vegetables and medicinal varieties in micro climate areas of the region	Concentration of agricultural publication services under this crop group	Popularization of farmer applications	All sub-regions
Low Yield	Research on high yielding diseases resistant varieties suitable for agro ecological conditions of the region and extending the demonstrative work	Continuation of research and applications	Continuation of research and applications	All sub-regions
	Extension of research and publication services on crop cultivation techniques such as soil preparation, sowing methods, seed use, fertilization, plant protection	Continuation of agricultural research and publication services	Continuation of agricultural research and publication services	All sub-regions

Table 2.2.10: Strategies to be Implemented in Crop Production (Continued)

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
	Encouragement and improvement of use of agricultural input such as fertilizer, machinery	Extending support and applications	Continuation practices	All sub-regions
	Extending the introductory works and implementation works for the use of hybrid seed in vegetable, fodder and some industrial crops	Provision of alternative fuel in place of animal dung to use it in farming	Continuation of practices	All sub-regions
		Continuation of practices	Continuation of works	All sub-regions
	Concentration of publication services and research for cultivation of vegetables under tunnels in ecologically suitable areas	Popularization of farmer practices	Continuation of practices	All sub-regions
Management and reclaiming of pastures and meadows	Studies and demonstrative works pertaining to amendment and cultivation techniques of pastures and meadows	Continuation of practices	Continuation of practices	All sub-regions
	Pointing out of lands with potential for converting into pastures and meadows	Reclaiming of pasture and meadows and establishments	Continuation practices	All sub-regions
	Preparation of pasture management plan	Implementation of plans	Implementation of plans	
	Revision of pasture law as including recurred sanction	Getting law implemented	Continuation of practices	

Table 2.2.10: Strategies to be Implemented in Crop Production (Continued)

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Agricultural research and publication services	Concentration of demonstration and practices under farmers conditions	Extending the study by giving priority to pastures, meadows, fodder and forage crops	Amendment of pastures, meadows, and establishment of artificial pastures	All sub-regions
	Establishing link between university-research-publication-farmers in agricultural publication services	Providing participation of farmers associations and private sector organizations undertaking investment into agricultural publications	Implementation of plans Implementation of law	All sub-regions
	Strengthening of agricultural research and publications institutions with trained personnel, tools, equipment and finance	Continuation of implementation	Continuation of implementation	All sub-regions
Organizing the farmers	Taking legal, economic administrative steps for popularization of cooperatives, irrigation and producers associations and similar organizations	Popularization of cooperative formation Getting farmers associations and cooperatives participate in agricultural publication services to members	Continuation of practices	All sub-regions
	Giving priority to members of cooperatives and associations in credits and incentives	Getting farmers associations and cooperatives participate in agricultural publication services to members	Follow up	

Table 2.2.10: Strategies to be Implemented in Crop Production (Continued)

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Marketing	Preparation of necessary infrastructure (storing, processing, transportation facilities towards marketing) for marketing organizations, where the farmers association will be dominated Development and implementation of project which will supply marketing infrastructure by contractual production model	Extending practice	Popularization of cooperative formation Providing cooperatives and farmers associations' participation to agricultural publication services, offered to members Popularization of practices	All sub-regions

Table 2.2.11: Strategies to be Implemented in Animal Husbandry Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Natural conditions	Implementation of models appropriate to natural conditions in some of the pilot provinces	Descending bases of these models to micro level	Observations of implementations, eradication of deficiencies, and considering the model in encouragement	All sub-regions
Market	Integrating animal farms and manufacturing industry based on animal husbandry	Taking necessary steps for arrangement and participation of capital from outside the region in this integrated model	Under the framework of this integration, commissioning of farmers associations and their spreading	All sub-regions
Conditions of pastures and meadows	With aim of producing quality feed to eradicate roughage deficiency and effective use of pastures and meadows in animal feeding, getting rapid implementation of pasture law, province wise sowing of quality fodder and forage grasses and conservation of these with proper methods and spreading afterwards	Continuation of methodology for eradicating roughage deficiency, for provision of concentrated feed at cheaper rates providing integration between farmer and factories.	Removal of deficiencies by mean of observing implementations	All sub-regions
Provision of input	Increase of feed production at farms along with animal productivity, at appropriate places determining the implementation for lowering of the costs of sheds (like open farms), tax reduction in the raw material of concentrated feed excluding cereals, encouraging formation of bee keepers unions	Increasing mechanization to reduce labor, incentive credits for production instead of infrastructure, creation of hatcheries in the poultry farming	Provision of roughage producing facility to every farmer (especially cattle farmer) at his own farm, increasing yield of animals and reducing share of inputs cost on vitality of animals,	All sub-regions

Table 2.2.11: Strategies to be Implemented in Animal Husbandry Sector (Continued)

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Organizational structure	Reorganization of the Ministry, distribution of veterinary doctors and technicians to provinces according to their needs; reordering the artificial insemination activities, activating animal health regulatory police	Taking necessary steps for the transfer of artificial insemination and vaccination services to private sector, establishment of test station for good quality sperm production	Evaluation of results and eradication of deficiencies	All sub provinces
Education and publication	Encouraging educated people for production and so providing model practices and improving visual education, increasing the activities of education and publication through the collaboration of public institutions and universities. creation of producer- industry contract model.	Extending activities in all sub-regions	Provision of scientific research results to farmers	All sub-regions
Race breeding	Obtaining culture or hybrid calf and encouraging yield obtained from these races	Making yield control, implementation of selection, creation of farmers associations	Creation of pilot units for undertaking of biotechnological studies	Elazığ, Malatya, Erzurum, Erzincan, Kars and Van
Research and development	Bringing present research institutions into more active form, aiding universities with additional budget in this context	Using the correspondent budget of concerned Research institutions and Universities for the development of Regional Animal Husbandry only	Directing especially the integrated companies to the research activities	Elazığ, Erzurum, Kars and Van.

Table 2.2.11: Strategies to be Implemented in Animal Husbandry Sector (Continued)

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Contractual animal husbandry	Bringing model in attractive form in pilot areas, increasing the effectiveness of the model in integrated animal husbandry enterprises	Popularization of model for other types of animal husbandry as well	Organizing producers-farmers associations in the contractual model	Elazığ, Malatya, Erzurum, Erzincan, Kars, Van and Muş
Problem of cold chain	Integration of milk factories and slaughters with farmers	Provision of national and international partnership to integrated model in the province	Observation of results	Elazığ, Malatya, Erzurum, Erzincan, Kars and Van
Scale Problem	Provision of credits and incentives for conversion of present enterprises in to medium-scale farms	Observations of results	Directing the credits and incentives to large scale enterprises	All sub-regions
Disease control problem	Control of animal movements, providing vaccination in an effective form, improving checking and prescription laboratories to be effective	Encouraging private sector for checking and treatment of the diseases	Extending private sector application	All sub-regions
Terror problem	Eradication of terror problem	Rendering pastures and meadows to use	Legal measures for the use of pasture lands,	All sub-regions.

Table 2.2.12: Strategies to be Implemented in Fishery Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Conservation and management of water resources	Biology work of fishery and stock determination	Enriching appropriate places with appropriate new fish species	Continuation of species enrichment work	All the provinces with water resources
	Determining the resources to be opened for fishing, amount of fishing from these resources, appropriate fishing techniques and fishing season	Defining appropriate fish species, resources and stocks for sportive fishing, and development of places and policies for rafting, water skiing and under water sports in the area	Establishment of a unit at Ministry of Agriculture and Rural Affairs and formation of fishers associations	
	Training fishers in respect of fishing methods		Formation of publication and communication unit	
Development of cultured fishery	Identification and defining of appropriate water sources for pond and caged fishery and their places in sources			
	Aiding investments for improvement and development of present establishments	Converting the establishments with annual production of less than 10 tons to spawn production establishments		The provinces with present establishments
	Incentive measure for regional factories to produce fish feed, Training of staff in these factories (in-service seminars)	Establishment of new spawn producing enterprises	Establishing new spawn producing enterprises	Elazığ, Erzurum, and Van for new establishment
	Development of resources of mussel and a live fish feed	Making necessary arrangements for the employment of trained staff, formation of upper cooperative associations		

Table 2.2.12: Strategies to be Implemented in Fishery Sector (Continued)

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Fishery processing technology	Formation of producers cooperatives and associations (to provide hatcheries, eggs, spawn, and fish meal)	Establishing fishery preserving and processing facilities	Development of industry based on fishery	Elazığ, Erzurum, Van
	Arrangements of campaigns for introduction of products, incentive measures for installation of low capacity fish meal producing factories	Development of packing units in present feed factories		Elazığ, Erzurum
		Extension of present factories with fish processing units		
Finance	Controlled Credits	Under upper cooperative association, a financial unit, similar to Agricultural Credit Cooperatives or Tradesmen Security Cooperatives	Continuance of implementations	Van (firstly)
Institutional arrangement	Work to eradicate problems related with authority disorder in the institutional structure	Single responsible institution for the sector		
Marketing	Support to marketing cooperatives	Researching possibilities to increase export		
	Arrangement of campaigns in the region for the introduction of products	Formation of cold storage chains	Observation of implementations	Elazığ, Erzurum, Van
Wholesale markets	Establishment with possibilities of cold storage			

Table 2.2.13: Strategies to be Implemented in Forestry Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Conservation and management of forests	Defining priority areas for forest use and land use capability. Defining forest limits and executing land registry work	Extending the work of defining forest limits and land registry	Completion of defining forest limits work and land registry work	All sub-regions
	Preparation of forest management plans in the framework of priorities to be determined	Implementation according to management plan	Implementation according to management plan	
	Encouraging growth of poplar in the Region	Extending of poplar plantations		
	Preparing tree plantation plans by determining species	Improving energy forests		
		Widening of tree plantation areas and conservation of slopes near dams		
Erosion control	Improvement of pastures	Widening of pasture improvement work	Using foreign credits and continuation of implementations by getting participation of local people	Elazığ, Bingöl, Tunceli
	Preferring forest villagers in employment for forest work	Formation of forest villagers organizations for undertaking work in forests		

Table 2.2.13: Strategies to be Implemented in Forestry Sector (Continued)

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Forest- people relationship	Increasing resources of ORKÖY	Widening of credit programs to increase product variety in forest villages	Continuation of forest works	All sub-regions
	Researching the potentials for National Parks, Natural Parks, and Protection Areas Establishments	Extending of conservation areas and recreational areas	Transferring right of benefiting from energy forests to local people	All sub-regions
	Increasing rest and recreational places in the forests		Extending of conservation areas and recreational facilities	All sub-regions
	Making inventory of under forest products and evaluating their economic value			All sub-regions
Activities towards biologic variability and recreation	Marketing research for possibilities to market plant raw material and processed products	Provision of credits for culturing of forest plants when necessary	Incentive measures for product export and processing units	Erzurum, Van, Malatya, Elazığ
Utilization of under forest products	Training villagers to collect plants from the nature in the most appropriate ways	Controlled collection from the nature in the context of sustainable resource usage planning Continuation of villagers training	Extending the production of culture forest plants	All sub-regions

2.3. INDUSTRY

2.3.1. MANUFACTURING INDUSTRY

2.3.1. Manufacturing Industry

East Anatolia Development Strategy is basically established on three bases:

i) Increasing row material production as input for industry and improvement of agriculture, especially animal husbandry to create market,

ii) Improvement of industry to open market area for agriculture and to increase employment and especially manufacturing industry,

iii) Improvement of urban and rural infrastructure and human resources in order to improve industry and agriculture.

In the context of Regional conditions, the most difficult one to improve is manufacturing industry. In order to improve industry, plan suggests a site policy different from the place policies followed up to now. It foresees placing of industry on limited number of attraction centers (development poles), improvement of infrastructure in a way strengthening those development poles, foundation of an Economic Development Agency (EDA) or a similar organization in order to perform necessary activities to provide the entrepreneur in the Region with consultant service, to introduce Region's opportunities to investors from outside of the Region and to attract investors to the Region. It also projects reconstruction of incentive system by additional incitements in a way to create a difference in favor of the Region.

2.3.1.1. Summary of Current Situation

Other than exceptions, there exists no region in any country of the world that could be developed without improving its industry. There are mainly three reasons for being not developed without improving industry:

i) Value added created per employee in industry is several times greater than that of agriculture. Even in the countries like United States of America and Japan where the productivity levels in agriculture are high, the ratio of value added per capita in industry to value added per capita in agriculture is about 3. This ratio in our country is around 3-5 depending on years and economic situation. In East and Southeast, it is even more than those numbers.

ii) Industry increases agricultural production by creating demand or market to agricultural products. It stimulates agricultural input production directly by demanding products from agriculture sector to process. In addition, by the population it employs, it indirectly increases the demands on agricultural products. This relationship between industry and agriculture is two-sided.

iii) Industry makes the development of service sector possible by creating direct demands to accounting, legal works and services and indirect demands to consumer services in terms of population it employs. Industry and services are accompanied in both functional and placement points. In places other than tourism centers, development of neither producer services nor consumer services -except for marginal section- is possible before the

development of industry sector. Although services sector may be developed by intensifying of public services at a certain location for any reason, it is not sufficient for development of a region.

Although Malatya has made a progress in the last ten years, it is seen that industry sector in EAP Region has not developed to a sufficient level. According to the data of 1997, while the Region has 9.3 % of country population, it has only 2.2 % of the value added created in manufacturing industry in the country. In GAP Region, which has a population of similar size and is the least developed region of the country after East, this ratio is at a level around 4.1 %.

There are basically 4 reasons, which were discussed before, for industry of the Region, being not developed:

i) Negative location of Region relative to center of gravity of the national market,
ii) Remoteness of the Region to import and export gates and to primary exportation markets of Turkey,
iii) Shallowness of regional and local markets due to low level of income per capita and
iv) Limitations of regional row materials in variety and quantity.

Those negative factors limited the development of the industry in the past. Although some of those may be considered as data that cannot be changed much by manpower and policies, there exist some additional factors which obstruct or slow the development of industry down and whose effects can be decreased or eliminated by policies applied with resolution. These can be listed as follows:

- The basic infrastructure that will provide reliable development of economic activities in the Region such as transportation, communication, storage, electric and water distribution could not be developed to a sufficient level. Although some of the insufficient infrastructures, e.g. reliable electricity source, can be assured by the enterprises themselves, the additional cost due to this puts enterprises into a disadvantageous position in the competing market and cause the firms in this cost-sensitive market to make investments in other regions, where basic infrastructure exists.

- Besides physical infrastructure, social infrastructure is also insufficient. Social infrastructures did not sufficiently developed to meet the social and cultural needs of qualified personnel employed by industry such as engineers, administrators, technicians and their families.

- The policy of scattering underdeveloped industry on to places with an approach of “factory to everywhere” makes it difficult to form concentrations at certain locations where enterprises provide each other with externalities and gain competitive power.

- Since enough accumulation does not exist, enterprises could not be supplied with repair and maintenance services, which they continuously need or they are supplied with a relatively high prize.

- Although unemployment is widespread, finding staff at desired quality and quantity is a problem and it is not always easy to find other qualified staffs instead of the ones resigned from the work.

- Due to insufficient demands in the region, the spare parts needed by enterprises can only be supplied from outside of the Region. Enterprises are forced to have high stocks of spare parts which effects their competition power negatively.

- Regional entrepreneurs cannot get together and bring their financial powers together to establish optimal-size enterprises on their own due to partially cultural and social reasons.

- Small and middle enterprises, which are the characteristic type of enterprises in the Region and act on their own, encounter financial management, production, advertising and marketing problems. These enterprises are deprived of human resources that can analyze problems and produce solutions.

- The technical knowledge of local entrepreneurs is limited in identification of investment areas and new investments. Some part of new investments are done to the areas where presumably successful enterprises are occupied and by this way, partially idle capacities are created and inadequate sources are wasted.

- There exist shortcomings in knowledge transfer to who can make investment in the Region. The Region cannot sufficiently be introduced to investors from outer Regions.

- Government aids to investments are not fast and effective enough to make those investments attractive. There is lack of control to prevent unlawfulness and wasting resources in the system.

Terrorist actions, which have been experienced in different parts of the Region with different intensities for the last fifteen years and are taken under control today, of course, had also negative effects on the development of industry. But, taking terrorism under control eliminates only one of the negativities. Other negativities continue. Approaches and policies are needed to overcome at least some of those negativities and increase industrial investments.

In this framework, both following of a new policy in industrial location and applying to form an organization seem to be necessary. By placement point, a policy that aims to concentrate enterprises in a few centers of industry should be followed. By organizational point, an Economic Development Agency (EDA) or a similar organization should be founded.

2.3.1.2. Attraction Centers Policy

In the context of public resources which are expected to be very limited in short and medium terms, in order to solve infrastructure problems or to reach to an acceptable level of infrastructure standards which should be supplied by public sector and is needed in industry, in order to help enterprises in gaining competition power by overcoming critical demand thresholds to create sectors giving repair-maintenance and spare part services and in this way provide opportunity of having those type of services cheaper, in order to create economies of learning by maximizing informational contacts of employee, in order to form a labor market containing people with various skills to help enterprises in finding their desired staffs in a shorter time and in order to ensure social and cultural infrastructure demanded by key staff; application of a selective industry accumulation policy, in other words, an "attraction" centers policy seems to be necessary. Scattering industrial establishments –except for the ones whose location is based on row material resources- to places will increase the requirement of infrastructure to a level which can not be supplied by public easily, and will delay –and even make it impossible in some sub-regions the formation of "critical mass" necessary for creating and wide spreading of external economies increasing competitive power of enterprises. If attraction centers policy is implemented successfully, it will decrease the volume of migration from East to West in a large scale by being a filter in front of it.

Establishments of three attraction centers are envisaged. These are provinces of Erzurum and Van and the axis of Malatya-Elazığ. Those attraction centers are outstanding cities by current population and location tendencies which will probably continue in the foreseen future and at the same time they are the centers of functional sub-regions. Historically, those cities have also been important commercial and/or administrative centers due to their locations at main transportation channels mostly determined by topography or at their intersection points.

2.3.1.2.1.Characteristics of Attraction Centers and Their Surroundings

First Sub-Region Attraction Center: Erzurum

First Sub-Region is determined according to present situation data as follows:
Center: Erzurum City, Provinces: Ağrı, Erzincan, Erzurum, Gümüşhane, Kars, Muş, Ardahan, Bayburt and Iğdır. All those provinces are included in Regions with Development Priority.

In First Sub-Region, 28.8 % of GDP is created in agriculture, 8.5 % in industry and 62.7 % in services sector by current prizes of 1997. By the constant prizes of 1987, those ratios were 32.6 %, 9.7 % and 57.7 % in the respective order. According to the estimates made in the framework of this study, the ratio of agriculture was 70.6 %, the ratio of industry was 3.8 % and the ratio of services was 25.6 % in employment in 1997.

The transportation, communication, energy and labor possibilities owned by Erzurum in First Sub-Region and being close to some row materials provides the city with the qualification of a sub-regional center. Erzurum's economy is based on agriculture and animal husbandry and 55 % of its population lives in rural areas. In Erzurum Sub-Region,

especially Erzurum and secondarily Erzincan city should be supported as industry centers. Due to its large urban population, Erzurum has the capacity to be an important local market. Being close to Trabzon harbor and located at the intersection point of transportation channels creates a potential.

Besides rootless industries, industries which are located in Erzurum and Erzincan and based on local and regional row material and which can supply the local, regional, to a certain extent national and international markets in Middle Asia and have competition power should be supported.

The products produced in Erzurum in the context of manufacturing industry can be listed as; fodder, sugar, cement, flour, meat products, milk products, rubber shoe, boiler for central heating units, dye, thermopane, PVC joinery, nail and can.

Although economy of Erzincan located in First Sub-Region is mostly based on agriculture, erosion creates difficulties in both agriculture and industry, which is based on agriculture and animal husbandry, due to the effect of it in 70 % of Region's lands. Even though a total of 48 mining licenses exist on various mines in Erzincan, mine production is at a low level. In this province, necessary precautions should be taken especially for chrome production. In addition, in order to increase pearlite production, which has an important size of reserve, Governmental Aids should be supplied to use pearlite iron in structures in the Region. In this frame, besides the industry based on agriculture and animal husbandry, the industry based on mining should also be given importance in Erzincan. There are approximately 15 industrial establishments in Erzincan. The outstanding ones in those are sugar factory, fodder and flour factories and establishments producing underwear.

In Ağrı, which is located in First Sub-Region, 76.3 % of the active population works in agriculture sector. In 30 % of the provincial lands agriculture is performed. Economy of Ağrı is mostly based on agriculture and animal husbandry. Ağrı has 3.2 % of sheep/goats in Turkey and 14 % of milked sheep/goats in EAP Region. In spite of this potential, there exists no enterprise based on animal husbandry in Ağrı. The only significant industry establishment that this province has is the sugar factory.

Economy of Kars located in the First Sub-Region is also mostly based on animal husbandry and agriculture. 2 % of sheep/goats in Turkey are in this province. A very high quality beekeeping is performed in the province. In addition, there exist Scotch pine weighed forests in a large size. There exist almost no industrial establishments except for sugar and cement factories. Present establishments are small scaled and operate in very difficult conditions.

Again the economy of Iğdır located in the First Sub-Region is based on agriculture and animal husbandry. The province has large grass and pasture areas. Constructions of OIZ and airport are currently continued in the province. An important part of the agricultural production in the province is sugar beet and this is processed by sugar factory.

In Muş, which is located in First Sub-Region and has a continuous out-migration and whose 84.5 % of working population is in agriculture sector; animal husbandry is the

most important economic activity area. 45 % of the province land is grass and pasture. 15 % of sheep/goats in EAP Region exist in this province. Since Muş is not rich in mineral deposits, it is not possible to construct an industry based on mining sector. Muş Plain could not be used productively for years due to terror and structural problems.

Lands of Gümüşhane, which is located in the First Sub-Region and whose 74.7 % of active labor force works in agriculture sector, consist of agricultural fields by 17.3 %, forests and heaths by 25 %, grasses and pastures by 33 %. Vegetable and fruit growing do not create an important source of income for people working in agriculture sector in the province. Gümüşhane is the most important place in Turkey in zinc production. In 1996, 44.2 % of country zinc production was obtained in this province. Other outstanding activities in Gümüşhane are dog rose growing, mulberry and its products and beekeeping. In spite of its important forest wealth, the province cannot realize this potential sufficiently. The province is also included in the provinces having a serious out-migration.

Bayburt, which is located in the First Sub-Region and whose 75.3 % of active population works in agriculture sector, has become a province recently. In 35 % of provincial lands agriculture is performed. Bayburt Plain is important in cereal production. Province is poor in terms of forests. Since it has almost no industrial plants, it continuously has out-migration.

Ardahan located in the First Sub-Region became a province in 1992. Its economy is based on agriculture and animal husbandry. There are large grass and pasture areas in the province. In Ardahan, there is an efficient forest area of 27 thousands hectare and log is produced. The number of industry establishments in the province is at a very low level.

Second Sub-Region Attraction Centers: Malatya-Elazığ

Second Sub-Region is determined according to present situation data as follows: Center: Malatya-Elazığ axis, Provinces: Bingöl, Tunceli, Malatya and Elazığ. All those provinces are included in Regions with Development Priority.

19.1 % of GDP was created in agriculture, 24.8 % in industry and 56.1 % in services sector by current prizes of 1997 in the Second Sub-Region. Those ratios were 17 %, 31.9 % and 51 % respectively by constant prizes of 1987. In employment, ratio of agriculture was 67.2 %, the ratio of industry was 5.9 % and the ratio of services sector was 26.9 % in 1997, according to the estimates done in the framework of this study.

In Malatya-Elazığ Sub-Region attraction center (MEAC), especially industry sector in Malatya has made a progress in recent years.

In Sub-Region, activity areas, which have high backward connection are; vegetable oil and animal fat, grist products, non-ferrous metal mining, building construction, dress, clothing made from textile, ready-made goods, facade construction, slaughterhouses, and sugar production.

According to forward connection indices, there are 31 sectors above the average. In these sectors, the 13 sectors having a production percentage of 0.5 or higher are as follows:

financial organizations, motor vehicles of overland transportation, personal or professional services, production of vegetable oil and animal fat, other non-metallic mineral industry, machines without electricity, stone quarry, gas and water, cement, plastic products, metal good production, overland transportation, and other food staff.

Malatya-Elazığ Sub-Region has a structural level close to Turkey average in terms of industrialization. The ratio of industry sector in GDP in 1997 was 24.8 % in the Sub-Region, while it was 24.5 % in Turkey in the same year. However, this high ratio is mostly sourced from the energy sector having a relatively high ratio in this Sub-Region.

There are 41 enterprises having activity on water products and fishery in EAP Region. Most of the present water products enterprises in the Region work under their capacity. It will be possible to operate those enterprises with full capacity by taking necessary precautions and performing improvement works.

The Sub-Region has a lot number of natural lakes, dam lakes, small lakes, ponds and streams, which has rich water resources. In spite of rich water products potential it has, it is seen that those resources are not utilized sufficiently and they wait to be assessed. In this subject, Sub-Region has a potential for future.

It is not possible to reach to the desired consumption quantities in water products by only fresh consumption. So, some part of the products obtained should be processed in water products processing and utilization plants, which should be established in the Sub-Region and processed products supply should be developed besides products for fresh consumption.

Elazığ is a province in EAP Region which do not have much problems in transportation, energy and other infrastructure elements. Provincial industry sector is one of the two most powerful provincial industry sectors in the Region. The economy of the Province does not depend on a single sector. According to the data of 1997, 14.9 % of GDP of Elazığ is sourced from agriculture sector and 28.7 % of that from industry sector. These are followed by construction sector by 5.7 %, commerce sector by 10.6 % and transportation and communication sectors by 8.9 %. The reason for high ratio of industry sector in GDP is that electric, gas and water subsectors have a ratio around 17.5 %. Ratio of manufacturing industry is about 8.2 %.

There are 68 manufacturing industry establishments in Elazığ. 19 of those show activities in food and beverages industry, 14 of that are in non-metallic mineral industry, 10 in metal goods, machine and equipment industries. 25 firms show activity in other industry sectors. In terms of employment, it would be beneficial to increase marble production, which has an important potential in this province, and to process this marble in larger quantities in Organized Industrial Zones.

Malatya, which is located in Second Sub-Region, comes first in the provinces whose population increases in East Anatolia Region. Together with Elazığ, Malatya became the most powerful province in the Region economically. 54 % of the province population lives in downtowns, while 46 % of that lives in rural areas. 64 % of working population in this province is in agriculture sector, while 6.7 % of that is in manufacturing

industry. Ratio of agriculture sector in GDP of Malatya is 20.8 % by the year 1997. Ratio of industry sector is 27 % and ratio of manufacturing industry is 25.3 %. Of the GDP of this province, 4.4 % is sourced from construction sector, 17.9 % from commerce sector and 9.3 % from transportation and communication sectors.

The outstanding production in agriculture sector of Malatya is fruit growing. The ratio of hard stone fruits in fruit growing is 67 %. The proportion of this ratio in Turkey production is 3 %. Apricot is the most important fruit. Ratio of Malatya in total apricot production of Turkey is 46 %, according to the data of 1996.

Malatya is rich in terms of mineral deposits. Chrome, copper, profillit, asbestos, zinc, lead, and coal are outstanding kinds of mines. There are mine processing and production plants processing mines in this province.

In Malatya, there are about 150 industrial establishments, 3 of which belong to public sector. An important number of those are in OIZ. An important part of these firms in OIZ shows activity in textile and food industry. Except for waste treatment plant, basic infrastructure investments are completed in this OIZ.

With its present economic power and potential, Malatya is a city, which can attract the population migrating from EAP provinces to the west regions and also attract domestic and foreign capital. So, 2nd Organized Industrial Zone and infrastructure investments continued by public sector should be completed in the possible shortest time. In this framework, the construction of civil airport, Garbage Treatment Project (WTP) and Gökpınar project are the projects that should be completed urgently.

Malatya is the province whose medical infrastructure is the most powerful in EAP provinces. This powerful infrastructure should be used to increase economic power of the province. Reorganization should be performed which will provide a more effective utilization of Turgut Özal Medical Center.

In Bingöl, 85 % of the labor force is engaged in agriculture sector. Outstanding products in agriculture sector are sheep/goats and wheat production. Although forests cover 14 % of the provincial lands, forest quality is very low. Besides rich coal and lignite deposits, Bingöl has also brick clay. Industry in this province is almost at a negligible level.

In Tunceli, which is located in Second Sub-Region, 72.6 % of working population is employed in agriculture sector. But, only 14 % of provincial lands are suitable for agriculture. Although economy of the province is mostly based on animal husbandry, production is done by elementary methods and almost no culture animal husbandry is performed. The province is rich in terms of forests. 27 % of provincial lands are forest area. Number of industrial establishments is very low in the province. Construction of OIZ is currently continued.

Third Sub-Region Attraction Center: Van City

Third Sub-Region is determined according to present situation data as follows: Center: Van City, Provinces: Bitlis, Hakkari and Van. All those provinces are included in Regions with Development Priority.

22.8 % of GDP was obtained from agriculture, 5.3 % from industry and 72.1 % from services sector by current prizes of 1997 in the Third Sub-Region. Those ratios were 31.4 %, 7.4 % and 63.5 % respectively by constant prizes of 1987. In employment, ratio of agriculture was 72.9 %, the ratio of industry was 2.8 % and the ratio of services sector was 24.3 % in 1997, according to the estimates done in the framework of this study.

Considering the advantages it has, Van is the only province in which industry sector can be developed in the Third Sub-Region. Van is an important local market with its increasing population and can form a certain size of industry mass by the industries processing local and regional row materials and having competition power in such a scale.

According to the data of 1997, 22.9 % of GDP created in Van is obtained from agriculture sector, 8.6 % of that from industry, 4.9 % from construction, 16.2 % from commerce and 17.7 % from transportation and communication. In field products, wheat production is in the first rank. According to the data of 1996, 11 % of the wheat produced in EAP Region is sourced from Van. Although pastures and grasses, which create an advantageous position in terms of animal husbandry, cover 71 % of lands of Van, animal husbandry has lost a serious place in the province. Basic reason for that is terror in the Region. In spite of that, in East Anatolia Region 25 % of sheep, 9 % of Angora goat, 15.2 % of cattle and 8.3 % of water buffalo are slaughtered in Van. 24 % of sheep meat produced in EAP Region is obtained from Van.

According to the mining potential of Van, the outstanding mines are chrome, iron, pumice, and lignite. Van is very poor in terms of manufacturing industry. Number of present enterprises is about 19. In industry sector, three enterprises are important in terms of size of scale. Those are cement factory, sugar factory and Van integrated meat plant. According to the data of 1997, ratio of industry of Van in industry sector of EAP is approximately 4.7 %.

In Bitlis, which is located in the Third Sub-Region and has an agriculture-weighted economy, mean of subsistence is animal husbandry. The row material used in the production of cement is the most important mine reserve in Bitlis. There are totally 8 industrial establishments in the province. But, some of those are closed.

In Hakkari, where there exists almost no suitable land for agriculture, the basic source of income is animal husbandry. There are a dairy and a kilim workshop in the province. It is also very poor in terms of mines. Hakkari has not much potential with regard to industry.

2.3.1.2.2. Means of Application of Attraction Centers Policy

There are five means of application of attraction centers policy:

i) Establishment of Organized Industrial Zones (OIZ) suited to the needs of potential industries and establishments,
ii) Development of physical and social infrastructures of OIZ and cities being attraction centers reliably in a way that it can serve continuously. Giving priority to those cities during the development of industrial and urban infrastructures.
iii) Improvement of East-West, North-South transportations, especially highway connections of cities being attraction centers and air transportation including cargo,
iv) Reorganization of government aids so as to create difference in favor of cities being attraction centers.

2.3.1.3. Local Organization in Economic Development

When institutionalization about regional development in Turkey is analyzed, there are three institutional problems related to each other:

i) Number of institutions and functions they undertake are limited. Some of those limited functions are dispersed between institutions.
ii) There exist institutional structure centers but no local institutions.
iii) There is a need for new institutions, which will undertake the duties that are not undertaken or could not be accomplished sufficiently by any institutions in present system related to regional economic development.

In many of developed countries in the world, there exist local development units. Economic development agencies as well as local branches of central organizations may perform local organization in development. Different alternatives for local organization are suggested below. Either any of those alternatives may be appropriated as a model or similar approaches may also be considered.

2.3.1.3.1. Economic Development Agency (EDA)

In Turkey, there are two banks supporting economic development, namely Development Bank of Turkey (TKB) and Industrial Development Bank of Turkey (TSKB); and two banks of semi-development and semi-commercial, namely Agricultural Bank and Handicraft and Small Industries Bank. Experience gained up to now showed that although there existed some successful applications on business and local basis, they are not successful in economic development on regional basis. Small and Medium Industry Development Organization (KOSGEB), which has a different function and is mainly organized on central basis despite its local organizations, cannot also be said to be active in regional development and industrialization today. Although there is a partial success in the development of region as in the case of Malatya, there is a general failure. One of the reasons for this failure is the absence of a local organization, which would find solutions for some of the problems pointed above. Among those problems to be solved, there exist

problems such as providing non-regional investors with information on Region's opportunities, determination of new investment areas and obtaining technical information about those, providing small and middle enterprises with support on the subjects of financial management, production, promotion and marketing, organization between enterprises and education of labor.

In the establishment of a successful EDA, the basic principle is "regionalism". A general centrally formed organization, which is to deal with the problems of underdeveloped regions pointed above, will not only meet difficulties in the identification and definition of general problems and problems in business basis of various regions, but also have difficulties in making decisions on sharing of services and resources between regions. In foreign countries, all of the development agency type organizations, which are said to be successful, are regional. Moreover, as it is seen in the example of Scotland Development Agency, some of those agencies were divided into "autonomous" agencies by Sub-Regions and main agency has become a supreme organization of those agencies. Those events are in the direction of "decentralization" principle of the European Community.

The second foundation principle of EDA should be "publicness". The reason for this is that the works of agency on regional development and the duties it will undertake requires the utilization of public resources and/or authorizations. Although an EDA may be established as a private company or as a foundation and get rid of some of the limitations due to being a public organization and benefit from the flexibility of a private organization, it may encounter many problems in terms of extent of duty and activity. Other than exceptions, all of the development agencies in the world are public. But, even if EDA is founded as a public organization, it should be able to form autonomous companies and foundations, or participate in them.

Third principle of a regional EDA should be "autonomy". An autonomous organization is the one which "can make decisions by its own decision departments and apply these decisions", with regard to administrative laws. In the administrative tradition Turkey, autonomous public organizations have begun to arise in recent times. Autonomy, of course, has degrees and limits. Critical point here is the independence of the application of a decision made by an authority from the approval of a supreme position or government, on condition that it is in the legal frame.

Fourth principle of EDA should be "complementariness". In terms of the duties undertaken in the relationship with other public and private organizations, agency should be complementary; i.e., should avoid from taking the duties on already undertaken by the others. In the current institutional context, the most important complementariness is to support the Governmental Aid system by supplementary tools and services.

Another principle that EDA should follow is "participation". Participation here should be understood as double-sided. EDA should be able to participate in the activities carried out by other institutions and organizations as a volunteer, while the other institutions and people should be able to take duties in all stages of activities of EDA, ranging from policy decisions to applications. Participation should include taking part in

new companies to be founded in the areas having potential by adding risk capital or by buying minority share.

The sixth foundation principle of EDA should be "proper scale". The definition of proper scale is difficult and changes with the functions that EDA will undertake. In abroad, there are EDA's whose number of personnel exceeds 1000. For EDA to be established for EAP Region, there is no need to be large due to complementariness principle or flexibility. Some –even most- of the functions that will be investigated later can be and should be carried out by purchasing service from expert institutions, organizations and people. By also benefiting from the new possibilities in communication and knowledge technologies, the total number of personnel may be kept under 50 in the center and under 5 in offices to be opened.

However, in purchasing service from outside, there may be no local institutions and people that can serve in the type and quality desired by EDA and purchasing service from outside of the Region may be required. But at least in the short term, not obtaining service inside the Region should not lead EDA to perform all –or most- of the functions by its own personnel and to increase number of personnel to large scales.

2.3.1.3.1.1. Targets of EDA

In the context of economic policies based on free market, functions and authorizations of present institutions and organizations and the principle of complementariness that should be kept in mind between these functions and authorizations, which are all asserted in the VIII. Five-Year Development Plan, the following targets may be determined for EDA to be found in EAP Region:

i) Supporting industry based on private entrepreneurship,
ii) Developing business and investment atmosphere in the Region and to introduce this atmosphere,
iii) Developing labor skills needed in industry,
iv) Increasing the levels of business administration, technology and productivity of Region's industry and so increasing the competition power in local and foreign markets.

The basic activity areas of EDA should be industry and services sectors. Since there exist other institutions and organizations active in agriculture sector and a wide organization is required in order to show an efficient activity, EDA should not be active in this sector. But, this should not be understood that EDA would not support industries based on agriculture. In an economic structure which revolute from agriculture to industry and services and in such an atmosphere where entrepreneurs having either limited or no industry experience exist, small and middle enterprises –partially based on agriculture- will have weight and the actual target group of EDA will consist of such type of enterprises.

2.3.1.3.1.2. Duties of EDA

In the framework of requirements for a fast development of the Region, services that are deficient in the Region and the targets determined to perform these services, the duties that should be undertaken by EDA may be summarized as follows:

i) Providing Investors and Enterprises with Consulting and Knowledge

This should be one of the basic duties of EDA. In this context, providing businessmen with the knowledge on subject of different stages of investment processes and preparing handbooks, preparing seminars and forming a database that is continuously updated; directing businessmen which will make new investments to prepare feasibility reports and to contact to expert institutions should all be thought in the duties of EDA.

EDA should not itself prepare feasibility reports and not select investment projects especially for businessmen recently take part in industry. Because perception of the selection as a suggestion of EDA by businessmen and believing to the success of an investment whose feasibility survey result conducted by EDA was positive in application have the risk of depreciation of institutional prestige of EDA in case the project fails in application and this risk is high in the Region. Moreover, if EDA will take part in some investments and perform the feasibility of investment itself, it will be difficult to establish a proper balance between consulting duty and being an investor.

ii) Directing Investors and Enterprises

EDA should perform studies to direct investors and enterprises in the subjects of appropriate investment areas, technologies and markets. Making researches covering selected industry sectors, preparing investment profiles and pre-feasibility surveys for appropriate investment topics in these sectors, investigating and analyzing technologies that can be utilized by present enterprises and new products and technologies suitable for Region and preparing domestic and foreign market researches for industrial products currently produced or can be produced in the Region are all in this context. Warning investors about unsuitable investment areas and technologies should also be thought in the duties of EDA. This institution should prepare special promotion programs on domestic and foreign markets, arrange commercial trips for businessmen, perform activities to make industrialists participate in fairs and support this participation with various donations.

In order to perform the duty of directing investors and enterprises, EDA should employ high skilled experts having good-use of a foreign language. These experts should prepare work specifications of researches to be conducted by expert institutions, check the standards of those works and present the results of researches to the use of investor businessmen by proper methods and means.

In order to provide assessment of opportunities that arose as a result of researches made or had made, by businessmen, the institution by means of Government Aids should support the attempts for assessment of these opportunities. For example, an industrialist who wants to be opened to a foreign market that is found to have potential after researches,

should be provided with consulting service and participation of industrialist to a fair related to that market should be supported by donations.

iii) Monitoring Investments and Enterprises

EDA should closely monitor present enterprises and investments, supply consulting service on the solutions of problems it determined, carry on works to save the firms in trouble. This duty will require monitoring all the enterprises and investments above a certain level in terms of employment.

iv) Financing of Investments and Enterprises

Without repetition of the functions of institutions as TSKB and TKB, which provide investment financing, EDA should provide entrepreneurs with risk capital in areas having potential in order to realize good investment ideas that have no possibility to be supported by other institutions in present institutional context.

The period of partnership to a company by risk capital should be limited according to the quality of investment project and this partnership should not gain continuity under any condition. In addition, upper limits should be determined for partnership with risk capital in terms of both investor percentage and amount of participation.

In financing, the actual duty of EDA should be mediation between investments, enterprises and country's financial system, banks, by means of providing consulting service in the subjects of preparation of investment projects and credit demands at the desired standards and conduction of them to financial institutions.

One of the basic problems of many of the present institutions in the Region is that they can take no or insufficient amount of working-capital loan from commercial banks. One of the basic reasons for this is that enterprises cannot provide real estate guaranties desired by banks and/or banks do not accept the real estates in the Region as guaranty. As a solution to problem of obtaining operation financing, it may be thought to provide working-capital loans of banks with guaranty by Credit Guaranty Fund, by also considering the evaluation made by EDA about the institution demanding credit. In order to make a reliable evaluation, EDA should form a team by qualified finance experts it already has.

v) Promotion and Attraction of Investment

Promotion of EAP Region to non-regional and foreign investors and attraction of their investments to the Region should be one of the main duties of EDA. Promotion may be performed either by EDA itself or by purchasing service from expert promotion firms. EDA should perform promotion activities in cooperation with related public institutions and organizations.

vi) Education of Labor

Limited Regional supply of skillful labor force is an important problem for current and potential investments. For this reason, EDA should undertake an active role in the education of labor force needed by enterprises.

In Turkey, Ministry of National Education, The Turkish Employment Office and private sector currently carry on activities for adults to gain skills. In programs carried out by public, no financial aid is expected from participants. EDA may undertake a directing duty in the types and contents of the programs carried out by public institutions. EDA may supply financial aid to the skill-courses people arranged by private sector.

EDA should be able to undertake at least some part –in critical investments all- of cost of labor force education for a firm planning to make an important investment in the Region but encountering the problem of finding skilled labor force.

2.3.1.3.1.3. Authorizations of EDA

i) Authorization of Obtaining Information

As a requirement for the duty of monitoring investments and enterprises, EDA should be given an authorization of obtaining information which forces organizations and institutions in the desired knowledge, except for the subjects having secrecy for public.

ii) Authorizations Related to Partnership

On condition that ratio and upper limit of partnership is determined properly, EDA should be given the authorization of taking part in private organizations and selling those sharing (This authorization should be limited to partnership to small enterprises employing less than 50 people in 2 or 3 years from its establishment).

iii) Financial Authorizations

EDA should have the authorization of collecting money for services it provides.

iv) Authorizations Related to Internal Administration

EDA should have authorizations of selecting and employing its personnel, transferring authorization between its administrative positions and opening offices and representations inside and outside the Region.

2.3.1.3.1.4. Organization and Internal Administration

Organization

EDA should consist of a chairman, four departments attached to the chairman, promotion offices opened inside and outside the Region and enough number of experts.

Organization should have a simple structure, total number of personnel in the central unit should be around 50 and that in each office out of center should be about 3-4.

It is important that EDA should carry out its works on regional development and strengthening entrepreneurship in harmony with the development plans and annual programs prepared by SPO which is the only organization having extensive authorizations such as preparing or having prepared plans at both country level and regional or provincial level, ensuring coordination between public institutions and organizations, assigning public investments and deciding economic, social and cultural policies. So, EDA chairman should be appointed from SPO. Administrative Board should consist of one member selected from each of the organizations Undersecretariat for Treasury, Undersecretariat for Foreign Trade and KOSGEB Department; 4 members selected from Chamber of Industry and Commerce Chairmen in the Region and EDA Chairman. Except for Chairman, Administrative Board memberships should be for 3 years, while one third of the members selected by chambers should be replaced in each 2 years.

Administrative Board should be decision department of EDA in the frame of laws. An alternative model for the supreme administration of EDA is given in Appendix1.

Center of EDA should be either at Erzurum or at Malatya. At the first stage at the centers of two other sub-regions, at the second stage at the centers of some other provinces having industrial potential, promotion (and investor attraction) offices should be opened. After forming a detailed database on the Region, one promotion office should be opened at each of Ankara, İstanbul and İzmir. All those offices and the center should be connected online to each other.

Central Organization of EDA should consist of the departments of,

i) Promotion and Attraction of Investment,
ii) Supporting Enterprises
iii) Real Estate,
iv) Human Resources.

Department of Promotion and Attraction of Investment should be responsible from domestic and foreign promotion and marketing of the Region, Department of Supporting Enterprises from consulting, informing, directing, monitoring and financing, Department of Real Estate from obtaining plot stock and allocation of it, constructing prefabricated buildings and renting them, and Department of Human Resources from personal affairs of the institution and education of labor force. In addition, a financial affairs department is required to carry out financial works of institution. But this department should be perceived as an internal services department.

2.3.1.3.1.5. Financing of EDA

EDA will work autonomously. But it basically has public institution characteristics. So it's financing should come from public resources. EDA should be financed by appropriations put into government budget.

In order to increase the local participation to activities of EDA and to ensure reasonable decisions made by administrative board, Chambers of Industry and Commerce in the Region should contribute to EDA financing as much as a certain ratio of their budget.

Some part of revenue of EDA may consist of its own activity incomes and the money received for consulting services with the amounts gradually increasing after establishment stage. Moreover, for some of its activities, EDA may obtain sources from organizations such as UNIDO and World Bank and some funds of European Community.

2.3.1.3.2. Other Alternative Forms of Organization

Although establishment of EDA seems to be necessary to accelerate industrial improvement of the Region, if such an organization is not attempted for any reason, it would be beneficial to establish an organization whose functions are much more limited. This alternative organization should make promotion of the Region's opportunities to entrepreneurs from inside and outside the Region, give consulting service in the subject of laws and direct the investors to correct addresses in feasibility, company establishment, and similar subjects. In this organization, young members in a small number, but having good use of a foreign language and whose origins are economics, business administration or engineering should be employed at a satisfactory wage level and they should be given a wide initiative.

The organization should be organized at first in one of the sub-region centers, in Malatya or Erzurum, then in the other sub-region centers, next in Erzincan, Kars and Muş in the form of offices. There must be at most 10 people-including assistant personnel- at organization center and 4 or 5 personnel at offices in sub-regions and other centers. Offices should be connected online to each other and have databases continuously updated.

As in the case of EDA alternative, this organization should have an administrative board formed by representatives from Undersecretariats for Treasury and Foreign Trade and KOSGEB and by Chairmen of Chamber of Industry and Commerce of the provinces where offices will be opened and its Chairman should be appointed from SPO.

The organization should be financed by appropriations put into budget and contributions of Chambers of Industry and Commerce of the Region. Expenses due to some of the activities of the organization may be met by international organizations as UNIDO.

An organization, called as "SAP Entrepreneur Supporting and Directing Center", (SAP-GİDEM) similar to this suggested alternative has been active in GAP Region successfully since 1997. In determination of activity areas, responsibilities and authorizations of such an organization in EAP Region, experiences of SAP-GİDEM may be useful.

In addition, as it is suggested in VIII Five-Year Development Plan; in order to increase the efficiencies of preparation, implementation, coordination and monitoring stages of Plans, Programs and Regional Plans, Undersecretariat of SPO may be provided with similar duties and authorizations given to EDA by opening offices in the Region. Appropriation of such an organization model is believed to ensure an important

contribution to both increasing efficiency of public investments and strengthening private sector. Besides, strengthening of Directorates of Provincial Planning may be considered in the context of this model. Such an alternative model will ensure not only carrying on more effective and rational planning activities for the Region and provinces, but also an important aid in strengthening of private sector and project studies for it.

2.3.1.3.3. Other Useful Organizations

1) A University Industry Research Center to be founded by the cooperation of Fırat and Dicle Universities and industrialists may be useful in conducting researches on the R&D subjects needed by industrialists especially on Malatya-Elazığ axis in the Region, in transferring of the findings of researches conducted at universities and in educating experienced staff. Such a center may increase the research potential of universities by employing mostly graduate students in its studies. For financing of the Center, sources of Turkish Scientific and Technical Research Institution (TÜBİTAK) for research and development and local industrialists may be utilized.

2) An Industry and Foreign Trade Company to be founded through the participation of industrialists: This company, which is formed by small and medium-sized establishments, may be considered as an umbrella company over companies. The members of this company may be helped in the subjects;

   - Exportation, marketing goods, performing technical and legal works,
   - Obtaining credits,
   - Obtaining cheap input,
   - Suitable transportation,
   - Cheap insurance.

By this way industry of Region may be accelerated. In Turkey, there are some organizations performing this type of services and became successful. In establishment of similar company(s), EGS may be taken as a model. As a second alternative, as a part of EGS Holding extending its activities over the country, a company special to the sub-regions or to the Region as a whole may be established. Since EGS is basically occupied with textile and clothing industries, it may be useful to establish a separate company, similar to EGS in terms of structure and function, for food industry of the Region.

2.3.1.4. Government Aids (Incentives)

2.3.1.4.1. Government Aids (Incentives) Supplied to the Region

Table 2.3.1.1 gives the number of incentive certificates given to the Region and percentages of these in Turkey by various indicators between 1990-2000. The Region took an important quantity of incentive certificates in the beginning of 1990s. In 1990, number of incentive certificates given to the Region was over one fifth of the total and in 1991, number of that was one tenth of the total. Unfortunately, the number of certificates given was decreased rapidly after 1991; in 1992, it was decreased to a level about 6 % of that given in 1990. Although number of incentive certificates began to increase again after

1995, the ratio taken by the Region could not exceed 5 % of the total. This shows that investments with incentive certificates continues to intensify out of EAP Region.

When different columns of **Table 2.3.1.1** are compared, it is clear that ratio of the Region in total investments with incentive certificates and employment is smaller than the ratio of it in number of certificates, other than exceptions. This shows that investments with incentive certificates in the Region are smaller than that in other regions in terms of their scales.

Besides the scarcity of number of incentive certificates given to the Region, incentives are also insufficient in quantity. For example, the sum of payments whose investments are made from incentive Fund is approximately 48 trillion TL in 1998 in Turkey. If we distribute this number to regions proportional to the number of incentive certificates, the sum of incentives given to East in cash in 1998 is 2 trillion TL, which is an insufficient number.

2.3.1.4.2. Government Aids (Incentives System)

Country is divided into parts as Developed Regions, Normal Regions and Regions with Development Priority in terms of Government Aids given to industry investments. Firstly in 1968, a separation is done as Regions with Development Priority and Developed Regions. Although it was reduced in 1980s, number of Regions with Development Priority reached to 49 in 2000. In addition, Bozcaada and Gökçeada districts of Çanakkale are included in Regions with Development Priority. Provinces of State of Emergency Region and some adjacent provinces were provided with additional Government Aids by Law No: 4325 in 1998, and later the geographical extent of Government Aids given to State of Emergency Region and Adjacent Provinces was expanded by Decision No: 98/10551 by Council of Ministers. Today, all of the provinces of EAP Region are included in Regions with Development Priority. Except for Erzincan, Elazığ and Malatya, all the provinces of the Region are benefiting from Government Aids given to provinces of State of Emergency Region. All the EAP provinces are included in additional Government Aids given to Small and Middle Enterprises (SME) by the 99/12474 Numbered Decision of Council of Ministers. In provinces of State of Emergency Region, cost of electrical energy used in investments with incentive certificates will be applied with discount gradually for 3 years, according to 99/12478 Numbered Decision of Council of Ministers.

By the year 2000, in all Developed Regions, Normal Regions and Regions with Development Priority, all the investments with incentive certificate are exempted from customs duty, Mass Housing Fund, value added tax in purchasing of domestic and imported machine and equipment, several stamps and duties (**Table 2.3.1.2**). In government aid system, the ratio of self-capital required for investments, lower limit of incentive certificates and guarantee fund in application, which are applied with approximately 50 % lower in favor of Priority Regions in Development as compared to Developed and Normal Regions, have not created decisive advantages in favor of Priority Regions in Development in investment decisions. The right of plot and land allocation that are not benefited from by other regions and only Regions with Development Priority have, are in the quality to create differences in favor of regions relatively behind the others in some investments.

Table 2.3.1.1: Government Aid to the EAP Region Compared to Overall Turkey by Various Indicators

Year	Number of Incentive Certificates*	PERCENTAGE IN TURKEY (%)			
		Number of Incentive Certificates*	Total Investment	Foreign Exchange Allocation	Employment
1990	697	22.2	8.4	7.0	11.1
1991	188	10.6	3.2	3.7	5.4
1992	41	2.6	1.3	0.9	2.0
1993	70	2.3	0.9	1.4	2.1
1994	39	2.8	3.4	2.9	3.6
1995	72	1.5	2.1	3.0	2.7
1996	112	2.2	1.5	1.8	2.2
1997	120	2.3	2.0	1.6	2.6
1998	176	4.1	2.5	2.2	3.8
1999	131	4.4	2.2	1.7	3.8
2000**	109	5.0	3.2	2.7	4.2

Source: Undersecretarait of Treasury
Note: * Provinces Gümüşhane and Bayburt are not included.
** By 31st August 2000

Table 2.3.1.2: Government Aids in Investments

Support Items	Developed Regions	Normal Regions	Regions with Development Priority	Provinces of State of Emergency by Law no:4325 and Other Provinces Determined By DCM
Lower Limit of Government Aid Certificate (TL)	100 Billion	100 Billion	50 Billion	-----
Application Guarantee (TL)	160 Billion	160 Billion	80 Billion	-----
Exemption of customs duty and Mass Housing Fund	Present	Present	Present	-----
Investment Discount (%)	100	100	100	----
Exemption of Value Added Tax in Purchasing of Domestic and Imported Machine and Equipment	Present	Present	Present	-----
Minimum Self-Capital Ratio (%)	40	40	20	-----
Exemption From Several Stamps and Duties	Present	Present	Present	-----
Allocation of Plot and Land	-----	-----	Present	-----
Exemption of Income Tax and Corporation Tax (Exempted in The First Five Years, 40-60 % in The Second Five Years)	-----	-----	-----	Present
Postpone of Taxes in Employees	-----	-----	-----	Present
Insurance Premium Employer Contributions Covered by Treasury	-----	-----	-----	Present
Extensive Exemption From Several Stamps and Duties	-----	-----	-----	Present

Source: SPO, Regional Development before VIIIth Five-Year Development Plan, 1996-2000(Ankara: SPO, June 2000), p 89.

Of the special Government Aids to State of Emergency Region, which is determined by Law No: 4325 and 98/10551 Numbered Decision of Council of Ministers and covers all the EAP provinces except for Erzincan, Elazığ and Malatya, applications such as exemptions of income and corporation taxes which ends in 2007, postpones of taxes which ends in 2002, exemptions from several stamps and duties in procedures, and payment of Insurance Premium Employer Contributions by Treasury are Governmental Aids which are able to create differences in favor of the Region in investment decisions.

By a new regulation made in the middles of year 2000, some changes are made in the system of Government Aids especially on SMEs. Interest rates of investment credits and working loans are evaluated in a way to contain an important amount of subsidization. Investment credits interest rates given to SMEs are determined to be 10 % for Regions with Development Priority, 15 % for normal and developed Regions and OIZs, 15 % for actual investments made by partnership companies to SMEs corresponding to their contribution rates to capitals of SMEs. Working loans interest rates are determined to be 15 % for investments in Regions with Development Priority, 25 % for investments in normal and developed Regions and OIZs. If one considers interest rates in the market, which are much higher than those rates, those are said to be important Government Aids.

In addition, SME investments are included in Credit Guaranty Fund by the new regulation. Lower limits of self-capital ratios of SMEs in constant capital investments are decreased to 30 % in developed and normal regions and 20 % in Regions with Development Priority. By extending exemption of value-added tax, investment discount is determined to be 200 % in investments of foreign capital exceeding 250 million US Dollars. By the new regulation, extent of SME investments is also expanded. Enterprises, which have a sum of registered constant capital investments -excluding plots and buildings- on legal book less than 400 billion TL and employing labor between 1-50 are considered as SME.

Inclusion of SME investments in Credit Guaranty Fund is a positive event especially for EAP Region. But benefiting from interest subsidizations only by SMEs is a limiting factor to attract big investments to the Region.

The most important intencives in Government Aid system are exemption of income and corporation taxes and discount of taxes. However, since those Government Aids are applied to firms established after 1998, firms established and began to production before that date encounter unfair competition and production and employment of them are effected negatively.

Another feature of the Government Aids System is the unbalance in sectoral distribution. For example in 1997, constant investments of 26 trillion TL in agriculture, 54 trillion TL in mining, 2 quadrillion TL in manufacturing industry, 229 trillion TL in energy and 909 trillion TL in services are envisaged. In the context of Region, industry based on agriculture comes first. In order to improve this industry, enough quantity and quality of products should be obtained from agriculture. This requires investment on agriculture. Giving such an inadequate amount of Government Aid to agriculture is one of the reasons limiting the improvement of Region’s agriculture and also Region’s industry indirectly.

On the subject of current Government Aids system, the following evaluations may be listed:

- Excluding allocation of plots, system does not have the quality of effecting investment decisions in favor of Regions with Development Priority.

- Geographical extent of the system is too wide. Such a system will help scattering the investments on to places and is deprived of a mechanism causing enterprises to gain competition power by external economies that can only be created in certain centers by gathering industrial establishments.

- Application period of Government Aids in State of Emergency Region is short.

- Erzincan, Elazığ and Malatya are out of application of Government Aids on State of Emergency Region. However, the investments especially in provinces Malatya and Elazığ, which reach to a certain level of industrialization and have improvement potential, should be encouraged. Concentration of industry on the axis of Malatya-Elazığ and growing this cities up will make it possible to form a filter to the migration from East to West and development effects will be spread to the neighborhood provinces in time. External economies, especially for small and middle size enterprises, are at least important as much as internal economies with regard to competition power and existence capabilities of enterprises. For formation of external economies, accumulation on certain places is necessary.

- System is deprived of a mechanism, which will decrease or eliminate the constant investment requirements (factory building) of enterprises having limited capital and help them in initiating production in a short time. However, in countries having successful regional development policies, renting ready factory buildings to entrepreneurs is an extensive practice.

- In the system, there exists no encouragement item that will attract investments to underdeveloped regions by means of assisting in first investment costs of entrepreneurs by donations. In all of the countries being a member of European Community, capital donation is given. In countries where the development differences between their underdeveloped regions and developed regions are large, capital donation increases as a ratio of total investment relative to the ones having a smaller difference.

- System does not include interest subsidization for credits other than SMEs and credits taken by them from certain banks. In many countries, interest subsidization is used more extensively as an effective means of Government Aids.

- System does not include labor education.

- System includes only industry sector. It excludes investments on health, education and similar service sectors, which forms social and cultural

infrastructure of industrial centers. Education and health investments are included in Government Aids system only for investments in the extent of SME, in the middles of year 2000.

- System basically has no regional development philosophy. In other words, system is not established on a location and regional development theory. The approach of "investment is a benefit no matter on which part of an underdeveloped region it is made" is dominant in the system. The most important thing is not only making an investment, but also making it on a place, which has highest yield to entrepreneur and society in the long term.

- There is not a credit guaranty mechanism in the system. However, one of the most important problems and complaints of investors in East is that they can not find enough credits since real estates are not accepted as guaranty by banks or accepted with a very high risk discount. Credit guaranty was added to the system by the last regulation. But this is only for SMEs and its efficiency has not been proven yet.

- In the system, there is not an organization which checks whether Government Aids are used appropriate to its aims and applies sanction to the ones using Aids beyond their aims.

- Resources reserved for Government Aids are insufficient.

- Sectoral distribution of resources reserved for Government Aids is unbalanced.

Suggestions

1) Geographic extent of Regions with Development Priority should be narrowed.

2) In investments with incentive certificate, exemption of especially value added tax in machine and equipment purchasing, exemptions of customs duty, Mass Housing Fund and investment discount to investments, instead of applying no matter where they are made, should be applied to developed and normal regions partially and a difference should be created in favor of Regions with development Priority.

3) Provinces of Erzurum, Malatya and Elazığ should be benefited from Government Aids given to investments in State of Emergency Region and its adjacent provinces by the Law No: 4325 and 98/10551 Numbered Decision of Council of Ministers and the period in which those Government Aids will be given should be extended beyond year 2002.

4) Additional Government Aids and exemptions given to the investments made on Organized Industry Zones should become encouraging on investments to be done in those Regions.

5) Service sector and especially all health and education sectors should be included in Government Aids. Government Aids that will be given to these sectors may be differentiated from those given to industry.

6) In order to help entrepreneurs to start production rapidly and to decrease first investment costs, donation and renting of ready factory buildings should be included in Government Aid system. This may be an effective encouraging element for especially small and middle size industrialists, having inadequate capital (This subject was discussed in the part related to foundation of Economic Development Agency (EDA)).

7) Regardless of scale of the enterprise, interest subsidization should be applied.

8) Investors should be given investment donation, in the frame of a system, which is differentiated according to place and sector. Donations should be differentiated in favor of attraction centers.

9) Education of labor should be included in Government Aids and at least a part of it should be supplied by public sector (If EDA is founded, education of labor should be included in the activities of this organization).

10) A credit guaranty system should be founded especially for small and middle enterprises.

11) An organization, which checks whether government aids are used appropriate to its aim and applying serious sanctions and punishments to those using them beyond its aim, should be formed.

2.3.1.5. Organized Industrial Zones (OIZ)

An OIZ is an industrial location structure, which decreases investment and operation costs of enterprises by having industry plots whose infrastructure and social plants are prepared and creates external economies by gathering establishments to a place and in this way increase the competition power of enterprises. Its existence is an encouraging element concentrating industry on its location. Besides being an encouragement means, OIZs have benefits for planned development of cities, extending industry to underdeveloped regions, preventing the usage of agricultural fields in industry and preventing environmental pollution by its common treatment plants in our country (8^{th} Five-Year Development Plan, Regional Development, SC Report, p 248).

In the context of EAP Region, the most important function of OIZs is to attract the industry to the Region and to be used as a means in formation of attraction centers. Attraction of industry to the Region is the first target. But achievement of this depends on a successful attraction centers policy, due to the reasons pointed before.

In the Region, there is one OIZ in each of Erzincan, Erzurum, Elazığ, Van and Malatya now. In addition to those, a total of 23 OIZ Projects exist in Investment Program. In 13 of those, construction is continued, 2 of those are at the stage of nationalization and

in 8 of those, although they are included in Program, no money has been spent on them yet. The cost of the 13 projects under construction is 28.8 trillion TL, by the prices of 2000. 10.8 trillion of that was spent up to the end of 1999 and total of allowances of 2000 is 1.7 trillion TL (**Table 2.3.1.3**). If allowance of 2000 is wholly spent, realization rate at the end of the year will be 43.6 %. If allowances at the same level of that in Year 2000 Investment Program are reserved for the projects in the coming years, it will take 9 years to complete them. If the projects currently at the stages of survey and nationalization will be put into practice in the coming years, it will be arisen that even some of the on-going projects will not be completed for long years, considering inadequate sources.

When this situation and attraction centers policy are evaluated together, it will be seen that 3 policies that are not exclusive of each other should be implemented.

i) Investment allowances should be increased.

ii) Of the OIZs, a great part of the project cost of which are spent, Elazığ (II), Erzincan-Center, Kars-Center and Malatya-Center (I) treatment projects should be completed primarily.

iii) In Erzurum and Malatya, establishment of 2nd OIZ should be given priority.

Table 2.3.1.3: Organized Industrial Zones in 2000 Investment Program in EAP Region

Placement	Characteristics	Starting-Finishing Dates	Project Sum (Million TL)	Estimated Expenses up to The End of 1999 (Million TL)	Investment Allowance in 2000 (Million TL)
Ağrı-Center	100 ha	1998-2002	1,300,000	-----	1
Bingöl-Center	80 ha	1995-2000	451,000	314,335	136,665
Bitlis-Center	200 ha	2000-2000			Nationalization
Elazığ-Center (Fattening)	Survey	1999-2000	13	-----	13
Elazığ-Center (OIZ-II)	100 ha	1985-2001	1,500,000	1,179,645	300,000
Elazığ-Center (Animal-Product)	20 ha	1998-2001	260,000	-----	15,000
Elazığ-Center (OIZ-III)	190 ha	1999-2004		-----	1
Elazığ Treatment I and II	Survey	1998-2001	15,000	-----	1
Erzincan-Center	348 ha	1990-2000	5,007,039	4,117,039	150,000
Erzincan Manufacturers (Earthquake Damage)	-----	1997-2001	560,900	261,510	230,000
Erzurum-Center II	380 ha	2000-2004		-----	1
Gümüşhane-Center	75 ha	2000-2000			Nationalization
Hakkari-Center	45 ha	1995-2001	585,000	106,401	15,000
Kars-Center (Fattening)	Survey	1998-2000		-----	1
Kars-Center	200 ha	1984-2000	4,672,821	3,872,8210	100,000
Malatya-Center (I)	Treatment	1996-2001	1,355,900	847,715	400,000
Malatya-Center (II)	350 ha	1998-2003		-----	1
Malatya-Darende	100 ha	2000-2003		-----	1
Muş-Center	300 ha (50 ha)	1994-2004	3,900,000	-----	15,000
Tunceli-Center	100 ha	1994-2001	642,460	95,200	200,000
Bayburt-Center	500 ha	2000-2004	6,500,000	-----	15,000
Ardahan-Center	150 ha (50 ha)	1994-2004	1,950,000	-----	150,000
Iğdır-Center	Survey	1998-2000		-----	1
Total 23 Projects	**3238 ha**		**28,700,120**	**10,794,466**	**1,726,665**

Note: In the Organized Industrial Zones at the stage of application, percentage of realization rate in 1999 is 37. At the end of year 2000, percentage of realization rate will be 43.6.
Source: SPO, Year 2000 Investment Program

Problems of Organized Industrial Zones

Although OIZs are an important element of Government Aids and application means of urban improvement policy, they have some problems. These are not special to the Region but common to the country and to solve those problems, policies valid for country whole should be developed and new legal regulations should be made.

Those problems listed in 8th Five-Year Development Plan, Regional Development SC Report (pp 251-252) are as follows:

i) Source problem,

ii) Enterprising Organizations not benefiting from exemptions from several stamps and duties and their authorizations and responsibilities not being defined clearly, since they do not have legal status,

iii) Occurrence of separate industrial formation out of OIZs, due to lack of interest of Local Governments,

iv) Making plot speculation by Enterprising Organizations; industrialists not starting to investment due to speculation within the period stated in Internal Regulations and real industrialist not finding industrial plot,

v) Not finding a proper alternative place; surface and ground water problems and difficulties encountered in energy and water supplies in a place selected as OIZ, all of which delays application,

vi) Problems encountered during nationalization due to not finding plot owners; high plot prizes; delaying of nationalization procedures due to the reasons sourced from Plot Office laws and costs of plots reaching to very high amounts due to suits to increase prize.

2.3.1.6. Small Industrial Sites (SIS)

Small Industrial Sites have similar roles to OIZs in decreasing infrastructure costs, creating external economies, covering local necessities, development of cities in a planned way and solutions of environmental problems. They are not efficient in industrialization and development of the Region as much as OIZs, since they aim to small enterprises by scale. But, it has a great importance especially in EAP Region in the development of small enterprises and in creation of employment possibilities.

SISs in the Investment Program are given in **Table 2.3.1.4**. There are 46 SIS in the program. Total number of establishments in those SIS, which are planned to completed in the coming 3 or 4 years is 5610 and total cost of them is 37.5 trillion TL by prizes of 2000. 17 of those having 2322 establishments are under construction and total cost of them is 20.3 trillion TL. Up to the end of 1999, 8.3 trillion TL was spent for those 17 SIS under construction and allowances for them is 1.9 trillion TL. If the allowance level will remain the same after 2000, 5.5 years are required to complete 17 SIS under construction and it will take 15 years to complete all the 46 projects in the program. In order to obtain their results as soon as possible, all the weight should be given to the projects under construction in the coming one or two years and new projects should not be started.

Table 2.3.1.4: Small Industrial Sites in 2000 Investment Program in EAP Region

Placement	Characteristics (Number of Establishments)	Starting-Finishing Dates	Project Sum (Million TL)	Estimated Expenses up to The End of 1999 (Million TL)	Investment Allowance in 2000 (Million TL)
Ağrı-Patnos	150	1997-2001	852,000	102,110	100,000
Ağrı-Diyadin	100	1998-2002	560,000	-----	1
Ağrı-Eleşkirt	50	1998-2002	280,000	-----	30,000
Ağrı-Doğubeyazıt	100	1998-2002	560,000	-----	1
Bingöl-Center	127	1992-2001	667,000	288,625	100,000
Bitlis-Ahlat	100	1987-2000	826,259	526,259	300,000
Elazığ-Center	250	1995-2001	1,618,000	324,655	100,000
Elazığ-Palu	200	1997-2001	947,000	96,800	80,000
Elazığ-Karakoçan	100	1997-2002	665,000	-----	1
Erzincan-Center	100	1991-2001	632,000	229,050	1
Erzincan-Refahiye	150	1987-2001	982,000	154,240	75,000
Erzincan-Tercan	150	1997-2003	1,007,000	-----	1
Erzurum-Aşkale	100	1985-2002	870,000	-----	1
Erzurum-Tortum	50	1990-2002	435,000	-----	1
Erzurum-Horasan	200	1998-2003	1,130,000	-----	1
Erzurum-Pasinler	100	1998-2002	560,000	-----	1
Erzurum-İspir	50	1998-2002	280,000	-----	1
Erzurum-Aziziye	200	1998-2003	1,130,000	-----	1
Hakkari-Center	100	1985-2002	910,000	574,335	1
Hakkari-Yüksekova	70	1997-2002	497,000	-----	1
Kars-Center	408	1986-2001	3,028,000	1,910,245	100,000
Kars-Kağızman	100	1997-2002	665,000	-----	1
Kars-Sarıkamış	25	1998-2001	140,000	----	1
Muş-Malazgirt	90	1986-2001	574,000	208,815	50,000
Muş-Varto	75	1991-2002	683,000	----	1
Muş-Bulanık	70	1995-2001	431,000	188,000	50,000
Muş-Center (II)	100	1997-2001	774,000	48,100	75,000
Muş-Center (Alpaslan)	70	1998-2001	515,000	79,625	75,000
Tunceli- Çemişkezek	50	1998-2002	208,000	-----	1
Tunceli-Center	100	1998-2002	560,000	-----	1
Tunceli-Pertek	50	1998-2002	280,000	-----	1
Van-Erciş	184	1991-2001	1,794,190	1,324,390	280,000
Van-Center (Part II)	366	1996-2002	2,444,000	357,460	150,000
Van-Center (Carpenter)	215	1995-2001	1,596,000	642,745	150,000
.Van-Özalp	100	1997-2002	665,000	-----	1
Van-Başkale	100	1997-2002	665,000	-----	1
Van-Çaldıran	100	1997-2002	665,000	-----	1
Van-Gevaş	100	1998-2002	560,000	-----	1
Van-Muradiye	30	1998-2002	168,000	-----	1
Bayburt-Center	180	1991-2001	1,688,700	1,258,680	150,000
Ardahan-Damal	100	1995-2002	665,000	-----	1
Ardahan-Göle	100	1997-2002	665,000	-----	1
Ardahan-Çıldır	50	1997-2002	333,000	-----	1
Ardahan-Posof	50	1997-2002	333,000	-----	1
Ardahan-Honak	50	1997-2002	333,000	-----	1
Iğdır-Center	300	1998-2004	1,690,000	-----	1
Total 46 Projects	**5610**		**37,531,149**	**8,313,934**	**1,865,000**

- In 1999, 12 % of the Small Industrial Site Projects were realized. In Year 2000 Investment Program, 16.9 % of that will be realized.

Source: SPO, Year 2000 Investment Program.

2.3.1.7. Industrial Concentration and Its Meaning

By year 1996, the last year for which the data is available, there are 35 public establishments and 116 private enterprises employing 10 or more labor in the manufacturing industries (ISIC 31 to 38) of the Region. According to this data, 10.9 % of the total public industrial enterprises and only 1.1 % of the private sector enterprises employing 10 or more labor in the country are in this region (**Table 2.3.1.5**). In both sectors, the highest numbers of establishments are located in Malatya-Elazığ Sub-Region. 60 % of the public establishments and 56.9 % of the private sector enterprises in the Region are collected in sector of ISIC 31; food, beverages and tobacco. In terms of number of establishments, second important sector is textile, clothing goods and leather industry sector and the third one is non-metallic mineral industry (Sector Code: 36). Metal goods-machine and equipment sector comes in the fourth in number of establishments.

If **Table 2.3.1.5** is analyzed in terms of provinces, the province having the most variety is Elazığ. After Elazığ, Malatya and Erzurum, in the order, have an industrial structure, which can be said to have variety relative to other provinces of the Region.

Total number of people working in the manufacturing industry in the Region is 19,958. This covers only 1.9 % of the people working in the manufacturing industry in the country. The most developed province in the Region is Malatya in terms of manufacturing industry. After Malatya, Elazığ, Erzurum, Van and Erzincan comes in the order. Of the people working in manufacturing industry in the Region; 37.1 % is in Malatya, 21.9 % is in Elazığ, 8.9 % is in Erzurum, 8.2 % is in Van and 5.4 % is in Erzincan. Those 5 provinces, whose industries are mostly concentrated in downtowns, ensure 81.5 % of the employment of manufacturing industry in the Region.

Table 2.3.1.6 gives the situation of the industry in the Region from another point of view, sectoral concentration. Since in some of the sectors, there exists only one single establishment in a province and employment data of those are not disclosed, **Table 2.3.1.6** has less number of sectors than **Table 2.3.1.5**. Concentration coefficients of sectors are only approximate numbers. As it is calculated here, concentration coefficient is the ratio of the percentage of employment in a sector in the total industrial employment in a certain province to the percentage of employment of that sector in the total industrial employment in the country. Concentration coefficients in the Table are calculated on the basis of both total and public and private sector establishments. In the calculations made on the basis of public and private sector establishments, sectoral employment and total employment numbers are relative to the number of employee in public and private sectors.

A concentration coefficient equal to 1 shows that the ratio of employment in a sector to the total industrial employment in a certain province is exactly equal to the ratio of employment in the same sector to the total industrial employment in the whole country. In other words, this means that there is no specialization or concentration of that sector in that province relative to the country's situation. If concentration coefficient is greater than 1, this means that that province became a specialist in that sector or that sector is concentrated on that province. The greater the coefficient is from 1; the higher the specialization or concentration is in that province in that sector.

Concentration coefficients in **Table 2.3.1.6** shows that many of the provinces in the Region became specialist only in food, beverages and tobacco sector, i.e. 31st sector, and there is a concentration only in this sector in many of the provinces. A concentration is seen in textile and clothing goods industry in two provinces of Malatya and Elazığ, and a concentration in non-metallic mineral industry in Kars and Van. None of the provinces show existence in the level of specialization in any of the other industry sectors. The concentration structure showing itself by the total employment in each sector repeats itself by the employment in public and private sectors.

In the frame of current situation, concentration pattern by sectors and provinces of private sector acting by profit motive is an indicator in which sectors provinces have the comparative outstandingness. Region's provinces can only have a certain specialization or concentrations in sectors whose raw materials can be obtained locally or which have local markets or where the transportation costs isolate Region's enterprises from non-regional enterprises. In all the other sectors, either no enterprises exist in the Region or industry in these sectors is on a marginal level.

In which sectors a region has comparative outstandingness depends on transportation costs, prize of capital and especially labor relative to the ones in the other regions, income per capita in the region, income flexibilities of goods, existence of raw materials and sizes of local and regional markets to a certain extent. Of those; transportation costs, relative prize of labor, income per capita, income flexibility and sizes of local and regional markets are factors changing slowly in time. This shows that Region's advantage will be in currently concentrated sectors at least in short and middle terms and which sectors should be supported in the Region. This does not mean that industries having a marginal existence in the Region today should not be supported, but points out the requirement of acting thoughtfully and rationally. As it is observed from the number of private sector enterprises in **Table 2.3.1.5**, there are provinces in the Region as Elazığ, Malatya and partially Erzurum, which have advances in the sectors other than the concentrated two sectors and diversify its industrial structure. Since any private sector enterprise cannot continue its existence without making profit, existence of a private enterprise in a sector in a province shows that for any reason, a relative advantage exists in that province and in that sector. This means that establishment of other enterprises to those places is possible in order to benefit from that advantage.

2.3.1.8. Exportation to Neighborhood Countries: Present Situation and Potential

In 1997, the last year for which the data is available, an exportation of 116.1 million US Dollars is done from the Region. This number is related to the exportation which is cleared through customs in EAP Provinces. It is possible that exportation which is produced outside of the Region and whose clearance through customs is done in customs of East is included in this number. Moreover, there is also a high probability that there are some products which are produced in the Region and whose exportation clearance through customs is done in the customs other than the ones in EAP provinces. But since there exists no exportation statistics in terms of origins, it is not possible to give a number in this subject. If an instant assumption is made such that the goods from other regions whose exportation procedures are done in EAP provinces and the goods produced in EAP Region and exported from the other Regions balance each other, exportation of the Region is only

0.4 % of exportation of Turkey, which was 26.2 billion US Dollars in 1997. Region is in a disadvantageous situation relative to the other regions of the country in exportation to the countries of European Community, United States of America and partially Gulf Countries, which are the main exportation markets of Turkey.

Table 2.3.1.5: Number of Manufacturing Enterprises in the EAP Region's Provinces

PROVINCES	NUMBER OF PUBLIC ESTABLISHMENTS								NUMBER OF PRIVATE ESTABLISHMENTS								TOTAL NUMBER OF ESTABLISHMENTS	
	SECTOR								SECTOR									
	31	32	33	34	35	36	37	38	31	32	33	34	35	36	37	38	Public	Private
ERZURUM SUB-REGION	**8**				**2**	**1**		**2**	**30**	**2**	**2**		**2**	**4**		**3**	**13**	**43**
Ağrı	1								3								1	3
Erzincan	1							1	5	2				1		1	2	9
Erzurum	2				1			1	11		2		2	1		2	4	18
Gümüşhane	1				1									1			2	1
Kars	2					1			8								3	8
Muş	1								1								1	1
Bayburt									1					1				2
Ardahan									1									1
MALATYA-ERZURUM SUB-REGION	**8**	**1**	**1**		**1**	**2**	**1**		**25**	**12**	**2**	**1**	**4**	**6**	**7**	**5**	**14**	**62**
Bingöl	1																1	
Elazığ	2				1	1	1		7	1	2	1	3	6	2	3	5	25
Malatya	4	1	1			1			17	11			1		5	2	7	36
Tunceli	1								1								1	1
VAN SUB-REGION	**5**	**2**				**1**			**11**								**8**	**11**
Bitlis	1								3								1	3
Hakkari	1	1															2	
Van	3	1				1			8								5	8
EAP REGION	**21**	**3**	**1**		**3**	**4**	**1**	**2**	**66**	**14**	**4**	**1**	**6**	**10**	**7**	**8**	**35**	**116**
TURKEY	**163**	**26**	**16**	**18**	**30**	**20**	**12**	**36**	**1658**	**3303**	**403**	**352**	**902**	**822**	**362**	**2354**	**321**	**10,156**

Note: * Enterprises employing 10+ persons, Annual Manufacturing Industry Statistics, in 1996, no data is available related to province Iğdır.
Source: SIS, "Yıllık İmalat Sanayi İstatistikleri," 1996 (Ankara: SIS, May 1999).

Table 2.3.1.6: Concentration (Location) Coefficients In Manufacturing Industry In the EAP Region by Province

PROVINCES	SECTORS (2) (By Total Employment)					SECTORS (3) (Public Establishments)						SECTORS (4) (Private Sector Establishments)				
	31	32	35	36	38	31	32	35	36	37	38	31	32	35	36	38
ERZURUM SUB-REGION (5)																
Ağrı	6.0					2.8						7.6				
Erzincan	3.6					2.1					2.0	2.3				
Erzurum	4.7					2.5		0.2			0.5	4.1				
Gümüşhane						0.6		5.8								
Kars	3.8			5.6		1.6			12.8							
Sub-Region	3.8					2.4		0.3	1.8		0.5	3.8				
MALATYA-ELAZIĞ SUB-REGION (5)																
Bingöl	6.0					2.8										
Elazığ	1.5		0.9		0.1	0.6		0.6		3.8		2.6		2.6		0.3
Malatya	2.3	1.6		0.3		1.8	3.4		0.3			1.0	7.6		0.5	
Sub-Region	2.1		0.3		0.03	1.3		0.3		1.7		1.4		0.3		0.07
VAN SUB-REGION																
Bitlis	6.0					2.8						7.6				
Hakkari	0.4	2.7				0.2	9.1									
Van	5.0	0.2		1.4		2.3	0.9		3.1			7.6				
Sub-Region	3.7	1.0		0.8		1.6	3.5		1.8			7.6				

Notes: 1) Concentration (Placement) Coefficient= (Employment at i^{th} sector in a province / Employment in manufacturing industry in that province) / (National Employment at i^{th} sector / Total Employment in manufacturing industry)

2) Concentration coefficients are calculated in terms of the total employment in manufacturing industry in a province. Establishments employing less than 10 persons are not included in total employment.

3) Concentration coefficients are calculated in terms of employment in public establishments in manufacturing industry in a province.

4) Concentration coefficients are calculated in terms of employment in private sector establishments employing 10 or more persons in manufacturing industry in a province.

5) Placement coefficients are not calculated for those provinces where single establishment employing 10+ persons exists or no establishment exists in related sector.

Source: SIS, "Yıllık İmalat Sanayi İstatistikleri," 1996 (Ankara: SIS, May 1999).

In the Region, a total of 1,388.3 million US Dollars exportation was done to the neighbor countries Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan and Iran in 1997. The most important items in this exportation are mill products, malt and starch by 112.6 million US Dollars, boilers, machines, mechanical devices and equipment and their pieces by 21.9 million US Dollars, liquid and solid animal fat and vegetable oil by 77.5 million US Dollars, electrical machines and devices and their pieces by 69.2 million US Dollars and plastics and its products by 57.4 million US Dollars. Except for malt, starch, liquid and solid vegetable oils, the others are goods, which are either not produced in the Region, or produced to meet the regional and local demand in a small quantity.

Total importation of Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Uzbekistan and Turkmenistan was 12.8 billion US Dollars in 1997. The importation of Iran was 14.7 billion US Dollars. As those figures suggest, markets of the first six countries are small yet and it is highly probable that they will remain the same in the short and middle terms. Although market of Iran is relatively large, commerce with Iran is highly sensitive to the political events and it is not a stable market for Turkish Goods. More important than that, importation of Iran are mostly industrial products. So, the chance of developed regions and countries, whose industries reached to the scale economy, is much greater than the Region in exportation to Iran.

At least for the near future, it seems that it is not possible for EAP Region to make too much exportation to its neighbor countries in East, and for this exportation to become an engine for development of Region's industry, since EAP Region has not diversify its industry so as to aim to the demands of those markets and at least in short and middle terms, it is a small possibility to ensure this variety, and since the markets of those countries are small or unstable.

2.3.1.9. Financing the Industrial Development

In a region, financing of industrial improvement may be supplied from three sources:

i) From in-region savings,
ii) By transferring of funds from outside of the region to the entrepreneurs of the region through Financial system,
iii) From funds brought by investors of outside of the region to make investment.

In a region like East Anatolia Region which is underdeveloped and where the income per capita is low, level of in-region savings is also low. In addition, the savings cannot be transferred to industry, but they can rather either be directed to investments in commerce and agriculture, or kept under cushion, or transferred to the other regions through financial system. All those are valid for the Region. Although the exact quantity of it is not known and the in-Region pattern shows differences, the quantity of in-region savings used in the industrial investments of the Region and its ratio to total savings is low.

Funds transferred to the Region through financial system are negative. In other words, they are lower than the savings of the Region in the banks. Since treasury covers its

budget deficits by borrowing from the market due to the difficulties met by the Government finances, the negative difference between regional savings and credits increased further especially in 1990s. Because of terrorist actions affecting many of the provinces of the Region, banks behaved reluctant in giving credits to investors of the Region. Although one of the reasons of this reluctance was eliminated by taking terror under control, since the cadastre was not completed in many places, entrepreneurs cannot cover the guaranties desired by the banks and the credits given to the industrialists of the Region remains low. Credit usage is low even in province Malatya, which is engine of the Region's industry. Between 1988 and 1998, while Denizli used 740 million US Dollars of credits, Gaziantep 570 million US Dollars, Kayseri 339 million US Dollars and Eskişehir 376 million US Dollars; Malatya used only 140 million US Dollars of credit (VIII Five-Year Development Project, Regional Development SC Report, pp 240-241). Those are the total credits used by provinces, and credits used by industrial sector are even less than that.

In the Region, investments of investors from outside of the Region are very scarce, except for Malatya and Elazığ to a certain degree. Capital coming from outside of the Region is the capital brought by either fellow countryman companies established by people living in foreign countries, or people born in the Region and currently live outside the Region, but continue its relationship with the Region.

For industrialization of the Region, obtaining capital from all those three sources at maximum level is absolutely necessary. As compared to the ones given to the investments in developed regions, an incentive should be provided which can create a difference in favor of the Region. By promoting Region's opportunities inside and outside of the Region well, it is necessary to attract investment to the industry of the Region. A primary condition to attract capital and investor from outside of the Region is to improve the social infrastructures besides physical urban infrastructures in especially Erzurum, Malatya-Elazığ and Van, which are envisaged to be the industrial attraction centers. Otherwise, even if there exist Government Aids creating difference in favor of the Region to an important degree, it is very difficult to attract entrepreneurs and capital from outside of the Region.

In the foreseen future, it is a high probability that Region's industry will mostly depend on the entrepreneurs in the Region. So, the entrepreneurs in the Region should be supported as much as possible. In the part of Government Aids, it is analyzed by which incentives entrepreneurs will be supported. In the subject of financing, it seems important to give investment donation to investors and to apply credit guaranty system and interest subsidization. In addition, since loans let by commercial private banks are usually short-term credits in the country, even if those banks behave more positive to investors, need for investment credit will be continued. So, public banks, especially Development Bank of Turkey (TKB), Handicraft and Small Industries Bank (HSIB) and Industrial Development Bank of Turkey (TSKB) having a special status should give loans to the Region in much greater size.

Well organization of those banks in the Region and behaving towards Regional investors more positive than commercial private banks may not be sufficient in covering credit needs of investments in the Region. In this case, a quota may be applied to the credits of TKB and HSIB for the Region. But, in the political context of the country,

possibility of such an application is low. Another radical application is to establish a development bank special to the Region. Again the political possibility of that does not seem to be high.

2.3.1.10 Projects in the Investment Program

In Investment Program of Year 2000, there are totally 12 projects, 1 of which belongs to Ministry of Agriculture and Rural Affairs, 7 belong to Directorate General of Monopolies, 1 belongs to Turkish Sugar Factories Corporation and 4 belong to Eti Holding. Sum of investments of those is 9,523.3 billion TL. Their total expenditure up to the end of 1999 was 197.1 billion TL and allowances for year 2000 is 2,700.5 billion TL. Only 2 of those are directly related to production, while the others are projects that are not directly related to production, as warehouse construction and vehicle units. The ones directly related to production are "Waste Treatment and Assessment Project of Alcohol Factory" of Sugar Factories Corporation in Malatya and "Project of Elimination of Bottleneck at Ferrochrome Plant" of Eti Holding in Elazığ. Sum of project of Sugar Factories Corporation is 2,195.5 billion TL and sum of project of Eti Holding is 4,490 billion TL. For the project of Sugar Factories Corporation no money was spent up to the end of 1999 and the allowance of year 2000 is 1 billion TL, while 183.2 billion TL was spent for the Project of Eti Holding and its allowance for year 2000 is 1,157.0 billion TL.

A part of the 12 projects in the Investment Program is planned to be complete in 2000 and another part of it is planned to be complete in 2001. Also the project of Sugar Factories Corporation for which no money was spent is planned to be complete in 2002.

It will be beneficial to complete those 12 projects, which have a relatively small amount in the total expenses envisaged in Investment Program, in the coming 2 years.

2.3.1.11. Half-finished, Partly Operating or Never Operated Investments

There are many investments which are semi-finished, could not started to operate due to insufficiency of working capital or partially operating in EAP Region. Some of the establishments were closed after a short period of operation. Although there is not an inventory on the recent years, an investigation conducted in 1996 may illustrate the subject. The findings of this investigation are given in **Table 2.3.1.7**. At that date, excluding Gümüşhane, there are 18 semi-finished plants, 6 plants requiring additional investment to start operations, 38 plants requiring both additional investment and working capital and 29 plants operating at a very low capacity due to insufficiency of working capital in the Region. In addition, 51 plants are closed.

Some of the plants which are incomplete or working at a low capacity due to insufficient capital were recovered to production by the support obtained by Decision No: 96/8905 and 99/12477 of Council of Ministers, about "Recovering of Investments, Which are Semi-Finished or Could Not Started to Operate Due to Insufficiency of Working Capital, to Economy" or given loan with very good conditions. In this applications, which are referred as First and Second Urgent Support Programs, interest rate of investment credits was 20 % and interest rate of working loans was 30 %, in such an economic situation where interest rates were 100 % or more. Time of payment of investment credits

is 5 years with no repayment in the first 2 years and time of payment of working loans is 3 years with no repayment in the first year. Besides East and Southeastern provinces, First Urgent Support Program included provinces of Kahramanmaraş and Sivas, and second one included provinces of Hatay, Ordu, Sivas and Yozgat. 419 firms applied to First Urgent Support Program and 122 of those got a bank loan and 384 firms applied to Second Program and 143 of those got a bank loan. It is probable that at least half of those firms which made application and got the loans are from EAP Region. There is not an assessment study to see how much of those credits given in the frame of these programs succeeded in reaching to the aim.

However, according to the data of TKB, which was obtained from Provincial Chambers of Industry and Commerce in the middles of 2000, number of closed establishments is 22. It is possible that some of those closed establishments, which got loan in the content of Urgent Support Programs started to operation.

Although a part of them was aroused in the frame of Urgent Support Programs, it would be beneficial to consider the following subjects in finding solution to the establishments with problems in East.

- Enterprises, which have no possibility to work due to regional conditions even if they were completed and initiated to operate and which have no possibility to operate profitable even in case new sources are allocated, should be eliminated.

- In giving credits, enterprises, whose working areas are proper to the criterion, which can serve to the in-Region markets and/or produce sub inputs of the establishments in the Region should be given priority.

- Enterprises, which are at the stage of investment and determined to be able to start operating, should be given credit primarily.

- Alternative utilization areas should be determined for establishments, which lost its operating quality and have a small possibility to continue its existence even if their financial problems are solved.

Table 2.3.1.7: Problematic Private Sector Enterprises In the EAP Region (Number of Units by 1996)

	Have Problem in Operation	Have Problem in Investment + Operation	Have Problem in Investment	Total	Government Aids Left Half-Done	Closed Establishment
ERZURUM SUB-REGION *	**15**	**18**		**33**	**9**	**29**
Ağrı	5	1		6	5	2
Erzincan	3	8		11		8
Erzurum	3	3		6	4	9
Kars	1	2		3		5
Muş	2	1		3		
Ardahan	1	1		2		
Bayburt						
Iğdır		2		2		5
MALATYA-ELAZIĞ SUB-REGION	**5**	**17**	**4**	**26**	**2**	**22**
Bingöl	2	1		3	2	
Elazığ	1	9	4	14		
Malatya	2	4		6		20
Tunceli		3		3		2
VAN SUB-REGION	**9**	**3**	**2**	**14**	**7**	
Bitlis	4	1		5	7	
Hakkari	1	1		2		
Van	4	1	2	7		
TOTAL	**29**	**38**	**6**	**73**	**18**	**51**

Note: * Gümüşhane is excluded.

Data Source: Development Bank of Turkey, "Doğu ve Güney Anadolu Bölgesi Potansiye Değerlendirme ve Uygun Yatırım Alanları Çalışması (İl Bazında Değerlendirme)" Volume II. (Ankara: TKB, February, 1997).

2.3.1.12. Project Proposals For the Manufacturing Industry

In developing projects for the Region, besides the infrastructure properties of the Region, situations of the present enterprises in the Region were also taken into consideration. In implementation of the suggested projects, it is believed that, the knowledge, skills and problems that present enterprises have will give some hints in the subject where, at which scale and by which technology the new enterprises should be established. The projects suggested here are the ones assumed to be appropriate to the general strategy. Some of them are in the projects whose feasibilities are made by being considered in the frame of general strategy and whose list is given in **Table 2.3.1.9**.

Projects for Food, Beverages and Tobacco Industry

Name of Project I: Biscuit Production Plant

Reason: Of the provinces in the extent of EAP, Erzurum and Ağrı are on the path connecting Blacksea to East Anatolia Region and Iran. At the same time, those provinces have advantages in transportation to Republics of Middle

Asia. In this context, there is a possibility for many products to be exported to the neighbor countries to the Region.

Since there are flour and sugar factories in Erzurum and Ağrı, raw material needed for biscuit exist in the Region. Considering this fact, producing biscuit and its derivations is also important in exploitation of Region's raw material possibilities. Since the domestic market is small, the plant to be founded should produce for exportation. Plants should be installed in both present Organized Industrial Zones and the ones to be founded.

The cost of the Plant, which will have a capacity of 3000 tones/year, is estimated to be 6,000,000 US Dollars.

Starting-Finishing Dates **:** 2001-2005

Organization Performing Application **:** Private sector firms

Area of Application **:** Erzurum and Ağrı

Name of Project II: Potato Processing Plant

Reason: Erzurum, Gümüşhane and Bayburt, which are included in EAP, are important potato producer provinces. Approximate annual potato production level is 150 thousand tones in Erzurum, 15 thousand tones in Gümüşhane and 8 thousand tones in Bayburt. In addition, in especially Bayburt, there is a potential to increase the production by the increasing demand. A potato-processing plant installed in those provinces will exploit present raw material possibilities.

By the plants to be founded in both present Organized Industrial Zones and the ones at the stage of construction, an addition would be provided to the increase in the value added created in agriculture sector.

The cost of a plant having a capacity of 1250 tones/year is 1.5 million US Dollars.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Erzurum and Bayburt

Name of Project III: Legumes Packaging Plant

Reason: Erzurum, Erzincan and Muş, which are included in EAP, are important dried beans production centers. The dried legumes packaging plant to be founded will create value added and new employment. If the diversifying in the beans production is reflected to the packaging, the Region may become an important exportation center in this product. Plants should be founded in

Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

The cost of a plant having a capacity of 10,000 tones/year is 1 million US Dollars.

Starting-Finishing Dates **:** 2001-2005

Organization Performing Application **:** Private sector firms

Area of Application **:** Erzurum and Muş

Name of Project IV: Cheese and Butter Production Plant

Reason: In many provinces of the Region, good quality cheese and butter are produced by traditional production methods. A plant should be founded to increase this production by standardizing it. The plant should not produce ordinary products, but diversify by generating "brand". Those plants are important in the development of Region's animal husbandry. Plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

The cost of a Plant having a capacity of 20 tones/day/milk is 3 million US Dollars.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Kars, Iğdır, Ardahan, Bingöl, Hakkari, Muş, Tunceli and Bitlis

Name of Project V: Cube Sugar Production Plant

Reason: According to the data of 1997, annual crystal and cube sugar production is 358,100 tones/year in East Anatolia Region. The production done is below the potential the Region has. While cube sugar can be marketed in the Region, there exists exportation possibility. Integration of the plant with sugar factory will cause to decrease the costs. Plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

The cost of a plant having a capacity of 30,000 tones/year is 800,000 million US Dollars.

Starting-Finishing Dates **:** 2001-2005

Organization Performing Application **:** Private sector firms

Area of Application **:** Kars, Erzurum, Malatya, Muş and Van

Name of Project VI: Beekeeping and Honey Packaging and Bottling Plant

Reason: It is possible to increase the products of beekeeping, which is currently performed in rural areas by traditional methods in small scale and in limited quantities, to utilize its products by installing filling and packaging plants and to market it to inside and outside of the Region by means of a good marketing. Giving the beehives primarily to the districts having a high unemployment and outer migration will increase the social benefit created. Filling plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

The cost of a plant having a capacity of 5,000 beehives/year is 1.5 million US Dollars.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Kars and Gümüşhane

Name of Project VII: Fodder Factory

Reason: By the fodder factories suggested in the Region, where animal husbandry potential is high, the fodder needs of cattle and sheep/goats breeding, poultry raising and hatchery will be provided and new occupation areas will be created. Because of field fishing (aqua farms), which is developed fast in the Region, the demand for fish feed is increasing fast. The plants to be founded should be planned to be large enough to cover present and future demands.

Plants should be founded in Organized Industrial Zones. Technical details related to the plant of the plants should be determined at the feasibility survey stage separately.

The cost of a plant having a capacity of 10,000 tones/year is 800,000 US Dollars.

Starting-Finishing Dates **:** 2001-2005

Organization Performing Application **:** Private sector firms

Area of Application **:** Iğdır, Elazığ and Van

Name of Project VIII: Vegetable Drying, Freezing and Can Production Plant

Reason: Elazığ is an important vegetable producer by its fertile plains. This production is supplied to the market by means of traditional distribution channels without being processed. Although Malatya, Muş and Erzincan currently do not have the production volume that Elazığ has, they have an

important potential in this area. Foundation of such a plant will ensure an increase in vegetable production in agriculture sector by its backward relation and consequently increase the income per capita in this sector.

Processing of the vegetables produced will increase the value added created in the Region. Vegetables such as broad bean, bean, pepper, red mullet, pumpkin, gumbo and eggplant, which are to be processed, may be obtained not only from the provinces determined, but also from the neighbor provinces. The good transportation possibilities especially in Elazığ and Malatya suffice it to produce for exportation. Plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

The cost of vegetable drying plant having a capacity of 5,000 tones/year is 1 million US Dollars. The cost of a frozen vegetable and fruit monitoring plant having a capacity of 10,000 tones/year is 8 million US Dollars.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Elazığ, Muş, Erzincan and Malatya

Name of Project IX: Onion Flour Production Plant

Reason: According to the data of 1996, amount of onion production is 9,506 tones and amount of fresh onion production is 5,479 tones in Elazığ. The onion is directly marketed without any processing. In this manner, the contribution of onion production to the GDP of Elazığ is very low. From this very high quality onion, onion flour and sliced onion may be obtained for exportation. The foundation of a plant achieving such a processing will not only increase employment but also enhance onion production in the province by its backward relation. Foundation of production plant in OIZ will be important in terms of its cost. The employment and cost created by plant will be determined during feasibility stage.

Starting-Finishing Dates **:** 2010-2020

Organization Performing Application **:** Private sector firms

Area of Application **:** Elazığ

Name of Project X: Fruit Juice Production Plant

Reason: Elazığ comes first in fruit production in EAP Region. Outstanding fruits are apple, pear, apricot, mulberry, plum, cherry and peach. 2/3 of the fruits produced in Elazığ are apple and apricot. In Malatya, apricot, which takes an important place in present fruit growing potential of the province, is marketed by being dried. Besides this activity, producing fruit juice will provide not only assessment of apricots of different quality, but also

diversifying of products. Moreover, the fruit juice need of the Region is obtained from the other regions. At least a part of the production of the plants, which will exploit this potential of the Region, should be directed towards exportation.

Plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Elazığ and Malatya

Name of Project XI: Macaroni Factory

Reason: In Elazığ and Malatya, high quality wheat, which can be used in macaroni production is produced. 85 % of the grain production in Malatya is wheat and annual production is approximately 200 thousand tones according to the data of 1996. A high quality macaroni production plant, which can utilize the wheat produced in Elazığ and Malatya, and which is established by a production plan in which a product diversifying is done, is important not only for Region's need, but also for potential exportation. By considering the macaroni being one of the basic nourishment sources in the Region where the income per capita is not high, the possibility to encounter a problem in terms of demand is low. Plant should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

The cost of a plant having a capacity of 8,000 tones/year is 2.5 million US Dollars.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Malatya and Elazığ

Name of Project XII: Spices Packaging Plant

Reason: Spices usage in the Region is high. No standardization exists in spices and similar products. While a packaging plant for the Region will increase the spices production, it will also provide consumers with usage of a product, which has quality and have a certain standard. Considering the working cost and easy transportation to the marketing channels, plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

Starting-Finishing Dates **:** 2001-2005

Organization Performing Application **:** Private sector firms

Area of Application **:** Malatya and Elazığ

Name of Project XIII: Water Products Processing Plant

Reason: In EAP Region, number of enterprises producing and breeding water products is 41. Elazığ and Malatya Sub-Region has a very high potential in terms of breeding water products. Only a part of this potential is utilized and fish is marketed as being end product without any processing. Different products directed towards the increasing processed ready-made product demand together with the advanced food sector may be obtained from fish (by product diversifying method). In addition, products such as fodder (dog and cat food) may be obtained from the wastes of processed fishes.

Suggested plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

The cost of a plant having a capacity of 50,000 tones/year is 2 million US Dollars.

Starting-Finishing Dates **:** 2010-2020

Organization Performing Application **:** Private sector firms

Area of Application **:** Elazığ, Van and Tunceli

Name of Project XIV: Water Bottling Plant

Reason: Tunceli is a province where water potential is high. Today, this potential is not utilized. By a water packaging plant to be founded in Tunceli, water sources will be utilized and an increase will be provided in employment and value added. Scale size of the plant should be determined at the feasibility survey stage separately.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Tunceli

Name of Project XV: Soda Production Plant

Reason: There exist one soda production plant in the Region. However in Van, reach natural soda resources exist. But those could not be utilized sufficiently up to now. Progressing of the tourism activities will increase soda demand. Soda bottling plant, which does not require high costs, can either be founded at the mineral water source or in Organized Industrial Zone. For

the latter case, water is brought to the bottling plant by tankers. Scale size of plant should be determined at the feasibility survey stage separately.

The cost of a plant having a capacity of 50,000 bottles/year is 1 million US Dollars.

Starting-Finishing Dates **:** 2001-2005

Organization Performing Application **:** Private sector firms

Area of Application **:** Van

2.3.1.3.2. Projects for Textile, Clothing Goods and Leather Industry

Name of Project I: Raw Leather Processing Plant

Reason: The Region is an important center of animal husbandry. Although in some of the provinces of the Region there exist plants for animal slaughtering, no leather processing plant exists and leather is marketed without being processed. Some part of the processed leather to be produced may be further processed in suggested shoe and ready-made leather clothing plants and the rest may be marketed to other regions and foreign countries. Public should be guiding and encouraging in this subject. Plants should be active in specially founded Leather Processing Organized Industrial Zones. Tanneries may be founded near the leather processing plants to be founded in the future years. By this way, treatment costs will be decreased.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Erzurum, Van, Kars or Ardahan.

Name of Project II: Hand-Made Carpet and Kilim Weaving Plant

Reason: Hand-made carpet and kilim weaving has been done in small scaled workshops in many of the provinces of the Region with local patterns in a labor-intensive way for many years. This production may be done in greater plants in a more organized manner. Products may be marketed better by companies with multi-shareholders. Plants should primarily be founded in places where unemployment is high.

The cost of a plant with 50 weaving looms is 200,000 US Dollars.

Starting-Finishing Dates **:** 2001-2005

Organization Performing Application **:** Private sector firms

Area of Application **:** Erzurum, Kars, Ardahan, Gümüşhane, Bitlis, Hakkari and Muş

Name of Project III: Shoe and Boot Production Plant

Reason: In the plant to be founded, factory-made production directed towards both local and regional demand and exportation will be done. Plant will not only provide the utilization of the processed leather in the Region, but also be an advantage for the Region by its positive effect on employment. Plants should be founded in Organized Industrial Zones.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Van, Ağrı, Kars, Muş and Iğdır

Name of Project IV: Wool Yarn and Weaving Plant

Reason: The wool obtained is not utilized in the Region. To reverse this event and process the wool in the Region, wool yarn and woolen cloth plants should be founded. The present animal husbandry potential that the Region has is at the level to ensure raw material for production of quality wool yarn and weaving. Producing quality clothes, which can create brand, will increase the value added. Plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

The cost of a weaving plant having capacity of 2,500-tones/year yarns and 1.5 million meters/year is 1 million US Dollars.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Malatya, Erzincan and Van

Name of Project V: Dye, Print and Chemical Finish Plant

Reason: Malatya is the only province where textile sector is improved in the Region. There are plants currently performing dye, print and finish in the Region. For this reason, a certain amount of individual capital particular to certain products exists. So, foundation of new plants will create synergy effect. Public should undertake an encouraging function in this area. Plant should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

The cost of a plant having a capacity of 2,000-tones/year is 10 million US Dollars.

Starting-Finishing Dates **:** 2010-2020

Organization Performing Application **:** Private sector firms

Area of Application **:** Malatya

Name of Project VI: Ready-Made Leather Clothing Plant

Reason: An increase may be provided in employment and value added in the Region by transforming hides of animals slaughtered in the Region to the end products. Plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

The cost of a plant having capacity of 30,000-tones/year seep/goats and 1,800-tones/year cattle is 3 million US Dollars.

Starting-Finishing Dates **:** 2010-2020

Organization Performing Application **:** Private sector firms

Area of Application **:** Van, Erzurum and Ağrı

2.3.1.3.3. Projects for Wood Products and Furniture Industry

Name of Project I: Woodworks Production Plant

Reason: 23.8 % of lands of Gümüşhane are covered by forests. Important forest areas also exist in Kars. In assessment of this wealth, woodworks production plant based on forests may undertake an important function. In addition, products such as lumber, parquet, connecting pieces, etc., that will be produced in this plant will create its sub industry and ensure new occupation opportunities. Plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Gümüşhane and Kars

2.3.1.3.4. Projects for Paper, Paper Products and Printing Industry

Name of Project I: Kraft Bag Production Plant

Reason: Kraft bag is used for carrying granulated and pulverized building materials and synthetic materials. Present cement factories in Erzurum, Elazığ, Van and Kars and production of lime and plaster in the Region creates a regional demand for kraft bag. Amount of production of those four plants was

1,530,000 tones/year in 1997. Construction volume, which is expected to increase rapidly in the Region, will cause an increase in production of those and consequently cause an increase also in kraft bag demand. The scale of the plant should be determined by considering the increases in production of the cement, lime and plaster, etc. Plants should be founded in Organized Industrial Zones.

The cost of a plant having a capacity of 50 millions of bags/year is 3.5 million US Dollars.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Erzurum, Van, Kars and Elazığ

2.3.1.3.5. Projects for Chemicals- Petroleum, Coal, Rubber and Plastic Products Industry

Name of Project I: Polyurethane Sponge Production Plant

Reason: From polyurethane, flexible styrofoam mostly used as bed filling material and flooring and hard styrofoam used in production of light structural materials are obtained. Those are used as spacing material in automotive side industry, textile and in productions of furniture and bed. The demand is kept active continuously by the technology used in furniture and bed production, which depends mostly on polyurethane sponge. Plants should be founded in Organized Industrial Zones.

The cost of a plant having a capacity of 2,500 tones/year is 1.5 million US Dollars.

Starting-Finishing Dates **:** 2010-2020

Organization Performing Application **:** Private sector firms

Area of Application **:** Erzurum and Malatya

Name of Project II: PVC Joinery Production Plant

Reason: Usage of PVC joinery gradually becomes widespread in the country. The demand in the Region gradually increases. There exists regional market for these plants. PVC joinery production plants should be founded by aiming at regional market. While aiming at marketing outside the Region will increase the investment cost, it is also difficult for these plants to compete with the other firms marketing over the country. Plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

The cost of a plant having capacity of 300 tones/year PVC and fitting and 750 tones/year hose is 1 million US Dollars.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Erzurum, Malatya and Van

Name of Project III: Production of Coloring Agents

Reason: In Malatya, there was an experience on the production of dye before. The plant, which made activity by dye brand Merbolin, was closed due to worker-employer disagreement. This closed plant shows that there is a potential at least in terms of demand in Malatya. Moreover, the construction activity, which is increasing parallel to the increasing urbanization tendency, causes an increase in the demand to the dye. So, a dye production plant is needed in the Region. Plants should be founded in Organized Industrial Zones. Scale of the plants should be determined by conducting a demand analysis.

The cost of a plant having a capacity of 1,000 tones/year is 5 million US Dollars.

Starting-Finishing Dates **:** 2000-2005

Organization Performing Application **:** Private sector firms

Area of Application **:** Malatya

Name of Project IV: Color Gas Tube Filling Plant

Reason: Urbanization is rapidly increasing in the Region. In cities of the Region liquid petroleum gas comes first in the energy sources used at homes. According to the data of 1997, there are 6 liquid petroleum gas-filling enterprises in the Region. The capacity of those plants is 288,000 unit/year. When the present and potential demands in the future are considered, it is not possible for the present plants to supply the demand. So, it is compulsory to found new filling plants. By considering present and future demands and also security, transportation cost and connection to distribution channels in the provinces where demand is intensified, plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

Starting-Finishing Dates **:** 2001-2005

Organization Performing Application **:** Private sector firms

Area of Application **:** Van, Elazığ, Erzurum, Malatya and Erzincan

2.3.1.3.6. Projects for Non-Metallic Mineral Industry

Name of Project I: Ready-Mixed Concrete Production Plant

Reason: Urbanization rapidly continues in EAP Region, especially in provinces Erzurum, Van, Malatya and Elazığ, which are attraction centers. Increasing tendency of urbanization creates a gradually increasing demand for structure materials. Existence of cement factory in the provinces suggested for concrete plants will create an advantage in getting raw material. Plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

The cost of a plant having a capacity of 250,000 m^3/year is 5.5 million US Dollars.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Erzurum, Van, Kars, Elazığ and Malatya

Name of Project II: Prefabricated Structural Elements Plant

Reason: Building trade in Malatya-Elazığ Attraction Center has an important place in GDP of the Region. There are cement factories in provinces suggested for foundation of prefabricated structural elements plants. In addition, some part of agriculture sector is also active in these provinces. This forms an infrastructure for foundation of prefabricated structural element plant. Suggested plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

The cost of a plant having a capacity of 125,000 m^3/year is 4 million US Dollars.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Elazığ, Malatya, Erzurum and Van

Name of Project III: Brick Production Plant

Reason: The plants to be founded to utilize the brick clay in Bingöl and Van are important in terms of employment it creates. Coal reserves in these two provinces may be used as source of energy in brick production. Plants should be founded close to the coal reserves that will be used as energy sources. Scale size should also be determined at the feasibility survey stage separately.

The cost of a plant having a capacity of 15 million units/year is 700,000 US Dollars.

Starting-Finishing Dates **:** 2001-2005

Organization Performing Application **:** Private sector firms

Area of Application **:** Bingöl and Van

2.3.1.3.7. Projects for Metal Products, Machine and Equipment, Transportation Vehicle, Scientific and Professional Measurement Devices Industries

Name of Project I: Wire and Nail Production Plant

Reason: The rapidly increasing urbanization trend in the Region created a serious demand for construction material. It is possible that this demand will gradually increase. Nail and wire is also in the construction materials demanded. In the Region, there are four nail and wire plants now. The current capacities of those plants are not at the sufficient level to cover the Region's needs. So, the Region needs new wire and nail plants. Plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Van, Elazığ and Erzurum

Name of Project II: Farm Machinery Production Plant

Reason: Machinery utilization in agriculture sector becomes widespread rapidly in the Region. The growth of Region's economy will accelerate the mechanization more. There are two firms working on this subject now. The production capacities of those firms do not supply the needs of the Region. By considering present and future demands, farm machinery production plants may be founded. Plants should be founded in Organized Industrial Zones. Scales of plants should be determined at the feasibility survey stage.

Starting-Finishing Dates **:** 2005-2010

Organization Performing Application **:** Private sector firms

Area of Application **:** Van, Elazığ and Erzurum

Name of Project III: Heating Boiler Production Plant

Reason: Together with the continental climate conditions and increasing urbanization in the Region, number of buildings with central heating is increasing rapidly, according to S.I.S. Building Statistics. According to the data of 1997, there is only one enterprise producing heating boiler in the Region. The production capacity of this enterprise is 1500 units/year. This does not cover the Region's need. New heating boiler production plants should be founded in provinces with rapid urbanization. Plants should be founded in Organized Industrial Zones. Scale size should also be determined at the feasibility survey stage separately.

Starting-Finishing Dates **:** 2010-2020

Organization Performing Application **:** Private sector firms

Area of Application **:** Van, Elazığ, Malatya and Erzurum

The plants suggested to be founded in the Region, their places and periods are summarized in **Table 2.3.1.8**.

Table 2.3.1.8: Summary Table of Project Proposals for Manufacturing Industry in EAP Region

Plant	Proposed Place for Foundation	Suggested Period
1) Biscuit Production Plant	Erzurum, Ağrı	2001-2005
2) Potato Processing Plant	Erzurum, Bayburt	2005-2010
3) Legumes Packaging Plant	Erzincan, Muş	2001-2005
4) Cheese and Butter Production Plant	Kars, Iğdır, Ardahan, Bingöl, Hakkari, Muş, Tunceli, Bitlis	2005-2010
5) Cube Sugar Production Plant	Kars, Erzurum, Malatya, Muş, Van	2001-2005
6) Beekeeping and Honey Packaging and Bottling Plant	Kars, Gümüşhane	2005-2010
7) Fodder Factory	Iğdır, Elazığ, Van	2005-2010
8) Brewery	Malatya	2010-2020
9) Vegetable Drying, Freezing and Can Production Plant	Elazığ, Erzincan, Muş, Malatya	2005-2010
10) Onion Flour Production Plant	Elazığ	2010-2020
11) Fruit Juice Production Plant	Malatya, Elazığ	2005-2010
12) Macaroni Factory	Malatya, Elazığ	2005-2010
13) Spices Packaging Plant	Malatya, Elazığ	2001-2005
14) Water Products Processing Plant	Elazığ, Van, Tunceli	2010-2020
15) Water Bottling Plant	Tunceli	2005-2010
16) Soda Production Plant	Van	2001-2005
17) Raw Leather Processing Plant	Erzurum, Kars, Van	2005-2010
18) Hand-Made Carpet and Kilim Weaving Plant	Erzincan, Kars, Iğdır, Ardahan, Bitlis, Gümüşhane, Hakkari, Muş	2001-2005
19) Shoe and Boot Production Plant	Van	2005-2010
20) Wool Yarn and Weaving Plant	Malatya, Erzincan, Van	2005-2010
21) Dye, Print and Chemical Finish Plant	Malatya	2010-2020
22) Ready-Made Leather Clothing Plant	Van, Erzurum, Ağrı	2010-2020
23) Woodworks Production Plant	Kars, Gümüşhane	2005-2010
24) Kraft Bag Production Plant	Erzurum, Van, Kars, Elazığ	2005-2010
25) Polyurethane Sponge Production Plant	Erzurum, Malatya	2010-2020
26) PVC Joinery Production Plant	Erzurum, Malatya, Van	2005-2010
27) Production of Coloring Agents	Malatya	2001-2005
28) Color Gas Tube Filling Plant	Van, Elazığ, Erzurum, Malatya, Erzincan	2000-2005
29) Ready-Mixed Concrete Production Plant	Erzurum, Elazığ, Kars, Van, Malatya	2005-2010
30) Prefabricated Structural Elements Plant	Elazığ, Malatya, Erzurum, Van	2005-2010
31) Brick Production Plant	Bingöl, Van	2001-2005
32) Wire and Nail Production Plant	Elazığ, Erzurum, Van	2010-2020
33) Farm Machinery Production Plant	Elazığ, Erzurum, Van	2005-2010
34) Heating Boiler Production Plant	Elazığ, Erzurum, Malatya, Van	2010-2020

2.3.1.13. Proposed Additional Manufacturing Industry Projects Under Feasibility Study

In addition to the project suggestions whose short reasons are given above and which are summarized in **Table 2.3.1.8**, the feasibility surveys of project suggestions from provinces are being conducted. Some of those project suggestions took place in also the ones given in **Table 2.3.1.8**. The list of projects whose feasibility is being prepared are given in **Table 2.3.1.9**.

Table 2.3.1.9: Proposed Additional Manufacturing Industry Projects Under Feasibility Study

Placement of Proposoed Project	Proposed Manufacturing Industry Projects
ERZURUM SUB-REGION	
Ağrı	i) Carpet ii) Yarn Production iii) Agricultural Machine and Equipment Production
Erzincan	i) Viol (egg packaging) ii) Soap production
Erzurum	i) Boiled Salt ii) Plaster Production
Gümüşhane	i) Mulberry Products (molasses, sun dried pulp, vinegar) ii) Marble and Artificial Granite
Kars	iii) Legumes Classification and Packaging iv) PVC Soled Shoe v) Sunflower Oil
Ardahaan	i) Macaroni Production ii) Raw Leather Processing
Bayburt	i) Bayburt Stone ii) Ehram Weaving iii) Faience- Ceramic
Iğdır	i) Canned Foods (Fruit- Vegetables) ii) Fruit Juice- Beverages iii) Shoe and Boot Production
MALATYA-ELAZIĞ SUB-REGION	
Bingöl	i) Beekeeping Integrated Project (Production+Packaging) ii) Kraft Bag
Elazığ	i) Marble Production ii) Sauce, Can and Pickle iii) Concentrated Fruit Juice
Malatya	i) Concrete Prefabricated Structure Elements ii) Medical Textile Material Production iii) Ceramic, StainedGlass Medical Equipment Production
Tunceli	i) Nail, Wire, Barbed Wire and Cage Wire Production ii) Milk Products and Encased Cheese Production and Packaging iii) Knitting and Ready-Made Clothing Production
VAN SUB-REGION	
Bitlis	i) Pearlite Production ii) Wool Stocking Production iii) Pumice Production as Structure Element
Hakkari	i) Kilim Making ii) Water Bottling
Van	i) Automobile Tyre and Coating

APPENDIX.1

Alternative EDA Upper Management Model and Necessary Functions and Authorities of the EDA

It may be set forth that if EDA supreme administration becomes more autonomous than the one presented in the model given in part 2.3.1.3.4, it will be less affected from the political fluctuations and achieve the duties given to it more efficiently. The principle in a more autonomous supreme administration should be to change the Chairman frequently in order to minimize political considerations in Chairman selections and cause administration to win stability. The formation of such a supreme administration model is given below.

Chairman of EDA should be appointed from 3 candidates proposed by Prime Minister for a 5-year period. Chairman should be able to appointed twice. Administrative Board should consist of one member appointed from each of the organizations SPO, Undersecretariats for Treasury and Foreign Trade and KOSGEB Department themselves; 6 members appointed from Chamber of Industry and Commerce Chairmen in the Region and EDA Chairman. Administrative Board should select its Chairman itself. Except for Chairman, Administrative Board memberships should be for 3 years, while one third of the members selected by chambers should be replaced in each 2 years.

In order to increase the efficiency of EDA, EDA might have to perform functions other than the ones contained in the model in the text and to be provided with more extensive authorities. One of the main functions and authorities in those is related to the allocation of industrial plots and plants.

One of the most important methods to support entrepreneurs and to put investment projects of entrepreneurs with limited financial possibilities into application is to provide entrepreneurs with industrial plot and ready factory buildings, whose infrastructure is ready. This may be done by renting or selling to the entrepreneur. In that context, the models of Organized Industrial Zones (OIZ) and Small Industrial Sites (SIS) in the country are insufficient. EDA should undertake the following duties to encourage and accelerate the industrialization.

- Forming an industrial plot stock and renting plots whose infrastructures are completed to investors for long periods,
- Constructing prefabricated factories and administrative buildings in different sizes on industrial plots with infrastructure and renting them to investors,
- In cases where special constructions are required, constructing factory building and other plants according to the requests and plans of investor and renting them to investor,
- Forming integrated zones for industry and services,
- Constructing office buildings and plants in industrial zones and in downtowns, and renting them.

All those may be achieved either by EDA itself or by “Real Estate Investment Corporations” which is to be founded by partnership or by leadership of EDA (the subject of Real Estate Investment Corporations will be considered again in parts Commerce and Building Trade).

In order to achieve these duties, EDA should first of all form a plot portfolio. This will necessitate for EDA to work in close cooperation with Ministry of Industry and Commerce, which carries on the OIZ and SIS applications, Ministry of Public Works and Settlement, which uses authorities related to land usage and zoning, Plot Office, which stocks plots, and KOSGEB, which establishes service centers in OIZ and SISs and makes attempts on the subject of technoparks.

Table 2.3.1.10: Strategies to be Implemented in Manufacturing Industry Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Development of industry in Malatya and Elazığ	Supporting of industry directed towards national market	Supporting of industry directed towards national market	Diversifying of industry directed towards international market	Malatya, Elazığ
Development of industry in Erzurum and Erzincan	Development of rootless industries	Development of rootless industries	Supporting of industry directed towards neighbor and Middle Asia countries	Erzurum, Erzincan
Development of industry in Van	Supporting of industries processing local and sub-regional raw materials	Development of rootless industries, Opening to international markets in animal products	Reaching to competition power in animal products in Golf countries	Van
Development of Farm Machinery Industry	Development of Malatya farm machinery and electric motor industry	Development of electric motor and double-revolution motors in Malatya	Development of Farm Machinery Industry	Malatya
Meat and meat products, leather processing, milk factory, fodder factory development works	Considering Erzurum, Ağrı, Ardahan, Kars, Muş and Tunceli as primary provinces	Development of animal races and increasing their efficiencies	Development of industries related to animal husbandry and development of international marketing possibilities	All Sub-Regions
Supporting and Directing	Completing Small Industrial Sites and Organized Industrial Zones under construction, Supporting of investments	Consulting, development of marketing projects, foundation of Development Agency	Providing Government Aids for association of firms to form large industries	All Sub-Regions

2.3.2. MINING

2.3.2. Mining

Mining is a sector that creates a great number of employment opportunities. However, the studies that have been made so far indicate that the mineral reserves that can be operated economically in the region are only chrome, kaolin, marble, geothermal resources, brick-tile raw materials, perlite and pumice. On the other hand, geological structure of the region is suitable for the sulfur ore and iron rich ore formations. Mineral exploration and reserve determination studies may reveal new mineral deposits with economic values in the future.

The plan comprise the following studies; mineral exploration and reserve determination studies in larger scale, development of marble work, usage of pumice and perlite as an insulation material in constructions, usage of geothermal sources in building heating in the region that have geothermal resorces and evaluation of kaolin in ceramic industry.

Except for the chrome, which is an important export product and found in Elazığ, Erzincan and Erzurum, operation of the other mineral deposits will be made only to meet the local and regional demands at least in the short and middle term due to the high transportation cost of mineral products and therefore their economic impact will be very limited.

2.3.2.1. Summary of Current Condition

Although EAP Region has varios economic reserves and important mineral deposits, sufficient amounts of production has not been made in the region in the recent years. For instance, although Elazığ province has marble deposits which has considerable reserves and high market share, the share of marble produced in this region in total Turkish production was only 1.3%. In addition, in spite of existance of important perlite reserves in the region, the production is not at sufficient levels. Same situation is also observed in pumice production. Although many operation permits were taken for many different fields, there is no activity in most of them.

The share of mining sector in GDP of EAP Region was average of 1,5 percentage between 1987 and 1990 and decreased to average of 0.6 percentage between 1991-1994 (SIS, Gross Domestic Product by Provinces, 1997). The highest share in the mining sector in EAP Region belongs to the Elazığ and Erzincan. Malatya and Erzurum follow these provinces. Significant decreases was also observed in these provinces between 1991-1994.

2.3.2.2. Mining Master Plan

2.3.2.2.1. Legal and Institutional Arrangements

New arrangemnts are required to develop mining sector and dependingly increase the production, employment and value added in EAP Region.

Mining legislation should be considered again and new arrangements should be made. Minerals and marbles in Turkey are subject to Mining Law No:3213 enacted in

1985. Minerals that are not included in the content of Mining Law No: 3213 and raw materials excluding salt are subject to Quarrying Regulation rules enacted in 1901 (1317). Salt is operated according to the Salt Mine No:3078 enacted in 1936. Stone quarrying and salt mining must be included in the content of Mining Law. Although the article that states "Mining Department assemble its organisation throughout the country after this law is put into force" included at the end of Mining Law No:6309 enacted in 1954 and Mining Law No:3213, only the name of the organization was changed as "General Directorate of Mining Affairs" but no any organization was established in any province . This organization must be established at least in two provinces (Elazığ ve Erzurum) in EAP Region as Head Office with sufficient number of personnels and enough equipments to facilitate better oppotunities to the miners and to inspect the permitted fields sufficiently.

2.3.2.2.2. Reserve Determination and Mine Operations

A detailed inventory of known mine deposits and stone quarryings in EAP Region must be prepared. EAP Region has significant importance in terms of chrome, iron, copper, pumice, perlite, marble deposits. In addition, gold reserves should be investigated in Elazığ, Gümüşhane, Erzurum and Kars provinces.

Geologically EAP Region is composed of metamorphic rocks called as Bitlis-Pötürge massive, ophiolites which spread over wide areas in different places (particularly in Elazığ, Erzincan and Erzurum provinces), arch magmatics extended from Malatya to Hakkari, young volcanics widespread in all region and various sedimentary rocks. There are also important brick-tile raw materials in basins between mountains and along the Fırat River bed in EAP Region.

Ophiolites are important in terms of chrome. In addition, they are also important due to their nickel, platinum groub of metal and magnesite content. Chrome deposits that are found in the ophiolites have been known and operated for a long time. Presently, chrome deposits in the ophiolites in Elazığ-Guleman and in the Erzincan and Erzurum regions are being operated. Studies on the grade and reserve of minerals excluding chrome are very rough and therefore the mineralisation in ophiolites in the Elazığ-Erzurum region should be examined and minerals other than chrome should be determined.

Arch magmatics which are widespread in the region are important in terms of sulfur (especially copper). Some reserve determination studies were made about sulfur ore formation in these rocks in Malatya-Elazığ region. Copper ore formation has also great importance for the region. Because Copper Establishment in Maden county of Elazığ has nearly stopped its activities due to the insufficient reserves, which led to high amount of unemployment. If sufficient reserves are found for the establishment as a result of exploration and reserve determination studies made by General Directorate of Mineral Research & Exploration (MTA), the establishment should be privatized and the found reserves should be sold to this establishment. A research need to be made to take the proved copper reserves of Siirt Madenköy into operation. Besides copper, the grade and reserve of various sulfur minerals like lead, zinc should be calculated. Upper Fırat basin where polymetallic ore formation is common should be examined as regard of grade and reserve.

Metamorphic massives are important in terms of various mineral deposits. There are iron rich ore formations within the metamorphites developed at the contact points of granitic rocks in EAP Region. However, Bingöl-Avnik iron deposit are not operated due to their low quality. Marble is one of the important mineral in the metamorphic massives. The most important marble deposits in EAP Region is in the South of Elazığ. Besides the metamorphic massives, there are also travertine deposits operated as a marble mine. Marble inventory is not known accurately in EAP Region as in all regions in Turkey. European Union Countries have a high share in the world marble trade. Most of the world marble export was accomplished by these countries. Nearly all of the existent resources are being operated and the reserves has gradually decreased. For that reason, marble deposits in Turkey are very important for these countries not to lose their marble market and due the existent marble establishment in these countries. Therefore, it will be very beneficial if the inventory study of marble and hard stones is prepared in the coordination of MTA Directorate. Governmental support is required to make roads in places where important marble reserves exist to enable the transport of marble block to the marble workshops. Trained personnel and capital are the most required necessities for the marble sector in EAP Region as in all regions in Turkey. Although marble sector have enough manager, marketing expert, top level technical personnel for the mines and plants, it needs many intermediate technical personnel. Therefore, Marble Work Department should be established in Technical High School in Fırat University in the region to increase the number of intermediate technical personnel for the marble sector in EAP Region. A serial of laboratory studies and analysis are needed to differentiate the marbles according to the qualities and types. Performance of these analysis by marble producers will contribute the development of marble sector.

Young volcanic rocks, which widespread in the East Anatolia Region, include pumice deposits with significant reserves. These are consumed in the following areas;

- As abrasive material in textile industry,
- As brick-tile raw material in construction sector.

There are important pumice deposits in Bitlis-Tatvan, Bitlis-Ahlat, Van-Erciş-Kocapınar, Van Mollakasım, Ağrı-Doğubayazıt, Iğdır and Kars regions in EAP Region.

Pumice production is made by primitive methods in EAP Region. Unplanned way of work is the practise during raw pumice production from mine (from mine production till the raw pumice obtaining step). Therefore, time and product lose is high. Scientific and technical assistance should be given to operators to solve these problems. Financing credits should be supplied to the producer firms in appropriate conditions to process the pumice with modern technology and increase the consumption of pumice. Volcanic particles and foreign components that cannot be differentiated at the mine output and decrease the quality should be separated with suitable systems and after washing, drying must be made. In that context, a short training programme should be applied for the managers. In order to bring the standadization in the product, firms should cooperate and technical and scientific support shold be taken from the universities.

Adobe buildings that are unreliable and do not resist natural catastrophes like earthquake are made especially in rural settlements areas in EAP Region. People in the

region should be enlightened about the fact that the region is an earthquake region and resistant buildings should be made in the region. The usage of pumice should be encouraged. Detailed explanation were made in Construction Sector Section about the usage of pumice in housing estate constructions.

Perlite is very good insulation material and widely spread and produced in Erzincan, Erzurum-Pasinler, Kars-Sarıkamış, Van-Erciş and Adilcevaz regions. However, it is not consumed at enough levels since people in the region are not familier with perlite. First of all, perlite producers should be educated in order to increase the usage of perlite in the region and to make export to the neighbours especialy in the South.

There are gold occurences in Elazığ, Erzurum, Gümüşhane and Kars provinces in EAP region. Gold exploration project, that would be accomplished in Erzurum province by MTA in 2000, has continued. Reserves in Kars province are not at significant amounts.

Important clay deposits exist in basins between mountains and around Lake Van in EAP region. Clays are classified in different ways. According to the application area, clays are calssified as kaolins, plastic clays, fireclay, clay for garden pot, clay for laying and drain tile and brick-tile clays. Kaolin and bentonite (montmorillonite+baidelite) are two types of clays that are used in industry. The kaolin that is used in porcelains and isolators in ceramic industry has great importance for the region. Therefore, kaolin research especially around Lake Van should be made. Bentonite, which has wide application areas, forms at the regions where ophiolite and basic volcanic outcrops are observed. EAP Region is very rich in terms of ophiolite and basic rocks. Bentonite investigation should be made in Elazığ, Erzincan and Erzurum provinces.

Depending on the information summarized above, proposed new projects are given in **Table 2.3.2.2 (a,b,c,d,e).** Some of the proposed projects will continue during the plan period.

The projects that have continued in the frame of Investment Plan 2000 are given in **Table 2.3.2.1.**

2.3.2.3. Summary of Proposed Projects

Suggestions explanied in detail in the above sections are given as summary in **Table 2.3.2.1** and **Table 2.3.2.2. a,b,c,d,e.**

Table 2.3.2.1: Projects In the Year 2000 Investment Program

	Project I	Project 2	Project 3	Project 4
1. Project Name	Mineral Exploration	Geothermal Survey	Akifer Rock and Mineral Water exploration	Mineral Survey (Gold)
2. Location (Province, County, District)	Bitlis	East Anatolia (Genel)	Van- Bitlis	Erzurum
3. Cost (Billion TL.)	15	114	10	20
4.Starting Years	2000	2000	2000	2000
5. Fininshing Years	2000	2000	2000	2000
6. Estimated expenses till the end of (Billion TL)	15	114	10	20
7.Annual expense requirement (Billion TL.)	15	114	10	20
8. Annual employment opportunity, person/year	13	66	67	12
9.Responsible Organization	MTA East Anatolia Head Office	MTA East Anatolia Head Office	MTA East Anatolia Head Office	MTA East Anatolia Head Office

Source: Investment Program 2000

Table 2.3.2.2.a: Proposed New Projects

	Project I	Project 2	Project 3	Project 4
1. Project Name	Rearrangement of Mining Law No: 3213 in the form that will include Salt Law and Quarriyings	Establishment of Head Offices of Mine Department	Establishment of East and Southeast Anatolia Marbler Associationı	Establishment of Pumice and Perlite Producers Association
2. Location (Province, County, District)		Elazığ, Erzurum	Elazığ	Bitlis, Van
3. Cost (Billion TL.)		2.000		
4.Starting Years	2001	2001	2001	2001
5. Fininshing Years	2005	2010	2005	2005
6.Annual expense requirement (Billion TL.)		200		
7. Annual employment opportunity, person/year		150	20	20
8.Responsible Organization	Ministry of Energy and Natural Resources	Ministry of Energy and Natural Resources	Private Marble Establishments	Private Pumice and Perlite Producers

Table 2.3.2.2.b: Proposed New Projects

	Project 5	Project 6	Project 7	Project 8
1. Project Name	Exposing of Potential Pumice and Perlite Fields.	Examination of Ore Formation Depending on Ophiolites, Determination of Reserves (Exploration, Geochemistry, Cleaving and Drilling in Required Places)+ Operation	Reserve Determination of Polymetallic Ores (Exploration, Geochemistry, Cleaving and Drilling in Required Places)	Determination Studies of Gold Reserves
2. Location (Province, County, District)	Elazığ, Bitlis, Van, Erzurum ve Erzincan	Elazığ, Erzincan, Erzurum	Elazığ. Erzincan, Gümüşhane, Bayburt, Erzurum	Elazığ, Gümüşhane
3. Cost (Billion TL.)	500	1.000+2.000 +5.000	500	1200
4.Starting Years	2001	2001	2001	2001
5. Fininshing Years	2005	2020	2020	2010
6.Annual expense requirement (Billion TL.)	50	200 (1. Priod Public) 1.500 (2. and 3. Period Private Sector)	200	40 (1 Period) 100 (2. And 3. Period)
7. Annual employment opportunity, person/year	20	120 (Public) 1500 (Private Sector)	30 (Public)+ 500 (Private Sector)	15 (Public) + 1000 (Private Sector)
8.Responsible Organization	Related Establishments in the Coordination of MTA	MTA General Management + Private Sector Province Governership	MTA General Management + Private Sector Province Governership	MTA General Management + Private Sector Province Governership

Table 2.3.2.2.c: Proposed New Projects

	Project 9	Project 10	Project 11	Project 12
1. Project Name	Examination of Geothermal resources of East Anatolia (Survey+Drilling) and Operation	Examination of Clay-Kaolin Deposits around Lake Van, Reserve Determination	Determination of Marble Reserves and Establishment of Marble plants	Establishment of Marble Department (for 2 Years Education) in one of the Universities in EAP Region and Training of Producers
2. Location (Province, County, District)	Bingöl, Ağrı, Bitlis, Erzurum	Ahlat, Adilcevaz, Erciş	Elazığ	All the regions
3. Cost (Billion TL.)	300 (Public) + 500	100(Public)+ 800 (Private Sector)	5.000	500
4.Starting Years	2001	2001	2001	2001
5. Fininshing Years	2020	2020	2020	2005
6.Annual expense requirement (Billion TL.)	60 (1. Period) 50(2.and 3.Period)	50 (1. Period) 800 (2.and3.Period)	300-350	100
7. Annual employment opportunity, person/year	70 (1. Period) 100(2.and3.Period)	20 (Public) 500 (Private Sector)	200	25
8.Responsible Organization	MTA General Management + Private Sector Province Governership	MTA General Management + Private Sector Province Governership	Private Sector Private Sector Province Governership	Universities in the Region and Operators

Table 2.3.2.2.d: Proposed New Projects

	Project 13	Project 14	Project 15	Project 16
1. Project Name	Investigation of Trona Reserve	Liquefied Pure CO2 and dry ice Production	Heating Using Thermal Energy	Perlite and Pumice Processing Establishments
2. Location (Province, County, District)	Van	Diyadin (Ağrı)	Diyadin (Ağrı)	Van, Bitlis, Erzurum, Erzincan, Kars
3. Cost (Billion TL.)		10.000	10.000	2
4.Starting Years	2001	2001	2001	2005
5. Fininshing Years	2010	2005	2010	2010
7.Annual expense requirement (Billion TL.)				
8. Annual employment opportunity, person/year				
9.Responsible Organization	MTA Province Governership	Ağrı Province Administration	Ağrı Province Administration	Private Sector

Table 2.3.2.2.e: Proposed New Projects

	Project 17	Project 18	Project 19	Project 20
1. Project Name	Operation of Ores that Have Enough Reseves and Formed Depending on Ophiolites	Operation of Copper Deposits that Have Enough Reserves and Found as a Result of Polymetallic Ore Explorations	Establishment and Operation of Plant in the Region where Sufficient Gold Reserves are Found As a result of First Period Studies	Establishment and Operation of Industry Based on Kaolin
2. Location (Province, County, District)	Elazığ, Erzincan, Erzurum	All the EAP Region, Plant will be made in Maden County of Elazığ.	Erzurum, Kars.	Ahlat/Adilcevaz
3. Cost (Billion TL.)				
4.Starting Years	2006	2006	2006	2006
5. Fininshing Years	2020	2020	2020	2020
7.Annual expense requirement (Billion TL.)				
8. Annual employment opportunity, person/year	50	400-500	50	100
9.Responsible Establishment	Private Sector	Private Sector	Private Sector	Private Sector

Table 2.3.2.3: Strategies to be Implemented in Mining Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Legislation	Rearrangement of Law and Regulations (Mining Laws No: 3213, 3078 and Regulation No:1901)	New legislation formation studies	Performing necessary adaptation by Observation of Applications	General
Credit and Finance	Region should be included in the content of Law No:4325. Application of necessary incentives to increase the production of produced minerals	Application of credits and tax exemptions to operate the mineral deposits that have enough reserves	Providing cooradination for operation of reserves and for their export, continue to give credits to successful areas	General
Accurate Determination of Reserves	Preliminary examination of known deposits	Determination of ore deposits that will be operated after detailed reserve determination in high petential deposits	Starting operation activities after reserve determination	General
	Increasing the zinc production in Gümüşhane province	Establishment of zinc based industry	Performing worked zinc export	Gümüşhane
	Increasing the chrome production in Erzurum, Elazığ, Malatya	Establishment of chrome based industry	Performing worked chrome export	Erzurum, Malatya, Ealzığ
	Development of pyrophyllite production in Malatya province	Improvement of worked pyrohyllite techniques	Development and increase the usage of of pyrophyllite	Malatya
	Development of building materials production	Encouragement of usage of building materials in the region	Increase the usage of building materials in the region	Elazığ, Malatya, Van, Erzurum
	Accurate determination of perlite reserves and increasing the production	Development of pearlitic building material	Making the usage of pearlitic building materials compulsory in the region	Van, Bitlis Erzusum, Erzincan, Kars

2.3.3. HANDICRAFTS

2.3.3. Handicrafts

As in every region of the country, some handicrafts have been practised traditionally in the East as well. Some products of handicrafts, possessed an important economic function and did not have cheap substitutes like pots and pans making in the past, have a little chance of life today, since they are substituted by industrial goods based on mass production. Some products of traditional handicrafts such as carpet, rug, Siirt blanket are still demanded, although they have modern substitutes, because they are different from their substitutes. Demand for these kinds of goods could be increased with a well organised marketing and these could be a significant source of income and employment in the region. Plan puts some defined suggestions for developing handicrafts.

2.3.3.1. Summary of the Current Situation

Handicrafts, executed traditionally and seen as an extensive sector in the Eastern Anatolian Region, submit a variety of products. However, organization is necessary to protect and develop them.

The primary issue that draws attention in this sector is differentiation of every kind of work with respect to scope, number and field of activity in nearly all settlement areas. This differentiation is stemmed from;

a- Small scale activities practised traditionally in some fields on individual or family basis,

b- Commercial activities seeking profit in private and public sectors.

Handicrafts, composed of various goods, means and commercial materials produced in traditional style, address to numerous fields such as weaving firstly, coppersmith, blacksmith, Oltu stone carving, stick-makership, furriery, gun production, wooden means, rope-makership, matting, sock knitting, needle embroidery, bead embroidery, pots-pans-casserole makership and etc.

Handicrafts couldn't be thought free from general strategies of production industry. Although mass production in industry affects handicrafts negatively, they have a field of activity independent from mass production. Furthermore, characters of every arts are significant.

2.3.3.2. Handicraft Varieties and Development Opportunities

Carpet Weaving

Most of the production in the region takes place in the provinces of Van, Malatya, Iğdır, Hakkari, Erzurum, Bingöl, Gümüşhane and Bayburt. In the region 7960 peoples are working in 4770 looms.

Van province is in the first rank with 2300 workers in 600 looms according to provincial distribution in provinces. Malatya follows it with 1000 workers in 500 looms, next Iğdır with 900 workers in 300 looms, Hakkari with 800 workers in 700 looms, Erzurum with 700 workers in 750 looms.

It is important to direct hand weaving carpets with a long background and culture to more qualified production. Moreover;

- Expanding employment,
- Transferring the unemployed from being consumers to producers by providing them with jobs,
- Rising quality and design variety in carpet production,

are among the objectives.

Rug Weaving

Surveys indicate that the rug weaving has taken the second important rank among the handicrafts. Rugs woven with local names are significant for the region for economical and touristic aims. Compared with carpet, rug weaving is simpler and takes shorter time. It is a product with providing raw material without any problem and finding markets easily.

In the region 4.295 people are employed in 3.312 rug looms. Van province stays on top of list with its 1.500 looms followed by Hakkari with 800 looms, Gümüşhane with 500 looms, and Malatya with 400 looms. When these numbers are taken into consideration, Van and Hakkari could be selected as pilot area in rug production and production might be expanded by paying attention to collective and individual work. Important developments could be realised in the fields of economic growth and upholding the traditional values, by expanding rug production by means of regular organization and insurance in rural areas, in a similar way in the other provinces.

Gej Weaving

Being a local weaving kind, Gej is one of the traditional values sought to survive in the Bitlis Province. This kind of traditional weaving is facet to be disappear, since its raw material is bristle goat and production of bristle goat has been decreasing for years. But, according to the project, while the animal feeding will be increased in the region, it is necessary to support bristle goat feeding. It is clear that this will be useful for traditional blanket production and Gej weaving. The geographical position and economic conditions of Bitlis are suitable for increasing these values.

Ehram Weaving

Ehram, woven in Bayburt, Erzurum and Erzincan, is in deed a kind clothing over dresses. For using Ehram, loosing this function continuously, in different fields, a survey was done by the Provincial Governorship of Bayburt in 1997. As determined in this survey,

in case of producing jacket, shirt, kırlent, curtain, prayer rug, coverlet and glasses cover, etc., this weaving art could be survived especially in Bayburt and its production can be increased.

Bristle Tent

Bristle tent makership is being practised extensively in the Başkale, Gürpınar and Güzelsu districts of the Van Province. The bristle tents mostly used by nomads are used as a type of residence in Antalya (Beldibi and Kemer) where tourism is widespread. Fields of utility of bristle tents could be expanded and its production might be raised.

Siirt Blanket

Siirt blankets, produced in small workshops in Siirt and Bitlis, especially in Van Yüzüncü Yıl University in traditional and scientific methods, draw attention in terms of easiness of providing raw materials, and they are favoured by foreigners. It will be useful to develop this product in scope of KOSGEB, Programme of Local Economic Development and Programme of Supporting Entrepreneurs.

Natural Dye

Natural dye materials, rather demanded for dying cords of carpet, rug and sock, has a production infrastructure in the HİSAŞ in Hakkari and Erzurum Atatürk University. It will be beneficial to encourage the production of natural dye in the Hakkari Province with respect to provide raw material and additional employment.

Needle Embroidery

Needle embroidery is involved as one of the handicraft branches in every house in Elazığ and Malatya, but the workers suffer since producers could not establish direct contact with tradesmen and hence profit goes to the mediators. If contact can be established with the big firms producing fashion products, needle embroidery has a potential.

Pots and Pans Production

Pots and pans is produced by hand in Bingöl, Gümüşhane, Muş, Tunceli, Bayburt and Van as daily home good. It carries a high importance. This handicraft branch, using clay in expanded areas as raw material, could realize an increase in production and employment without so much investment. However its market opportunities are limited.

Wooden Home Tools and Stick Making

Wooden home tools that are produced in the Kürtün district of Gümüşhane in irregular and unorganized ways (accessories, plate, pencil box, rolling-pin (oklava), pişirgeç, meat wood, name plate, cradle, spoon, tray, etc.) and sticks and walnut made products that are produced in Ahlat in more professional ways attract interest throughout

the country and provide considerable economic benefits to the producers. However, those artisans who are involved in these activities should be taken to the Producer Support Program of KOSGEB.

Gun Making

It is known that the workshop, producing Institution of Machinery and Chemical Industries (M.K.E) licensed handgun named "Gümüşay" in the Kürtün district of Gümüşhane has many native and foreign consumers. With a similar regulation it seems that the production could be increased 3-4 times and sufficient potential is present in the region.

Jewellery-Coppersmith

It seems that in the Erzurum Center and Oltu District gold and silver working, in the Van Center silver working constitute an important potential. Gold ornaments, processed in 20 workshops in Erzurum might be developed by local cooperations.

Silver working in Van is carried out by Yüzüncü Yıl University and the Province Administration. This handicraft branch in Van will indicate an important potential, if specialised personnel, material and physical places are provided and marketing problems are solved.

In the case of Erzincan coppersmith is developed, not only it meets a significant need, but also it is an economic potential that could be exploited for touristic purposes.

Oltu-Stone Production and Ornament Making

Oltu-stone is carved out in limited quantity from underground layers and for this reason constitutes an potential not suitable for big business. On the other hand there are 550 artisan in either Oltu or Erzurum related with carved stone working. If the map of production place is not prepared and underground potential is not defined, the problems in this production branch will continue. If local administrations, association authorities and private sectors come together to determine underground reserves and make carving easy, then it will be possible for 7.000-8.000 families to own an income.

2.3.3.3. Supporting Handicrafts

Demand for handicrafts in the whole world is increasingly rising. Efforts should be spent for more qualified and more organised production activities by taking into consideration the potential of employment and income in the region.

a) As carpet and rug weaving firstly, model of contracted production application should be expanded in various handicraft branches. In scope of this model together with training of producer, needs of design, material and equipment should be provided by contractor firm. In weaving it will be beneficial to encourage to establish wool and dying workshops in the region and indulge them into contracted model.

This system, in addition to providing marketing guarantee for small scale producers who are working in a workplace or individually, will provide production standardisation and include generally unregistered labor force into the social security system.

b) Another organization model could be applied by means of "Local Economic Development Committees".

Entrepreneur Support Programme of KOSGEB, Local Economic Development Programme of the Union of Chambers of Commerce, Industry, Maritime Trade and Commodity Exchanges of Turkey (TOBB), and committees emerged by assistance of Exporters Association of Eastern Anatolia, Provincial Administrations and Public Education Centers might encourage the development of handicrafts.

In this way a project prepared in Kars could be given as an example. In 100 looms totally, 10 centers and villages with 10 looms, 345m² carpet is planned to be woven. Overall total cost of the project, which employed 300 persons, was 7,611,215,000 TL in 1998 prices (Kars Trade and Industry Chamber, Programme of YEGP, 1998).

Unionization of producers within this model should be encouraged under a cooperative or company. These cooperatives and companies themselves could assume marketing in the medium and long run. On the other hand, for evaluating export opportunities establishing a Sectoral Foreign Trade Company should be researched in weaving field.

c) In the region for encouraging the development of handicrafts, skill-gaining courses should be continued by the Public Education Centers and Job and Worker Finding Institution. Multi-purpose Society Centers and micro credit systems that are suggested to be established in the “Woman and Family Sector Section ” will be useful in supporting minor scale handicraft production.

d) For increasing market opportunities of handicrafts, special stands should be constituted in fairs organised by the Trade Chambers and Selling Centers inside or outside the region should be opened by the initiatives of the Trade Chambers, Public Education Centers and civil society institutions.

2.3.3.4. Project Proposals

I. Name of Project: Oltu-Stone Carving

Justification: Oltu-stone, carved out in the Oltu district of Erzurum and known as black amber, is attracting attention in the region as ornaments and variety of products used as accessories from which several families generate income.

Reserve determination must be done and process technology must be renewed in order to improve Oltu-stone production in the region .

Date of Start and Finish **:** 2001-2010

Implementing Authority **:** KOSGEB,
Private Sector

Area of Implementation **:** Erzurum

II. Name of Project: Developing Weaving Through Local Committees

Justification: For rising the potentials in various branches of weaving (carpet, rug, gej and ehram weaving, etc.), it is needed that individual producers in villages and little settlement areas in the region should be determined.

Project targets the determination of these individuals by means of Public Education Centers and village heads and organizing the producers through Local Committees constituted by the participation of relevant organizations. According to the Project equipment, materials and designs delivery will be practised by parties constituted in the Public Education Centers on behalf of the Local Committee.

Date of Start and Finish **:** 2001-2010

Implementing Authority **:** KOSGEB
TOBB
Provincial Administrations
Public Education Centers
Association of Eastern Anatolian Exporters

Area of Implementation **:**Hakkari, Gümüşhane, Ardahan, Van, Bitlis, Bayburt

III. Name of Project: Point of Sale Centers For Handicrafts

Justification: There is some branches of handicrafts in which equipment and material necessity is not so much and easily provided individually family members are included in production. examples for such handicrafts are needle and bead embroidering and sock knitting made in several provinces in the region. The most significant problem that small producers in these arts faced with is that they could not reach necessary channels for selling. For this reason it will be beneficial to establish selling centers for sale and exhibition in big cities inside and outside the region by initiatives of local administrations, civil society establishments, Public Education Centers and Trade Chambers

Project suggest to establish selling centers for handicrafts in province centers.

Date of Start and Finish : 2001-2002

Implementing Authority : Provincial Administrations
Public Education Centers
Trade Chambers
Civil Society Establishments

Area of Implementation : All Provinces

Table 2.3.3.1: Summary of Handicraft Projects

Name of Project	Place	Period	Implementing Authority
Oltu-stone Carving **a) Reserve Determination**	Erzurum	2001-2003	Association of Oltu-stone Producers
b) Reviewing Technology		2005-2010	Association of Oltu-stone Producers KOSGEB
Weaving Through Local Committees	Hakkari, Gümüşhane, Ardahan, Van, Bitlis, Bayburt	2001-2010	KOSGEB TOBB Provincial Administrations Public Education Center Association of Eastern Anatolian Exporters
Point of Sale Centers for Handicrafts	All provinces	2001-2002	Provincial Special Administrations Public Education Center Trade Chambers STKs

Table 2.3.3.2: Projects of Handicrafts Sector Under Feasibility Study

Province	Feasibility Subject
Bayburt	Ehram Weaving
Hakkari	Rug Makership (Hand)
Bitlis	Woollen Sock Production

Table 2.3.3.3: Strategies to be Implemented in Handicraft Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Weaving Sector	Establishing Woollen cord workshop, Encouraging new establishments into sector, encouraging female entrepreneur, expanding courses of skill gaining	Expanding courses of skill gaining, Make raw material be provided easly	Expanding and enlarging sector	Hakkari, Van, Erzurum, Bayburt, Ardahan, Iğdır, Elazığ, Malatya, Bingöl, Gümüşhane
Oltu-stone	Carrying out reserve inventory, Doing feasibility Survey, Expanding skill gaining courses	Improving carving technology, Encouraging female entrepreneurs	Evaluating export opportunities, researching the evaluation opportunities of Oltu-stone different from ornaments	Oltu, Erzurum
Needle and Bead Embroidery and Wooden Good	Expanding courses of skill gaining, Conducting research for market opportunities	Providing support of raw material and finance to small entrepreneurs primarily to female entrepreneurs	Continuing practises	Elazığ, Malatya (needle embroidery), Bitlis (bead embroidery), Gümüşhane and Bitlis (wooden goods)

2.4. ENERGY

2.4. ENERGY

Producing an adequate quantity of energy is a *sine qua non* condition for development. Though per capita energy consumption of the Region is about half of that of Turkey today, it imports almost half of its consumption. Even when the entire potential of the present primary energy resources of the Region are utilised, this would meet only about 1/8 of the estimated consumption by the end of this Plan period.

The Plan envisages utilisation of the entire hydroelectric potential of the Region by the public sector and within the framework of Build-Operate-Transfer (BOT) model, besides benefiting, though on a limited scale, from solar energy and geothermal resources. Moreover, it suggests a gradual reduction of the consumption of animal and plant remnants - a widespread source of energy in the Region today - and construction of two natural gas pipelines, one on Iğdır-Kars-Erzurum-Erzincan-Gümüşhane, the other on Van-Bitlis-Muş-Bingöl-Elazığ-Malatya route in order to meet the domestic energy demand of settlements en route.

There are two problems regarding energy distribution in the region today:

i) Energy distribution in the cities is far from providing secure energy.
ii) Network losses, especially the ones emanating from illegal consumption is pretty high in some provinces.

The Plan envisages the privatisation of the distribution system within the framework of Transfer of Management Right (TMR) model. If there is no applicant for the distribution in the regions with high network losses, the right of distribution in such regions will be given, on an obligatory basis, to the companies which have assumed the responsibility in the least problem regions.

2.4.1. Summary of Current Situation

Primary energy production and consumption of Turkey and the EAP Region in 1996 are given in **Table 2.4.1**.

Table 2.4.1: Primary Energy Production and Consumption in Turkey and the EAP Region - 1996 (100 Tons of Equivalent Petroleum: TTEP)

ENERGY RESOURCES	Turkey		EAP Region	
	Production	Consumption	Production	Consumption
Coal	1,382	5,357	-	-
Lignite	10,876	12,151	-	469
Asphaltite	15	15	-	-
Natural Gas	187	7,186	-	-
Petroleum	3,675	30,939	-	451
Hydraulic	3,477	3,477	372	629
Geothermal	72	72	-	-
Wood	5,512	5,512	467	467
Wood, Plant and Animal Remnants	1,533	1,533	510	510
Total	**26,883**	**67,430**	**1,349**	**2,526**

Source: Statistical Annals of Turkey 1997, T.R. Prime Ministry, SIS, April 1998

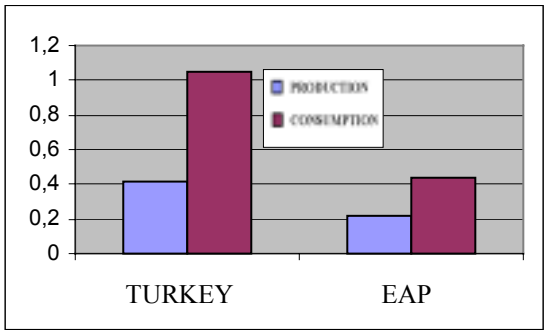
Production of primary energy resources became 27.2 million TEP in Turkey in 1997, increasing 2.8 % compared with the year 1996. On the other hand, energy consumption increased to 69.3 million TEP with 2.8 % increase. Energy import of Turkey reached to 45.6 million TEP with 2.9 % increase compared with the year 1996 (1997 Energy Report, Turkish National Committee of the World Energy Council, Ankara, September 1998).

Only 39 % of the energy requirement could be met through domestic production and about 4.5 billion dollars were paid for energy imports in the year 1997. Total import of crude oil and petroleum products ranks first in the energy imports with 29.4 billion TEP, followed by the natural gas imports with 9 million TEP. There is a noticeable increase over the years in the share of natural gas consumption in the energy balances, which had reached 10,072 million m^3 with an increase of 24 % compared with the year 1996.

Per capita energy production and consumption for the entire Turkey and the EAP Region in the year 1996, in terms of TEP, are given in the **Graph 2.4.1**. While per capita energy production in the EAP Region is equal to about 50 % of the national average, this figure is approximately 42 % for the energy consumed. Considering the energy consumption as an indicator of development, it is observed that the EAP Region is much beyond the national average.

It is compulsory to develop energy sector of the Region together with the other sectors. More energy should be supplied to the EAP Region and productivity in consumption should be emphasized.

Graph 2.4.1: Per Capita Energy Production and Consumption of the Entire Turkey and the EAP Region in the Year 1996 (TEP/Person).



Source: Electricity Distribution and Consumption Statistics, 1996, RPC Department, Directorate of Evaluation of Energy Demands and Statistics, TEDAŞ (the Turkish Electricity Distribution Inc.), October 1997

2.4.2 Determination of the Basic Development Strategy

Total per capita energy production and consumption of the EAP Region is about half of the national average. Per capita energy consumption, as an indicator of development level of the Region, should be increased. Increasing consumption is possible through development of all sectors, particularly industry. A strategy, in harmony with the objectives given below, has been determined for the energy scenarios.

a) To converge the per capita consumption to the national average.
b) To increase productivity and quality in electric energy consumption.
c) To extend consumption of energy resources, such as natural gas, instead of primitive energy resources like dried cow dung.

To achieve these objectives, it is necessary to increase the per capita energy consumption value in the EAP Region to the level of national average in the year 2020.

Basic Strategy:

1) To increase productivity and quality of electricity consumption in the EAP Region, 21st, 22nd and 27th Company Duty Regions should be operated more productively by transferring them to the private sector .
2) Hydroelectricity potential should be utilised.
3) Water heating systems by solar energy should be installed at homes, geothermal energy should be utilised in locations where it exists.
4) Lignite mines of the region should be utilised.
5) Consumption of natural gas in industry should be extended.

2.4.3 Production and Consumption Projections for the Region

Primary energy demand projection according to 1998 planning data of the Ministry of Energy and Natural Resources is given in the **Table 2.4.2**. In the projection made, MAED (Model for Analysis of Energy Demand) model depending on simulation, has been used .

Table 2.4.2: Projection of Primary Energy Demand of Turkey

Years	2000	2005	2010	2015	2020
Total Primary Energy Demand (TTEP)	91,030	12,4748	175,074	233,296	314,353
Population (thousand)	65,864	70,271	74,677	78,633	82,88
KEP/person	1,382	1,775	2,344	2,967	3,806
RDMDP* %	34	29	30	26	25

Source: "21. Yüzyıla Girerken Türkiye'nin Enerji Stratejisinin Değerlendirilmesi,", TÜSİAD Report, December 1998, İstanbul

* RDMDP: Ratio of Demand Met by Domestic Production

4.4 % population growth was observed in EAP Region between the years 1990-1997. However, on the basis of regional population determined as 5,868,535 people in the year 1997, considering population as approximately 5,980,000 in the year 2000, and making an energy demand projection by applying the national average population growth rate determined by the SIS from the year 2000 onwards, will be more accurate to examine the socio-economic situation of the EAP Region. For this reason, primary energy demand projection made with an annual average growth rate of 10.5 % in the EAP Region (growth in demand is at about 7 % on average for Turkey) is given in the **Table 2.4.3**.

Table 2.4.3: Projection of Primary Energy Demand of the EAP Region

Years	2000	2005	2010	2015	2020
TPED(TTEP)	3,761	6,196	10,208	16,817	27,705
TTEP/person	600	942	1,547	2,455	3,938

In the demand projection made, per capita energy consumption in the EAP Region is 3,698 KEP/person in the year 2020, ands this figure is very close to 3,806 KEP/person, the national average in the same year.

Primary energy production of the EAP Region in the year 1996 was realised as 1,349 TTEP. Production resources are composed of hydraulic resources as well as wood, animal and plant remnants. In the production projection of the primary energy resources by the Ministry of Energy and Natural Resources (2), wood production between the years 1998-2020 is fixed at the value of 5,512 TTEP. Besides, animal and plant remnants are given as 1,951 TTEP in the year 2000 and as 1,869 TTEP in the year 2020, with an approximately 20 % growth.

By utilising the production scenarios, wood production will be kept fixed at 500 TTEP for each three periods. Besides, energy sources of animal and plant remnants will be kept at the same level for each period (approximately 500 TTEP) and be reduced at a rate of 1/3. Regional total production at the beginning of the first period (in the year 2000) is assumed to be 1,442 TTEP, to go parallel with the production projection for the energy resources of Turkey. The results of production projection for the EAP Region are given in the **Table 2.4.4**.

Table 2.4.4: Production Projection of Primary Energy Resources of the EAP Region

	(2001-2005)	(2006-2010)	(2011-2015)
Current Production in the First Year of the Period	1,442	1,761	2,513
Hydraulic	304	680	1,003
Solar	80	-	-
Geothermal	-	72	-
Lignite	100	-	-
Remnants of plants and animals	-165	-	-
Net production/year (TTEP/year)	1,761	2,513	3,516

In the **Table 2.4.5,** projection of energy consumption for the EAP Region over the same periods is given. According to this scenario, regional production will be 3,516 TTEP by the end of the 3rd period, and meet approximately 12.7 % of the regional consumption (27,545 TTEP). At the end of the 1st period, regional production(1,761 TTEP) meets about 28.4 % of the regional consumption (6,187 TTEP). However, this projection of energy consumption is made by taking into account the socio-economic development of the Region, and thus its objective is to make the per capita energy consumption in the region reach the national average by the end of the 3rd period.

Table 2.4.5: Consumption Projection of Primary Energy Resources of the EAP Region

Years	2000	2005	2010	2015	2020
Consumption (TTEP/year)	3,761	6,187	10,179	16,744	27,545

2.4.4. Investment Programs

2.4.4.1 Privatisation of the Regional Distribution System

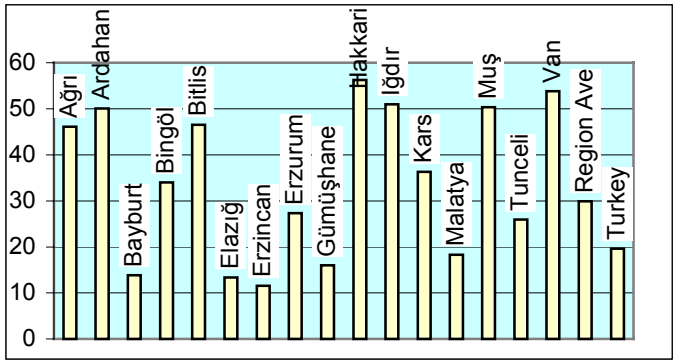
Distribution systems of the EAP Region are located in the 21st, 22nd and 27th Company Duty Distribution Regions. These duty regions should be privatised within the 1st Period .

Percentage network losses in the EAP provinces and the entire Turkey, with the figures of the year 1998, are given in the **Graph 2.4.2**. Illegal consumption has an important share in the losses. On the other hand, the **Table 2.4.6** shows energy consumption figures in the Company Duty Regions in the scope of the EAP provinces, in the year 1995 figures. In the 22nd Duty Region, as the distribution region with the least problems, rate of loss in 1995 is about 19.5 %. While the rate of loss promised after modernisation is 11 %.

2.4.4.2 Hydroelectric Power Plants of the EAP Region

Unit cost per installed power ($/kW) is an important factor in the investment planning of the hydroelectric power plants. The fact that the unit investment costs vary in a broad range can be explained by factors such as the location of the project, general conditions, general layout, type of the plant, etc. Unit investment cost of a hydroelectric power plant varies in the range of 800-1,600 $/kW. To mention an average figure, the unit cost can be taken as 1,200 $/kW. TEAŞ (the Turkish Electricity Inc.) had taken this unit cost as 1,335 $/kW in its long term planning study. There exists an interval of about 10-15 years between the pre-examination and the end of the construction of a HEPP (Hydroelectric Power Plant) project. A HEPP with a full project and assured finance, can be completed in 4-6 years. Hydroelectric power plants, which exist in the investment plans or are under construction in the provinces within the scope of the EAP are given in the **Table 2.4.7.** According to this, taking the unit investment cost as 1,335 $/kW, total investment costs of the 1st and 2nd Group hydroelectric power plants are approximately and respectively $1.5 billion and $3 billion. Total investment cost of the power plants to be completed in the 3rd Period is about $4 billion. For this reason, BOT model should be taken into account as an alternative model to compensate the insufficiency of finance for the power plants in the Region.

Graph 2.4.2: Percentage Network Losses of the EAP Provinces and the Entire Turkey with the Figures of the Year 1998.



Source: Statistics of Electricity Distribution and Consumption of Turkey 1998, RPC Department, Directorate of Energy Demand Evaluation and Statistics, TEDAŞ, September 1999

Table 2.4.6: Energy Consumption with the Figures of the Year 1995 in the Company Duty Distribution Regions within the Scope of the EAP Provinces

C. R. No	Company Region	Dwelling (MWh)	Commer. (MWh)	P.Off. (MWh)	Indus. (MWh)	Other (MWh)	Total MWh
22	Elazığ-Malatya-Tunceli-Bingöl	246,693	38,494	31,557	690,188	178,750	1,185,682
21	Erzurum-Ağrı-Iğdır-Kars-Ardahan-Erzincan-Bayburt	232,160	33,485	79,923	118,289	170,529	634,386
27	Van-Hakkari-Muş-Bitlis-Şırnak-Siirt-Batman-	175,402	24,461	43,675	175,218	180,022	598,778

Source: 1997 Energy Report, Turkish National Committee of the World Energy Council, Ankara, September 1998

2.4.4.2.1 Situation of the HEPP to be Completed in the 1st Period

Of the power plants to be completed in the 1st Period given in the **Table 2.4.7,** 2nd Unit of Kuzgun HEPP has been taken into operation in May 2000. Mercan and Kürtün HEPP will be completed in the year 2002. Hacılar HEPP, Uzunçayır HEPP and Alparslan-I HEPP, which are under construction are planned to be run in the year 2004. Torul HEPP will be completed in the year 2005. The estimated date of finishing the construction of Kığı HEPP is given as 2007 by the General Directorate of SHW. Özlüce HEPP has been completed and is in operation. Çıldır-II HEPP will be built with the BOT model. Final projects for Eriç HEPP, Laleli HEPP and Konaktepe HEPP are being prepared. It is planned to build Laleli and Konaktepe after their projects are completed with the BOT model by the Ministry of Energy, while Eriç HEPP and the other ongoing projects are envisaged to be completed by the General Directorate of SHW.

Table 2.4.7: Hydroelectric Power Plants in the Provinces within the Scope of the Eastern Anatolia Project Present in Investment Program or Under Construction

Name of Project	Installed Power MW	Annual Av. En. GWh	Location
Eriç HEPP	170	725	Karasu River, Erzincan
Laleli HEPP	99	245	Çoruh River, Erzurum
Kuzgun HEPP	20	38	Karasu, Serçeme Branch, Erzurum
Hacılar HEPP	13.5	88	Gökpınar, Malatya
Mercan HEPP	19.2	78	Munzur Ç. Branch, Tunceli
Uzunçayır HEPP	74.3	317	Munzur River, Tunceli
Konaktepe HEPP-1	90	290	Munzur River, Tunceli
Özlüce HEPP	170	413	Peri River, Bingöl
Kiğı HEPP	140	423	Peri River, Bingöl
Kürtün HEPP	80	198	Gümüşhane
Torul HEPP	100	322	Gümüşhane
Çıldır-II HEPP	7	24	Kars
Alparslan-I HEPP	160	381	Muş
TOTAL	**1,143**	**3,542**	

Source: Data provided by SHW 8th Regional Directorate, 1998; Data provided by SHW 9th Regional Directorate, 1998; Data provided by SHW 17th Regional Directorate, 1998

2.4.4.2.2. Hydroelectric Power Plants to Be Completed in the 2nd Period

HEPPs planned to be completed in the 2nd Period are given in the **Table 2.4.8**. Of these plants, Tohma HEPP, has been completed and taken into operation. Contracts for Girlevik II and Mercan HEPP have been signed as BOT projects, and they are expected to be finished in the year 2002. Proposals have been given for the power plants Tortum II, İspir, Güllübağ, Aksu, Arkun, Söylemez, Ayvalı, and Olur within the framework of the BOT model to the Ministry of Energy, and they are in the phase of examination. These power plants are planned to be completed until the end of the year 2006. Hakkari, Doğanlı, Çukurca, and Alparslan II HEPPs are planned to be constructed with foreign sources of finance. These power plants are planned to start operating until the end of the year 2010.

Konaktepe-II, Ayşehatun, Güzeldere, Bağışlı, Geçitli, and Başkale HEPPs are expected to be completed by the end of the Period, within the framework of the BOT model.

Among the plants to be completed in the 2nd Period, Söylemez HEPP and Alparslan-II HEPP are multi-functional ones. Söylemez HEPP is to be constructed by the Ministry of Energy with the BOT model. However, besides energy production, this power plant has 23,530 hectares irrigation capacity and a capacity for providing 53 hm^3 of network water annually. BOT model is usually considered as a model of finance for energy production. In this model, it is compulsory to clarify the benefits of water for the multi-functional power plants.

2.4.4.2.3. Hydroelectric Power Plants to Be Completed in the 3rd Period

3rd Period HEPPs are defined as "projects that will be treated in the next years" by SHW (**Table 2.4.9**). Of these power plants, ones with a high installed power (Beyhan I HEPP, Kaleköy HEPP, Aklıncı HEPP) are planned be constructed by the General Directorate of SHW, through foreign finance.

Table 2.4.8: Hydroelectric Power Plants in the Provinces within the Scope of the EAP Planning and Definite Projects of Which Have Been Completed

Project Name	Installed Power MW	Annual Av. Energy GWh	Location
Girlevik-II. And Mercan HEPP	12	43	Girlevik and Mercan Streams, Erzincan
Tortum-II HEPP	11	51	Tortum River, Erzurum
İspir HEPP	54	328	Çoruh River, Erzurum
Güllübağ HEPP	84	285	Çoruh River, Erzurum
Aksu HEPP	120	344	Çoruh River, Erzurum
Arkun HEPP	222	788	Çoruh River, Erzurum
Söylemez HEPP	36	195	Aras River, Erzurum
Ayvalı HEPP	125	409	Oltu River, Erzurum
Olur HEPP	65	242	Oltu River, Erzurum
Pembelik HEPP	108	367	Peri River, Elazığ
Tohma HEPP	11	63	Tohma River, Malatya
Konaktepe HEPP-2	48	289	Munzur River, Tunceli
Ayşehatun HEPP	60	278	Bitlis
Güzeldere HEPP	31	161	Bitlis
Bağışlı HEPP	24	122	Zap River, Hakkari
Hakkari HEPP	322	1.043	Zap River, Hakkari
Geçitli HEPP	8	50	Zap River, Hakkari
Doğanlı HEPP	462	1.327	Zap River, Hakkari
Çukurcu HEPP	245	796	Zap River, Hakkari
Alparslan-II HEPP	200	714	Muş
Başkale HEPP	6	19	Zap River, Van
TOTAL	**2,254**	**7,914**	

Source: Data provided by SHW 8th Regional Directorate, 1998; Data provided by SHW 9th Regional Directorate, 1998; Data provided by SHW 17th Regional Directorate, 1998

Table 2.4.9: Hydroelectric Power Plants in Provinces within the Scope of the EAP that will be Treated in the Next Years

Project Name	Installed Power MW	Annual Av. Energy GWh	Location
Haydar-I and II HEPP	23	76	Branch of Tuzla River, Erzincan
Fındıklı HEPP	30	101	Branch of Tuzla River, Erzincan
Sansa HEPP	44	302	Karasu River, Erzincan
Kemah HEPP	135	494	Karasu River, Erzincan
Bağıştaş HEPP	122	432	Karasu River, Erzincan
Minker HEPP	5	29	Karasu River, Erzincan
Bağıştaş-II HEPP	60	202	Karasu River, Erzincan
Sarıkonak-I HEPP	11	41	Karabudak River, Erzincan
Gökçeşıh HEPP	34	119	Tuzla River, Erzurum
Bayraktar HEPP	12	66	Alongside Branch of Tortum River, Erzurum
Engücek HEPP	7	18	Alongside Branch of Çoruh River, Erzurum
Anuri (Ardıçlı) HEPP	13	35	Alongside Branch of Çoruh River, Erzurum
Yedigöl ve Aksu-II	70	184	Alongside Branch of Çoruh River, Erzurum
Sırakonaklar HEPP	22	57	Alongside Branch of Çoruh River, Erzurum
Çayırözü ve Özlüce	33	87	Alongside Branch of Çoruh River, Erzurum
Çayaşan HEPP	17	84	Tortum River, Erzurum
Çatalbahçe HEPP	59	157	Tohma River, Malatya
Denizbağ HEPP	26	143	Tohma River, Malatya
Yazıhan-I HEPP	9	53	Tohma River, Malatya
Yazıhan-II HEPP	7	40	Tohma River, Malatya
Kesikköprü HEPP	62	355	Tohma River, Malatya
Sarsap HEPP	15	133	Tohma River, Malatya
Elkit HEPP	30	117	Tohma River, Malatya
Kaynarca HEPP	36	128	Ayvalı Tohması, Malatya
Yazıköy HEPP	42	129	Tohma River, Malatya
Seyrantepe HEPP	34	188	Peri River, Elazığ
Beyhan-1 HEPP	300	1.435	Murat River, Elazığ
Tatar HEPP	100	377	Peri River, Elazığ
Palu HEPP	20	84	Murat River, Elazığ
Akyayık HEPP	7	22	Mercan Deresi, Tunceli
Bozkaya HEPP	30	109	Munzur River, Tunceli
Kalatepe HEPP	60	215	Munzur River, Tunceli
Pülümür (Reg.) HEPP	26	114	Pülümür River, Tunceli
Pülümür HEPP	30	137	Pülümür River, Tunceli
Abdalan HEPP	6	21	Tunceli
Başköy HEPP	24	105	Peri River Kolu, Bingöl
Ilıca HEPP	5	17	Hopus River, Bingöl
Kaleköy HEPP	293	1.293	Murat River, Bingöl
Karataş HEPP	40	175	Peri River, Bingöl
Kazan HEPP	28	97	Peri River, Bingöl
Pülur HEPP	4	13	Bingöl
Kulataşı HEPP	30	60	Gümüşhane
Koru HEPP	16	42	Gümüşhane
Büyükdüz HEPP	60	174	Gümüşhane
Aladereçam HEPP	7	18	Gümüşhane
Karakurt HEPP	110	385	Aras River, Kars
Denizgölü HEPP	40	152	Aras River, Kars
Kuloğlu HEPP	35	148	Aras River, Kars

Table 2.4.9: Hydroelectric Power Plants in Provinces within the Scope of the EAP that will be Treated in the Next Years (Continued)

Project Name	Installed Power MW	Annual Av. Energy GWh	Location
İncilitaş HEPP	100	418	Kura River, Ardahan
Harmanlı HEPP	60	361	Kura River, Ardahan
Aklıncı HEPP	150	443	Kura River, Ardahan
Koç HEPP	33	187	Bitlis
Bitlis HEPP	60	228	Bitlis
Göllüce HEPP	12	47	Bitlis
Pirahmet HEPP	10	55	Bitlis
Dilektaşı HEPP	125	328	Zap River, Hakkari
Esenyamaç HEPP	9	25	Zap River, Hakkari
Erçek HEPP	7	37	Van
Ayrancılar HEPP	34	133	Van
Karasu HEPP	22	57	Zap River, Van
Beğendik HEPP	45	175	Van
Köprüler HEPP	2	13	Van
Pervari HEPP	4	16	Van
Narlı-I HEPP	24	105	Van
Narlı-II HEPP	18	77	Van
TOTAL	**2,944**	**11,668**	

Source: Data provided by SHW 8th Regional Directorate, 1998; Data provided by SHW 9th Regional Directorate, 1998;Data provided by SHW 17th Regional Directorate, 1998

Models necessary to enable the private sector take a role in the construction of power plants alongside SHW, should be developed.

2.4.5. Geothermal Energy and Lignite Production

Within the 1st Period , a project should be given to MTA for studies of determining the potential and utilisation of geothermal energy in the regions of Ağrı-Diyadin, Bitlis-Nemrut, Gürkaynak and Erzincan. Besides, MTA should make a study of 500 TTEP of lignite production for the entire EAP Region. In the 2nd Period, there should be a shift to geothermal energy consumption and all of the present potential should be utilised in heating of greenhouses and barns as well as homes. Private enterprises should be given incentives for this. 500 TTEP of lignite production should be made in the 3rd Period.

2.4.6. Natural Gas Pipeline

In the 1st Period, in addition to the east-west main line that will be constructed with interstate relations and foreign credits, BOTAŞ should realise two special distribution lines. The 1st Line should be on Iğdır-Kars-Erzurum-Erzincan-Gümüşhane route, and the 2nd Line on Van-Bitlis-Muş-Bingöl-Elazığ-Malatya route. These lines should be completed untill the end of the 2nd Period.

Natural gas consumption and distribution capacity should be increased in the 2nd Period.

2.4.7. Abstract

Investment plans has been made in the framework of objectives determined in the study of Strategy and Scenarios. Production and distribution planning of electricity energy for the1st, 2nd, and 3rd Periods have been studied in detail. In the **Table 2.4.10** limiting factors and proposed strategies to be applied are given on the basis of periods.

Table 2.4.10: Strategies to be Implemented in Energy Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD	2nd PERIOD	3rd PERIOD	
Appropriate proposal	Privatisation of regional distribution Systems			21st, 22nd, and 27th Company Duty Regions
Insufficient Investment	Completing 1st Group HEPPs	Completing 2nd Group HEPPs	Completing 3rd Group HEPPs	Related Tables
Raising Public Consciousness	Water heating systems by solar energy at homes			All the EAP Region
Geothermal Energy	Study for the utilisation of geothermal energy potential	Utilising geothermal energy		Elciş-Zilan Ağrı-Diyadin, Bitlis-Nemrut, Güraymak, Erzincan
Lignite Production	500 TTEP lignite production	500 TTEP lignite production	500 TTEP lignite production	EAP Region
Interstate relations, foreign credits	Realisation of natural gas pipelines	Increasing capacity	Increasing capacity	

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Data Provided by SHW 8th Regional Directorate, 1998

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Data Provided by SHW 17th Regional Directorate, 1998

Data Provided by SHW 22nd Regional Directorate, 1998

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2.5. TRANSPORTATION AND COMMUNICATION

2.5.1. TRANSPORTATION

2.5.1. Transportation

One of the main reasons for the backwardness of the Region is its location in relation to markets and main import-export centers. The most effective way to redress this disadvantage to a certain extend is to improve the regions transport links to market centers and ports with import-export activities. Transport planning by and large is geared towards this goal.

The Plan envisages improvements in the Region's East-West and North-South road links including improvements to the Erzurum-Trabzon, Malatya-Iskenderun routes. The priority is to bring these routes up to a Class 1 level and in order to achieve intra-regional integration to build up local road network parallel to the classification of settlements. Importance is attached to maintenance services in order to achieve safe and undisrupted traffic flow. To alleviate the effects of harsh winters a restructuring of snow clearance services and an improvement in personnel, equipment and in-house training is envisaged. The Plan proposes improvements in standards to the existing but underused main arteries, the North-South, East-West and port links and maintenance and snow clearance facilities rather than the building of new roads.

Transport demand will probably remain low and dispersed in the Region in the short and medium term. Hence the Plan proposes the improvement of the rail network, the alleviation of bottlenecks and effective use of existing capacity rather than the building of new railways. Regarding air transport, the Plan reaches the conclusion that the existing infrastructure and capacity created through ongoing projects will meet the possible demand increases for the duration of the Plan. However, new cargo transport facilities might have to be built at some airports.

For the proper functioning of a regional economy and for an increase in social welfare the Plan is emphasizing the necessity of urban transport systems and proposes different transport studies to be undertaken according to city size. In order to reduce the need for new investment to a minimum the Plan envisages the drawing up of plans, projects and administrative methods that facilitate the efficient use of existing infrastructure and that meet urban transport demand by public transport.

2.5.1.1. Summary of The Current Situation

The deficiencies of the transport systems in the provinces included in the EAP Region can be evaluated under three headings. The current insufficient demand for and supply of transport systems stem directly from the regions' economic, social, cultural structure and geographical features. The inadequacies appearing in the transport system do not originate merely from bottlenecks in infrastructure, services and capacity. It is observed that levels of demand are insufficient as well. Due to the low level of demand, the development of infrastructure and services is not given priority in public investment plans. As the infrastructure is not developed, expected increases in demand are not occurring and the negative feed-back loop continues. The underdevelopment of infrastructure and services on the supply side and the underdevelopment of the demand side are the

fundamental problems of the Region's transport system. The three components are underdevelopment of infrastructure, services and demand.

a. Infrastructure Deficiency

The transport modes (road, railway, air transport, pipeline and inland waterways) infrastructure in the Region is well below both the national average and established general standards. The lengths of road and railway lines per km^2, the quality of airway terminals and absence of inland waterway transport reflect the deficiency of infrastructure.

The main contributor to the factors leading to a deficient infrastructure is the geographical feature of the region. The Region's altitude, high mountain ranges that cut through the area and hinder access, and the small and dispersed urban and rural settlements, increase the outlay of transport infrastructure development. Moreover, the harsh climate makes it difficult to provide infrastructure services at desired standards all year round. Topographic conditions create great difficulty in developing the railway network. This transport mode's slant sensitivity is curtailing access, efficiency and the efficacy of railways in the region that in turn causes physical and economic difficulties for industrial, agricultural and dairy products to reaching extra-region markets.

In its historical development the region's transport infrastructure (especially road and railway networks) reflects the topography, traditional settlement patterns, political and economic structures. Despite ongoing changes within and adjacent to the Region (e.g. the increased need for transport with Armenia, Nahchivan and other former Eastern Block countries, the SAP Region, the expansion of new industrial, residential centers and corridors within the region) transport infrastructure has not been restructured accordingly. The transport networks and infrastructure that could have made effective use of opportunities arising from these changes have not been put into place. The lack of new transport structures that connect the emerging activity opportunities and new focal points with the Region and the new centers within the region are perceived as an important deficiency.

Because the production units that create transport demand are small and dispersed in the Region, demand for bulk transport is not arising. This state of affairs favors transport in small batches on the roads instead of the economical bulk transport that railways can offer. Hence there is not enough demand for railway transport to make new investments feasible.

Public sector transport infrastructure investments are determined through needs assessments that take into account existing demand and capacity use in the Region. As demand is low and density is insufficient, proposals for new investment in the region are not given priority at national level. Considering the number of service points and their use of capacity especially in air transport, proposals for new investments become impossible on technical and financial grounds.

b. Service Deficiency

Services on the currently limited transport infrastructure are being adversely affected by the regional conditions. Service levels cannot be increased because of these conditions (e.g. climate, topography, low density) and the low level of demand.

Because of climatic conditions the roads cannot be kept open all year round. Due to the long and harsh winters infrastructure can be maintained and repaired and services provided with any consistency only on the main arteries at a high cost. The interruptions to services during the long winter months are hindering the Region's access to the outside world and economic activity, further strengthening the negative feed-back loop.

The outlined conditions hinder the development of a transport sector that can provide efficient services at a scale and quality needed. Capital accumulation is weak which hampers investment in infrastructure and undertakings (carrier fleets, private transport companies). The scale of services provided by private operators consists of individually owned lorries.

The Region's topography and climate is increasing management costs. Services at each transport sub-sector are realized at a high unit cost. Security and terrorism problems had also adversely affected the consistency of transport service provisions.

c. Shortage of Demand

The other aspect of the negative feed-back loop in the transport sector is demand deficiency, which is a result of the regions economic, social and geographical characteristics. Economic activity in the Region is diffused and more isolated compared with the rest of the country. The resulting low mobility does not put any significant pressure on infrastructure and service development.

The consequence of the social and cultural structure combined with the climatic and topographic effects is a low level of demand for mobility that makes new infrastructure and services investments infeasible. Diffused and dispersed settlement patterns depress the mobility of passengers and goods with journeys scattered in rural areas and mobility demand being concentrated on the main corridors.

The Region's distance from large settlements combined with the high unit cost of transport becomes forbidding for locals whose incomes are low. Financial access barriers as these push transport demand down even further.

2.5.1.1.1. Restraining Factors

Factors that constrain transport systems in the Region are explained below. How the effects of these factors can be alleviated and a strategy for counterbalancing them is stated.

a. Topography and Climate

The topography of the Region combined with the climate is the main factors affecting transport systems. However as it is not possible to counterbalance this factor completely, alleviating measures have to be considered. To do so requires large-scale investment into high physical standard roads, railway links and airport terminal development. But as transport demand is low the feasibility of such investment is debatable. Hence at current demand levels the effective use of the existing transport infrastructure with some improvements has to be considered. Management techniques, maintenance and repair have to be adapted to the Region's conditions.

The following should be considered as a "low amount investment" strategy provided that current and short-term traffic levels are adequate. Climbing lanes can alleviate the restraining topography and anticipated bottlenecks and improvements of road surfaces can delay the climatic effects.

To lessen the climatic affects on railways, roads and airport terminals a restructuring is needed to the snow clearance work. Priority has to be given to improvements on organization, personnel, equipment and training. The accepted objective is to keep the main arteries clear for safe transport services throughout the winter. Considering the dispersed rural settlement patterns and that it will not be possible to clear all the roads throughout the winter, strategic winter plans have to be drawn up to decide which transport links will be kept open under which climatic conditions. This plan will consider modern technologies; and working practices, personnel, equipment, training needs have to be met in the short-term accordingly.

b. Distance from Markets

The Region's distance from the economically developed parts of the country, combined with the less than average traveling speed on the regional road and rail networks and frequency of services, is proving to be a material, financial and time wasting restriction.

As it is not possible to eliminate this restriction completely, the financial and time wasting components of "distance" can be alleviated in the long term through increases in the frequency and speed of services. However, the provision of such services will add to the cost and could only be feasible when demand increases.

To ease the negative affects of the Region's distance to the market, another approach that should be taken is "gradual access" whereby products from the rural areas are first transported to sub-centers and from there to extra-regional markets. Products collected at these sub-centers could be reformed (processed, packaged, put on pallets/containers/wagons) and hence use the more advantageous transport methods that sub-centers can provide to access extra-regional markets. With this approach, the transport modes would focus on their different economic and technical specifications and road transport could be used to support rail and air transport. In order to develop such an approach, a detailed action plan that covers product consolidation, processing, semi-processing, packaging facilities, road-railway transit facilities and container land terminals should be prepared.

c. A Landlocked Region

Because the region is landlocked and transport services to the nearest ports are inadequate, it is difficult to access international markets through shipping services. To alleviate this restriction, access to the Trabzon port in the north and Iskenderun port in the south has to be facilitated through road and railway infrastructure and service improvements. The ports of Trabzon and Iskenderun can be designated and further developed as access points for the Erzurum and Malatya-Elazığ sub-regions respectively. Given its geographical location and the poor state of transport services to these ports, the Van sub-region cannot easily avail itself of the services provided by either port.

d. Bordering Developing Countries

The Region has borders with developing countries. These and the countries the region can access through them cannot offer a high level of technology, economy, production and transport. Therefore her neighbors provide very limited stimulus.

It has to be considered that with the opening up of these formerly closed economies the region can expect to gain the important role of moving technology products from the West to these markets. For the needs of these emerging markets to be met and the rich mineral resource of these countries to be transported to the West, main transport corridors in the EAP Region will be used. Therefore transport organization, services and infrastructure has to be prepared so that the new demand expected over the next few years could be met, supported and channeled.

The proposals for the definition and development of the transport system that can take on and channel the transit traffic through the EAP Region to the countries northeast and east should be brought into the scope of this study. Projects regarding the use and role of the Trabzon and Iskenderun ports and Istanbul (which will be supported by the Bosphorus railway crossing) in transit traffic and the development of the infrastructure of the main corridors have to be defined. These then can be supported with wide ranging studies. The building of main corridors will greatly contribute towards enabling the EAP Region to transport its products to national and international markets. Furthermore, once the transport services were tailored to the mentioned demand, it will stimulate the Region's transport services and economy.

e. Population and Low Density in Economic Activity

To effectively and permanently remedy the low levels of demand for transport, high infrastructure and service costs problems, various sectors should work towards changing the diffused and dispersed settlement patterns. The aim should be to merge the small and inaccessible settlements (villages and smaller rural communities). Priority should be given to those merged central villages, which are chosen according to their climatic, topographic suitability, and their access to transport which should then be developed. Through the merger of settlements and the decline in the numbers of dispersed settlements, the transport costs for both users and operators as well as journey time can be reduced. As the road network needing to be kept open during the winter will becomes smaller, services can be focused and management costs reduced.

For such a restructuring of settlements detailed transport planning has to be carried out for sub-Regions and districts. Further, every new proposal for change in the Region has to be evaluated according to transport criteria. Parallel to increases in density of settlements transport infrastructure and service development projects and their financial-human resources have to be put into place. Organizational models that actively involve users and private entrepreneurs during the planning, investment and implementation stages have to be elaborated.

f. Capital Accumulation

The scale of capital and accumulation levels affect the regional transport system in two ways. Firstly, because production takes place in small unites and the products are consumed locally, goods are transported in small quantities at a high price. The level of economic activity in the region do not create demand for cost-effective bulk transport. In addition, insufficient capital accumulation hinders private entrepreneurs from providing efficient transport services. Large transport fleets are not emerging, which could use cost-effective modern communication systems and handling technologies.

Changes in the make-up of capital can only be achieved in the long run through the overall development of various sectors. However, subsidies for the transport sector, their criteria, methods and levels have to be looked at again in order to support the development of large enough enterprises that can provide an efficient and effective service. Particularly to meet the expected increase in transit traffic, new transport fleets that are comparable to their international counterparts should be created.

g. High Cost of Infrastructure Development

The most important restriction to transport systems is the topography and the resulting high cost of infrastructure development. Considering the cost of new road and railway infrastructure investments especially as infrastructure standards are rising (large curbs, viaducts, bridges, land fillings and tunnels that facilitate high speed and capacity), new links seem infeasible under the current demand levels. In the short and medium-term new road and railway links will only be build if national security and international strategies necessitates it.

Since the cost of new transport links is too high, the strategy that should be adopted is to improve the existing low capacity through administrative measures and maintenance provisions. Limited bottlenecks can be alleviated and capacity stabilized by comprehensive but inexpensive investments. Institutional and administrative adjustments can increase the efficacy of transport services whereby existing infrastructure is used more efficiently.

Until recently the importance of logistic planning for the production-consumption chain has not been fully appreciated. A reorganization of stages and procedures, the adoption of a client lead marketing and management approach and the readjustment of all functions such as organizational structure, personnel training and specialization will contribute to the increase in efficiency of the transport systems and vitalize demand.

h. Characteristics of the Transport Network and Infrastructure

Certain features of the transport network and infrastructure are a hindrance to the effective functioning of the system. For example the railway network has no north-south link and relating to this is the absence of a SAP link. Further, there is a limited capacity for railways crossing the Lake Van. The fact that there is not railway access to the Black Sea, the absence of a direct link between Malatya and the western regions are the main limitations on the railway network.

Regional terminals that serve air transport and their traffic volumes compared with traffic and terminals in the western regions indicate to limitations that could be regarded as bottlenecks in the civil aviation network and infrastructure. Future infrastructure development should be perceived as storage and terminal facility development in accordance with potential freight transport. However the location and scope of these developments should be planned concurrently to the creation of production, transport and marketing chains that are expected to result from the EAP Master Plan's implementation. The plans should run parallel to the Master Plans success.

Inland waterways transport is almost non-existent and development has not matched the increase in opportunities. Studies need to be undertaken that focus on the development of inland waterways transport especially on the Lake Van and Karakaya-Keban Dam Lakes. Infrastructure and services should then be developed according to findings of these studies.

Overland routes passing cities, urban transport systems that form an important part of transport networks will be facing serious problems with the increased urbanization and migration. Despite the given size of the cities, *per capita* ownership of vehicles and demand for mobility, urban transport related environmental problems are arising in certain settlement centers. In order to be able to take precautionary measures before these spiral out of control, all the urban settlements should be evaluated one by one and urban transport studies undertaken and their proposals implemented. Studies should be undertaken that define in detail the transport infrastructure and services demanded by the social and economic structures and should not only cover large cities but guided by the urban-plus-rural correlation method should include large cities with their peripheral rural areas and medium size cities and their peripheral rural areas.

2.5.1.1.2. Possibilities

Despite the above mentioned limitations and bottlenecks there is potential and a prospect for the development of the transport sector in the EAP Region. If this potential is used appropriately for transport infrastructure and operational improvements, it is possible to utilize the Region's given traits. These improvements then will positively contribute to the Region's overall development.

a. Expected Increases in International Transport

With the political and economic processes taking place in the eastern neighbors of Turkey and these countries turning to free market economics and opening up to the world economy, the EAP Region will assume an important role in integration of these countries into the world markets. The northeast and eastern provinces bordering the former Eastern Block are providing an opening to the world for these countries. Turkey and especially the EAP Region's transport links will assume vital importance in the utilization of the rich mineral resources of these countries by the world markets. Therefore, infrastructure and capacity creation work should start in preparation to meeting this demand.

Though investment in transport infrastructure capacity is an urgent need when the mentioned potential is combined with given low capacity usage, in the first instance it shall suffice to alleviate bottlenecks in the existing transport corridors that will be used in transit transport and achieve constant capacity.

The transit transport demand may issue with the same prospects and strain on national transport links of the 1970s heavy transit traffic between the Middle Eastern and European countries. This is a prospect that has to be utilized well for the EAP Region. This transit and international (import-export) transport demand will contribute directly to the Region's economy while providing a driving force for the transport service sector that will develop to meet this demand. In case demand matches infrastructure capacity, new infrastructure projects will surface to increase existing capacity, which in turn will provide a second wave of development for the Region.

b. Idle Capacities in the Transport Systems

Considering that in the existing structure there is idle capacity in all the transport sub-sectors, investments that require large financial resources are not urgently needed to develop the transport infrastructure in the EAP Region. This status quo reduces the financial burden of the changes need to be made to the transport system and prevents dependency on long-term transport investments that can only become operational and provide a service after a long period of development.

Improvements to alleviate the problems of unused capacities and localized bottlenecks in the existing infrastructure will provide sufficient capacity in the short-term throughout the Region and in the medium term in the areas outside the main corridors.

c. Urbanization and Development Focus

Some developing settlements and production centers in the EAP Region are turning into important focal points which provide centers of convergence for the Region's economy and transport system. The Malatya-Elazığ corridor is changing into a locus axis and with the sub-regions of Erzurum, Erzincan and Van, where economic development has intensified, are becoming lively points for transport systems.

These growth centers will be the driving force for Region's economy and parallel to it for the vitalization of demand for transport systems. The transport demand created between the growth centers and their periphery and external centers will vitalize the

Region's economy, the principal links where freight and passenger transport take place will become the arteries of the Region's economy.

d. Abating Terror and Security Problems

Terror and security problems in the Region have been factors depressing freight and passenger transport demand and have prevented demand to issue freely. This curtailing factor that arose in addition to all the others has artificially kept transport demand low. However, with the abating terror and security problems and the advance of permanent solutions the artificial depression on demand has eased. The free formation of transport demand, the possibility of planning journeys as and when they are wanted has put the Region's transport structure into a trend of vitalization.

e. The Extent of Environmental Problems

Environmental problems caused by transport are at a negligible level because of the low levels of transport demand and related motor vehicle traffic. Low numbers of vehicle ownership, the dispersed nature of rural settlements and limited economic activity has contributed to transport induced environmental problems remaining at a low level. This status quo allows for necessary measures to be taken to counter transport induced environmental problems and in contrast to the western regions for these to be kept in check at an early stage effectively.

Considering that transport induced problems (air pollution, noise, parking spaces, accidents) in the settlement areas and industrial centers that are growing in the EAP Region have started to reach levels where preventative action has to be taken and if done so the problem can be halted from becoming a serious one.

2.5.1.1.3. Results of the Analysis of the Current Conditions

The existing problems and deficiencies of the EAP Region's transport systems and the three main components of transport infrastructure, services and demand can be summarized in the following points.

Transport Infrastructure

- Given the current low level of demand in general there are no capacity bottlenecks in the infrastructure.

- The Region's topography, in a serious barrier to the improvement of geometric standards of the railway and road networks.

- The Region's climate is creating problems in terms of transport infrastructure maintenance, repairs and management and is causing these activities to be undertaken at a high cost.

- Existing capacity problems are by and large the result of the topography and low levels of demand.

- The historical development of road and railway networks is causing deficiencies in the Region's links with its sub-regional centers, the SAP Region and countries that have come into being after the disintegration of the Soviet Union.

- Because of the Region's rural settlement structure, a dispersed, low quality network has come into being which is difficult to operate and maintain.

- With demand levels being low, new infrastructure investment is deemed infeasible when economically evaluated.

- Because of demand levels being low and production units dispersed, freight transport in small quantity go through the road networks instead of long haul bulk transport, which is cheaper on railways.

Transport Services

- The Region's harsh climate and low levels of transport demand make it difficult to improve transport services.

- The high cost of keeping the road network open during the winter months means that this is not realized. This is further increasing the Region's isolation.

- The low level of demand in the Region prevents the transport sector from being a productive and vibrant sector for private investment.

- Insufficiency of capital accumulation in the Region is curtailing enterprise in the transport system. Establishments and fleets that are big enough to achieve productive undertakings are not emerging.

- The Region's climate and topography is increasing unit costs of transport services and this in turn curtails increases in mobility. Further, high transport costs are reducing the competitiveness of local produce on external markets.

- The terror and security problems experienced in the Region presents difficulties for transport services.

Transport Demand

- The Region's economic structure dominated by rural production and isolated small production units is causing transport demand to issue at a low level and be dispersed to rural areas.

- The settlement patterns being mainly rural, dispersed and at low density are decreasing freight and passenger mobility with demand concentrating to the main corridors.

- The long distance and high cost involved in transport when coupled with the low incomes of the Region's inhabitants prove to be financial barriers to accessing transport services and decrease mobility demand.

2.5.1.2 Targets and Strategies

A series of aims and strategies has been outlined below that consider the EAP Region's general structure, transport systems and possibilities to develop transport systems parallel to the general strategies and decisions of the EAP Region Master Plan.

The Creation of A Transport System That Can Meet the Region's Needs of Suggested Structural Changes

With the restructuring suggested in the Master Plan a new structure is pronounced for the EAP Region's economic, social, cultural traits and its settlement regime. The transport system while adapting itself to the new structures also has to meet the demand created through these and plays a vanguard role in the restructuring process itself. The priority objective is for the infrastructure to meet demand at the given structure and also the new demand emerging from the suggested new structure without creating unproductive and idle capacities. The transport system, the given and issuing infrastructure capacities, offered services and organizations should help the necessary modifications for the new structures.

Meeting the Transport Requirements of the Sub-regions

The proposed structure for the EAP Region and its sub-regions demands the restructuring of transport system. Through support given to the economic and social structures, the development of existing sub-regions, the creation of new onces, and districts and central villages within those, require a refocus and restructuring of the transports system. The transport system should ease the transformation of sub-regions into a new structure. Further, it should meet transport needs during the transitory phase as well as future needs.

The Development of Relations and Transport between the Sub-regions

As well as the strengthening of relations within the three sub-regions defined for the EAP Region the strengthening of relations between them should be one of the main objectives of infrastructure improvements. These improvements will bring about internal integration of the sub-regions; the specialization among them and through their interaction will induce economic vitalization.

The Integration of Urban and Rural Areas

The settlement structure in the EAP Region has historically been of a rural nature. The development of services and infrastructure between urban settlement centers where the provision of services, infrastructure and other amenities is easier, and their peripheral rural areas will enable rural areas to access urban facilities and will also be a driving force for the structural changes in the rural areas. Transport infrastructure, services, organizations and their financing will be an important factor in the integration of urban and rural areas.

Using the Opportunities Presented by Having A Border

The EAP Region forms the country's eastern border. Its transport network should play a vital role in providing the transport link to world markets for neighboring countries, and countries that can gain access through them. The low capacity usage in the EAP Region's transport links, should be regarded as a ready potential for arising new demand. The bottlenecks should be alleviated and for the demand to develop and be channeled through the EAP Region, necessary steps need to be taken in terms of international relations, agreements, organizations and marketing.

Access to the Sea

The above-mentioned transit transport and the EAP Region's own production and needs necessitate the effective use of shipping. Also to facilitate access to the world markets, the EAP Region's links with major ports should be developed. The transport links and services that facilitate access to the Black Sea and Mediterranean ports (Samsun, Trabzon, Iskenderun) should be supplied.

Integration with the West

The EAP Region should overcome its inward looking economic and social structure through integration with the "West". "West" here means the western areas of the country as well as the western countries it can access through them. In order to strengthen transport links with the "West" the improvements made to the transport system should have limited scope in the first instance with future developments to the infrastructure and concentration on developing institutions and companies that especially provide transport systems management and services.

Integration with SAP

Though the EAP Region is neighboring the SAP Region, there are gross deficiencies in the transport links between them. The two region's transport links should be developed to a level that will facilitate interaction in order for the EAP Region to make better use of the amenities of the SAP Region and for the co-operation between these two regions that have great development potential to be increased.

Specialization in Transport Modes and Services and Market Sharing

The transport sub-sectors and services in the EAP Region have not been developed in a planned way; in terms of functions no effective distribution has been made, a division of labor has not been established and special services have not matured. Considering that the low level of demand is not caused by infrastructure deficiencies, a new division of labor should be undertaken for the transport sub-sectors, structures that will provide transport services and their specialization in the transport of different goods should be supported in order to make better use of existing infrastructure and channel increases of demand.

The Control of Urban Transport Problems

The city centers in the Region are developing but have not reached the size of metropolis as yet. Urban transport problems in these city centers have started to surface. These should be solved at this stage before they present a serious challenge.

The level of urban transport problem and their characteristics are as such that they can be alleviated with limited financial resources. These problems and deficiencies should be attended to at this stage and their growth inhibited with effective solutions that produce results in the short-term. With this approach the enlargement of the cities will present less problems. Settlements with an effective transport system will have a positive affect on the Region's general progress.

2.5.1.3. Transport Decision of the Master Plan

This section has not been prepared as a standard "Regional Transport Plan" with short, medium and long-term investment projects for the transport system. Rather than writing a text that outlines "investments" for the duration of the plan, this document has been prepared with the aim to dwell on the general scope of the issues of "transport projects" some of which can not be described as "investment" in the classical sense and to define the "application strategies and program" of them.

On the one hand, the general conclusions of the Master Plan, accepted sectoral approaches and the decisions within the sectors invalidate conventional projections of goods and passenger flows due to proposing important changes and modifications in the current structure. On the other hand, the level of details of decisions and projects for the various sectors are not sufficient to provide data to calculate the category, quantity and departure-destination points of the new transport demand under the new system.

As the EAP's general approach defines structural changes in the East, a new structure has to be outlined for the transport system. These will aid and quicken the pace of the changes by preceding them and putting the necessary infrastructure in place while preparing to meet the qualitatively and quantitatively new transport demand ensuing from these transformations.

Though it is pre-conditional that the changes should be presented only after a new infrastructure and services are in place, "early" or "excessive" capacities created before the restructuring could impede them by channeling limited financial resources unnecessarily and untimely into the transport system though they are needed to achieve the transformation itself. Hence, new or add-on capacities that are envisaged in the transport system and increases in service levels that necessitate new investment should be developed parallel to demand increases.

The structural changes suggested by the EAP Project are expected to create qualitative and quantitative changes in transport demand. However, the effects and timing of the transformation on the transport system are not known as yet partly because of ill-defined projects with few details. Therefore, investments and unrecoverable projects that will be proposed to keep pace with these changes carry a high risk.

When affronted with an expensive projections for new transport links, the strategy that should be adopted is to improve the EAP Region transport links that are underused through various operational and maintenance mechanisms. Constant capacity can be achieved by alleviating bottlenecks through wide ranging but low outlay investments. To supply transport services effectively, efficient use of infrastructure should be made along with institutional and operational changes undertaken.

Transport systems need to be developed in correlation and in aggregate with the suggested changes for the other sectors in the East. Transport should have an infrastructure and organizational, operational structure that allows it to precede changes in the sectors it served; however, it should support these changes without undertaking unnecessary investments that create idle capacity.

The strategy framework that is envisaged for the transport sector and its stage-by-stage implementation has been summarized below:

- to pave the way for development in other sectors, basic infrastructure needs have to be met through alleviation of bottlenecks and deficiencies in the transport sector,

- projects for structural changes and transformations in transport to be defined and implemented,

- changes in the other sectors to be closely observed and in order to channel infrastructure capacities and services a series of flexible alternative projects to be defined and implemented parallel to the ensuing changes.

2.5.1.3.1. The Development of Transport Infrastructure

The first stage of the transport plan is to define the strategic corridors of basic transport infrastructure and to alleviate any bottlenecks and provide capacity at a defined level of standard.

Arising from local conditions and the historical development the predominant transport mode in the East is road transport. It seems inevitable that this is to be the case in the foreseeable future.

The strategic corridors that form the basic infrastructure of the road network are consisting of links mentioned below. These corridors should be operated as road networks that are kept open for transport at all seasons. The problems of climbing lanes and surface paving should be alleviated and required standards for traffic signs, maintenance and administration attained. The majority of these corridors should be developed according to transit traffic demands. The restructuring suggested by the Plans resolutions make it possible to create dual carriage ways at points where local and transit traffic demand overlap, especially as through-roads and other links will obviously be shared. This depends on the needs arising parallel to the opening up of the Region and the level of issuing transit traffic demand. **(Figure 2.5.1.)**

East-West Links

- **Sivas-Erzincan-Erzurum-Kars-Border/Ağri-Doğubeyazıt-Border:** On this principal transport axis, which can be defined as the upper corridor, is situated the Erzincan-Erzurum development axis; and transit transport destined for Georgia, Armenia, Azerbaijan, Nahchivan and Iran is expected. The corridor that forks out into two at its far eastern end is then separated into three routes. The corridor reaches four frontier-gates and also acts as a convergence axis for access to the Black Sea.

- **Kayseri-Malatya-Elazığ-Bingöl-Muş-Tatvan-Van-Border:** The lower corridor on which the Malatya-Elazýð development axis is located will service transit transport demand destined especially to Iran. This axis will also function as the principal corridor for the Region's access to the Mediterranean Sea.

North-South Links

- **İskenderun-Osmaniye-Malatya:** This link enables the Region's access to the Cilicia Plain and to the sea (Port of Iskenderun) as well as the SAP cities.

- **Ş.Urfa-Adıyaman-Malatya:** This corridor will be the shortest link for the Malatya-Elazig urban development axis to the SAP Region. Also it will help to combine the prospects of two projects and enable the Malatya-Elazığ sub-region opening up to Syria.

- **Diyarbakır-Elazığ:** This corridor links the eastern end of the Malatya-Elazığ development axis with the SAP Region and enables the EAP Region's connection with Syria and Iraq.

- **Diyarbakır-Bingöl:** Connecting the SAP and EAP Regions this corridor offers access to Erzurum and the Port of Trabzon on the upper corridor via Bingöl.

- **Siirt-Bitlis:** Connecting SAP and the Van sub-region this corridor will be used to link the SAP cities with the northeastern countries. In terms of traffic this corridor is expected to be of secondary importance.

- **Hakkari-Şırnak:** Though connecting the most inaccessible city of Hakkari with the West, the SAP cities and Iraq, no significant traffic demand is expected.

- **Hakkari-Van**: Though contributing to the internal integration of the Region, a high level of traffic demand is not possible.

- **Elazığ-Tunceli-Erzincan:** Is strengthening the Region's Samsun, Giresun link.

- **Bingöl-Erzurum:** Is strengthening the Region's Trabzon connection.

- **Bitlis-Erciş-Ağrı:** Is strengthening the connection between the Van Lake development center and the Ağrı-Patnos development region.

- **Van-Muradiye-Iğdır:** Links the two East-West corridors in the EAP Region and plays an important role in the internal integration of the Region. These corridors also facilitate access to the Black Sea through the lower corridor. In addition, it can be used to link the SAP Region to the Black Sea.

- **Aşkale-Bayburt-Gümüşhane-Trabzon:** Erzurum and Erzincan's link to the Black Sea and the Port of Trabzon. This link is expected to create a high level of demand as the Region's principal northern opening.

Forming the road network, these corridors will carry the majority of the Region's transport, and include the principal connections that link the Region with its sub-regions, the rest of the country, ports and neighboring countries.

This network is given priority and all of the roads should be developed to a Class 1 level. In the first instance the East-West corridors, depending on demand increases later on the North-South links, should be build with BHM (hot mixture with bitumen –concrete asphalt), projects such as climbing lanes, bridge widening should to be implemented. This should be the framework of investment programs for the duration of the Plan.

Investments in progress in the Region are concentrating on the defined priority network. They are important steps in alleviating bottlenecks and completing lacking links in the network. The majority of projects in progress (such as routes and capacity improvements and climbing lanes) are planned to be completed within the 2000-2002 investment program.

Though the bodies responsible for new railway investments and the operator have various project proposals (Kars-Tiflis, Samsun-Iskenderun, for the northern and southern crossing of the Van Lake) to develop the railway network, demand levels and the countries budgetary restrains make the realization of these projects unlikely unless foreign capital can be found.

Under the given conditions improvements to the railway networks infrastructure should concentrate on improvements to the administration of the existing network, the alleviation of bottlenecks, the effective use of existing capacity instead of the construction of new links. The proposals included in the TCDD's (state owned railway company) Restructuring Project should be re-evaluated for the EAP Region and a new study should be prepared with the view of possible project development for the railway system. Projects should be formulated especially to cover improvements to management, the development of combined transport and land terminals, the concentration on metal ore transport which has a large share in the railway freight transport in the EAP Region and the effective use of private sector resources.

Considering existing capacities and demand, the capacities and standards created through projects in progress to develop air transport infrastructure should suffice for the duration of the Plan. If, as a result of demand development in other transport sectors, demand arises for cargo transport in the future, projects that have been prepared beforehand covering the development of air cargo facilities and management might have to be implemented.

Inland waterway transport is almost non-existing and has not developed parallel to increases in opportunities. Studies that focus on the development of inland waterways transport especially on the Van Lake and Karakaya-Keban Dam Lakes need to be undertaken. Infrastructure and services should then be developed according to findings of these studies.

2.5.1.3.2. Structural Adjustment in Transport and Restructuring Projects

Transport system in the EAP Region has to be prepared for restructuring to adjust to world trends and the expected structural changes in other sectors that have been proposed by the EAP Master Plan.

These restructuring projects should be planned and implemented in a multi-dimentional way so that they can assist each other in their varying domains and functions. Firstly, projects need to be developed covering the areas mentioned below; these should be implemented at the second stage. At stage three new infrastructure and investment projects should be developed and implemented in correlation with the new situation of definitive demand issuing from the restructuring in the other sectors.

Rural Transport: The most important aspects of structural changes in the Region; the modernization of rural production, it being lifted from its self contained state and opened up to outside markets, the proposal that the opening up should be channeled through regional development centers makes the rural transport projects the most important factor in the restructuring of the Region.

The “Sub-regional Local Transport Plans” that will be prepared based on wide ranging studies for each sub-region and parallel to the gradation of production and settlement areas will define investments targeting local road networks and their management. These plans will area wise define the (logistic) chain of transport between the production point of agricultural and manufacturing products of the sub-regions, through the sub-convergence points and onto the destined markets. These plans will also detail capillary vessels and land terminal properties and their capacities, which will most probably constitute the biggest item of investment in the development of the transport system covered by the EAP Master Plan.

The sub-regions transport plans may not overlap with the three sub-regions mentioned in the EAP Master Plan. Agricultural production, manufacturing, transport, settlement structures and their gradation, geographic features will be considered, which means that many more localities might be involved in rural transport plans. Local transport plans while integrating the sub-region from the point of freight and passenger transport will define ways and gradations for the opening up of all smaller districts, investment requirements and management attributes.

The fundamental framework for transport restructuring is the organization of the transport of products from rural areas to the Region's sub-regions and from there to external markets. The move and collection of the Region's products at sub-centers, their reformation (processed into finished or semi-processed products, packaged, turned into palette/container/wagon unites) and transportation to the external markets using the more advanced transport opportunities at the sub-regions will provide important benefits. With this approach it will be possible for the different transport modes to concentrate on transportation that most suit their technical and financial specifications. Further, it will enable road transport to supply the railways and civil aviation. To develop such conveyance a plan has to be prepared that defines the position and location of product consolidation points (land terminals), allocates space for processing and packaging of products of various categories, determines railway-road changeover facilities and creates container land terminals.

Urban Transport: The EAP Master Plan envisages rapid urbanization. Inner-city journeys in the Region's urban centers are predominantly taken on foot. However with the envisaged changes a rapid increase in motor vehicles is expected. As the demand for vehicle transport increases and with growing incomes it is expected that the low percentage of motor vehicle ownership will reach national average levels that in turn demands that preparations are made in terms of infrastructure and management to solve ensuing transport and access problems.

In the urban centers of the region, detailed and wide-ranging transportation studies has to be done by grouping the cities that considers the planned population, and the decisions regarding planning, implementation and management about inner-city has to be made. Different studies should be prepared for settlements with a population under 100,000, between 100,000-300,000 and over 300,000. Transport plans and projects resulting form these studies should make effective and efficient use of existing infrastructure, reduce the need for new investments and deal with environmental problems caused by urban transport. Following this task plans, projects and management strategies should be developed that reduce motor vehicle demand in urban transport to a minimum, meet demand through public transport, deal with problems of automobile usage before they arise.

Management: A comprehensive restructuring has to be undertaken of management functions that play an important role in repair and maintenance, freight and passenger transport services. Though it is envisaged that the public sector will continue to deal with the maintenance and repair of the infrastructure, cost reductions can be anticipated through out-sourcing certain function from the private sector.

The existing infrastructure is currently not limited in term of capacity. For the effective use of the this infrastructure, projects should be defined and implemented that adapt improvement, management, maintenance and repair work procedures to the Region's adverse topographic and climatic conditions. Rather than the technology intensive approach of western countries, these projects should be based on special equipment and personnel that is supportive of local employment.

To alleviate the negative climatic effects on railway, road networks and air transport terminals the restructuring of snow clearance work is necessary. Priority should be given to improve the management, personnel, equipment and training aspects of this function. The private sector should be involved with the special maintenance and snow clearance work during the winter months. This will relieve the financial burden on the public sector while within a structure that is brought together by the private sector, employment opportunities would be created for labor employed in agriculture during the summer months.

The prime objective should be to keep the main arteries open for transport services throughout the winter. However, considering the rural settlement pattern, it will not be possible to keep all roads open. Hence a strategic winter management plan should be prepared for the Region's cities which outlines which transport links will be kept open under which climatic condition. Taking into account modern technologies and procedures, these programs should be integrated as scenarios into the Local Transport Plan and personnel, equipment, training and other requirements should be put into place accordingly in the short-term.

Structure: The importance of the transport aspect within the production-consumption chain and its logistic planning has not been recognized until recently. The reorganization of links of the chain and required procedures, a user orientated marketing and management approach and a corresponding organizational structure, personnel training and specialization can contribute to the Region's transport system achieving effectiveness and revitalize demand with minimum investments.

Instead of new capital investments a concentration on improving the given structure, equipment, organization and human resources and corresponding training and marketing aspects will enable the effective use of the existing infrastructure and provide a firm foundation to supply services for envisaged structural changes in the Region.

Studies aim to find ways of developing the Region's external trade relations (with import, export, marketing and transport companies), creating administrative procedures, organizations and companies that improve the Region's internal integration and its contact with the outside world, defining methods that facilitate the integration of the rural and urban areas. The results of these studies and projects that meet the necessary training and equipment needs should be implemented straight away.

Contact with Neighboring Countries: With the opening up of the former Eastern Block countries, it is thought that the Region's external relations will undergo significant change and that it will play an important role in the conveyance of Western technology and capital goods to these markets. Transport corridors of the EAP cities will be used to meet the needs of these emerging markets with the EAP Region's agricultural and manufacturing goods and move the rich mineral resources of these countries to the West. Therefore, the EAP Region transport organizations, services and infrastructure has to be prepared to create, channel, support and facilitate transport demand that is expected over the next few years.

Proposals for the definition and development of transport system that can take on and channel the transit traffic through the EAP Region to the countries to her northeast and east have to be brought into the scope of this study. Projects regarding the use and role of Trabzon and Iskenderun ports and Istanbul (which will be supported by the Bosphoros railway crossing) in the transit traffic through the region to neighboring countries, and the development of the infrastructure of the main corridors have to be defined. These then can be supported with wide ranging studies. The constitution of main corridors will greatly contribute to enable the EAP Region to transport its products to national and international markets. Further, the transport services in the region will be tailored to the mentioned demand and will give an impetus to the regions transport services and economy.

Synchronization: The transport structure defined in the EAP Master Plan outlines the strategies to be adopted for transport planning, project devising, investment, management, structure and finance but it is not a concrete investment project. According to the priorities, speed and success of restructuring in the other sectors the preparation of detailed regional/local plans and corresponding projects has to be speeded up. This stage-by-stage and flexible application necessitates effective synchronization that will be achieved through the preparation of transport plans and project in correlation with plans of projects in other sectors and their concurrent implementation.

The Preparation of an Alternative Projects Stock: The EAP Master Plan proposals for transport favor the creation of a plan mosaic that is put together by combining the general strategy outlines of development and restructuring with local and detailed plans prepared for a practical purpose. This approach is based on all transport needs being met by locally prepared projects, bar national and international links and envisages a synchronized correlation of local projects prepared within the framework of the defined general strategies that meet the needs of sub-regions and districts with the once of a wider scale. According to this method a large stock of projects dealing with transport investment, management, personnel/organization/equipment structures should be built up. These projects will be based on plans that have been prepared according to local data and needs. When over time the necessity for change emerges in the EAP Region, the most suitable projects can be selected from this pool and implemented. Hence there should be a large stock containing many alternative projects that have been formulated according to restructuring requirements, their timing, developments in foreign affairs, decision and strategies of a wider scope (national and international).

2.5.1.4. Implementation Stages of the Plan Decisions

The above outlined strategies and projects should be implemented according to the stages outlined below and parallel to the Master Plan's general decisions and structural changes in the other sectors.

Working for Restructuring and the Alleviation of Bottlenecks (2001-2005)

It is planned that during this period the EAP Region's transport infrastructure is to be improved with a low level of investment, and attention will be paid especially to management, maintenance and service provision competencies and specialization which is to be matched with technical standards.

The investments that have been made during this period should be limited to alleviating bottlenecks and increasing traffic safety. The majority of these investments are in progress and climbing lanes, coating, improvements to bridges and junctions and their signaling and curb rehabilitation will be completed by 2002.

During these years priority will be given to the necessary training and marketing work needed to develop structures, equipment, organization and human resources rather then capital investment. The groundwork should be done by the implementing of detailed sub-region, district and sub-sector plans and the putting into place the "soft" infrastructure that will be needed for the anticipated restructuring during the next period. Again at this stage it might be necessary to invest in the prioritized areas of the rural infrastructure to facilitate integration of sub-centers and central villages of the rural economy.

At this stage studies should be prepared that aim to find ways of developing the Region's external links, creating administrative procedures, organizations and companies that improve the Regions internal integration and its contact with the outside world, defining methods that facilitate the integration of the countryside with the cities.

Starting the implementation of the study results, the preparation of projects that meet education and equipment needs will be of prime importance for future years.

During this period a restructuring should be started to facilitate the marketing of transport services in international transport, forging and elaboration of institutional relations increasing of service capacities. Furthermore, international transport will show sign of vitalization.

Table 2.5.1.1 outlines the general measures and projects that should be implemented during this period

Economic Restructuring (2006-2010)

After the finalization of projects that have been repaired in the preceding years, restructuring proposals and other preparatory work and the implementation of initial measures; parallel to the first signs of changes in the basic economy, social and cultural structure in the EAP Region and changes in the transport structure will become apparent at this second stage.

During this period the missing links will be put into place, results and proposals of all the studies and projects will be implemented, the projects and proposals already in progress from previous period will be developed and spread, adaption of the outdated networks to current circumstances will be achived. Parallel to the EAP Region's economic restructuring, the restructuring of transport systems will be concluded. Infrastructure investment in the rural networks to integrate the countryside to the cities, building of change-over and sub-convergence centers will be concluded during this period.

At the beginning and the end of this period the following have to be evaluated: The level of progress in transit and international transport, the ratio of transport demand to infrastructure and service capacities, how and at what level the economic and social

restructuring has affected transport demand and systems. Following evaluation a development strategy with two options should be prepared. These strategies should define different development scenarios for the second and third stage based on the lower and higher values evaluated. Especially the third period projects should be prepared according to these evaluations and strategies.

Sustainable Economic Growth (2011-2025)

At the end of the first two stages spanning a ten year long period, the realization rate of the radical restructuring proposals and the strategies that followed in the wake of the plan have to be re-evaluated.

New demand generated through the transformations that have taken place within the framework of the Master Plan and external relations may necessitate road, railway and air transport infrastructure investments. Decisions on such investments should be made at this stage.

The new structures arising from the economic and social restructuring have to be regulated so as to avoid the depletion of the Region's economic resource and the decline of the material and social values. Further, natural resources have to be protected while transport system develops.

During this period attention should be paid to prevent and to ease the problems arising form restructuring especially from the growth of population in the settlement areas.

Table 2.5.1.1: Projects to Improve Transportation System

1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011-2025)
Management, maintenance and repair work structures suitable for the Region's conditions, Road building material suitable to the climatic conditions,	Expansion of climbing lanes,	Alternative links and routes to be developed for problematic links,
Increases of service frequency and speed, The building of goods collections and combinations centers, land terminals,	The spreading of land terminals The development of sub-regions,	The gaining of predominance of bulk transport and civil aviation in exports,
The improvement of the Region's links with the ports of Iskenderun and Trabzon,	Additional connections points to the ports to be developed,	
Improvements to infrastructure bottlenecks, Transport service institutions to be developed, Marketing and organization,	The development of the capacity of corridors that are exit points for bordering countries,	Increases to corridor capacities according to demand,
The development of the sub-regions transport links and services, The development of links of cities and central villages with their periphery,	The completion of rural networks, The completion of change over and convergence centers,	Precaution to be taken against densification
Large service enterprises to be supported in the transport sector, Partnership transport companies and co-operatives to be encouraged,	Private sector participation in railways,	
Only links with deficient infrastructure and problem points to be improved, Effective use of infrastructure with improvements to management and maintenance, Development of logistic planning approaches	Completion of missing and deficient links, Expansion of logistic planning approaches,	Improvements to new links and capacities depending on demand.
Improvements to deficient links in the network, Alleviation of network deficiencies without large investment outlay, Deficiencies and bottlenecks be alleviated for export transport, Pilot projects to be implemented for inland waterway, Urban+rural transport studies to be undertaken.	The completion of the adaptation of the network to current circumstances, The strengthening of transit main corridors infrastructure and links The development of inland waterways Urban+rural transport studies to be implemented.	

Table 2.5.1.2. Strategies to be Implemented in Transportation Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Topography and climate	Management, maintenance and repair work structures suitable for the Region's conditions, Road building material suitable to the climatic conditions,	Expansion of climbing lanes,	Alternative links and routes to be developed for problematic links,	All Region
Distance from Market	Increases of service frequency and speed, The building of goods collections and combinations centers, land terminals,	The spreading of land terminals, The development of sub-regions,	The gaining of predominance of bulk transport and air transport in exports,	All Region
Lack of Access to the Sea ports	The improvement of the Region's links with the ports of Iskenderun and Trabzon,	Additional connections points to the ports to be developed,	Improvement of routes connecting the Region to the ports,	All Region
Bordering Developing Countries	Improvements to infrastructure bottlenecks, Transport service institutions to be developed, Marketing and organization to be developed,	The development of the capacity of corridors that are exit points for bordering countries,	Increases in capacities of corridors leading to neighboring countries,	All Region
Population and Low Density in Economic Activity	The development of the sub-regions transport links and services The development of links of cities and central villages with their periphery,	The consolidation of rural networks, The consolidation of production units,	Precaution to be taken against densification,	All Region
Capital Accumulation	Large service enterprises to be supported in the transport sector, Partnership transport companies and co-operatives to be encouraged,	Encouragement of large scale enterprises in transport sector, Encouragement of large partnership companies,	Encouragement of large scale enterprises in transport sector, Encouragement of large partnership companies,	All Region
High cost of infrastructure development	Only links with deficient infrastructure and problem points to be improved, Effective use of infrastructure with improvements to management and maintenance, Development of logistic planning approaches,	Completion of missing and deficient links, Expansion of logistic planning approaches,	Expansion of logistic planning approaches,	All Region
Characteristics of the transport network and infrastructure	Improvements to deficient links in the network, Alleviation of network deficiencies without large investment outlay, Deficiencies and bottlenecks be alleviated for export transport, Pilot projects to be implemented for inland waterway, Urban+rural transport studies to be undertaken.	The completion of the adaptation of the network to current circumstances, The strengthening of transit main corridors' infrastructure and links, The development of inland waterways, Urban+rural transport studies to be implemented.	To carry out the necessary developments/rehabilitation works.	All Region

2.5.2. COMMUNICATION

2.5.2. Communication

Within the context of globalization of economic relations, having an efficient telecommunications network is a *sine quo non* for a well functioning regional economy as well as for produces and consumers wishing to get quick information about recent developments in the world of economy and to adapt themselves to the changes. An efficient telecommunications network has also become a precondition for cultural progress in a contemporary world.

The Plan proposes, for the establishment of an efficient communications network for the region, the construction of new telephone exchanges, the replacement of aerial fiber-optic lines with an underground network so as to minimize the impact of weather conditions on the lines and to provide continuous communication, the widening of the area of coverage of the state TV channels to include all residential areas, the formation of new FM transmission stations, the digitalization of such airborne transmissions as wireless communication, radio and television broadcasts, and the improvement of infrastructure through the utilization of new technologies with a view to encouraging wider use of the internet. Besides, it emphasizes that attention should be paid, during the realization of the above-stated activities, against the risk that investments being made may become outdated as a result of rapid technological advances before they paid off themselves.

2.5.2.1. Summary of the Current Situation

The report titled 'The Analysis of the Present Conditions in the Region' states that the region does not lag behind other regions in terms of telecommunications, especially in terms of telephone network. The most needed investment in the region is the construction of a transmission network connecting all provinces. There is an ever-increasing need that a satellite link system should become the main alternative to the terrestrial transmission systems like aerial lines, radio links, and fiber optic-cables as the principal line of transmission, rather than the forth alternative to them.

Clearly, those high standards which the EAP Region achieved in the telephone network, should also be realized in radio-TV, fiber-optic transmission systems. It is needed that an underground telecommunications network is constructed in order to minimize the impact of any weather conditions on lines, that continuous investments are made in the existing network to catch up with the developments in information technologies, and that arrangements are made to facilitate these tasks.

Despite the improvements recently made in the field of telecommunications, due to topographic characteristics of our country, there are still small villages in the EAP Region without access to basic telecommunication services. To reach the areas outside the conventional telephone network, the Türk Telekom (TT) is developing new alternatives. Taking advantage of having its own satellite, TT is currently trying to put two projects into service: one is designed to provide small residential areas where there is no telephone exchange with a reliable and high quality telephone connection via Turksat Satellites; the other, the satellite-earth systems project (TES), is aimed to enable the subscribers in villages and towns with old-fashioned telephone exchange to use PSTW network via satellite. In accordance with Turkey's TR-TES project, the supervision of the whole

network will be carried out by the back-up network-monitoring center in the Directorate of Satellite Communications Center in Gölbaşı, Ankara. The present state of communication infrastructure in the provinces of the EAP Region is shown in **Table 2.5.2.5** and **2.5.2.6**.

The MMS project has been initialized with the objective of utilizing the radio frequency spectrum, which is a scarce resource, in the following areas: to provide an effective use of the system by wireless, radio and television, and other types of communication systems; to prevent adverse effects of each system on the others; to prevent unauthorized broadcasting; to prepare a radio frequency infrastructure which would be able to absorb future technological developments in the field; to ensure frequency planning at an optimum level; and to set up and administer an advanced nation-wide frequency management and monitoring system.

The MMS project is also includes the acquisition of a National Frequency Management System (MFYS), which will consist of advanced computer hardware and software components (as ordered by law) and make it possible to perform all procedures regarding Frequency Management with computer support. The two systems shall be integrated with each other, and hardware, software, communication network and databases will be shared at a maximum level.

The law number 4502*, enacted on 29 January 2000, regulates Telegram and Telephone, the duties and organization of the Ministry of Transport, the rules concerning the management of wireless communication, postal and telecommunications services as well as the construction of infrastructure in these fields. By this law, the provision of all kinds of telecommunications services and the management of telecommunications infrastructure are under the authority of TT. The monopoly of TT on the national and international sound communication shall terminate on 31 December 2003. After then, companies other than TT may enter into the market. The new law is expected to increase competition and the quality of services in the sector. **Table 2.5.2.3** shows the cost of telecommunications projects in the EAP Region.

The general tendency in the world concerning telephone charges is towards making local calls free and reducing the price of national and international calls. Meanwhile, data communication and access to the internet through the existing lines are on the increase.

The regional development disparities appears to bring new opportunities for production-employment-welfare using information technologies. Through the construction of an efficient telecommunications structure, the opening up of the Small and Medium-size Enterprises (SME) in the region to the world, and provision of region's untapped resources to the service of Turkey and thereby to the wider world can be realized in the first term (2001-2003). **Table 2.5.2.4** shows the strategies to be employed in each period. The new law re-regulates the telecommunications sector.

* The original title of the law number 4502 as it appeared on the Official Gazette number 23948, dated 29.01.2000, is as follows: Law Amending Certain Articles of the Telegram and Telephone Law, Law on Organization and Responsibilities of the Ministry of Transport and Wireless Law, Law on Savings and Aid Fund of the Posts Telegraphs and Telephone Administration and Organizational Charts attached to the Decree with the Force of Law on the General Cadrees and Procedures.

2.5.2.2. Proposed Projects

With rapid development of communication systems, it is increasingly becoming possible for people to contribute to production of goods and services from the places where they live. An efficient communication system opens up the region to the world and helps to achieve rational use its resources. To this end, the projects to be realized in the first and second periods are as follows:

1. Information and communication technologies consist of office machines, data communication devices, computer software, communication devices, and technologies of related service industries. An investment in information-communications technologies has a huge impact on the national economy as a whole. The spread of such technologies can generate new service sectors. Because of their economic and social effects, these technologies are regarded as a critical field of investment almost all over the world. Given the level of economic activities in global information society, the formation of information networks in every country is inevitable. From this perspective, telecommunications sector should be given priority more than any other sectors.

2. The 155 Mbps TTnet (Today&*Tomorrow Network*) system includes İstanbul, Ankara, İzmir, Adana, Kayseri, Antalya, Diyarbakır and Samsun provinces. The E3 type connection between Kayseri and Diyarbakýr should be replaced with a STM1 (155Mbps) connection, as in other core backbone provinces. Even now the 155 Mbps systems are inadequate, and their replacement with 622 Mbps connections in the near future seems inevitable. No province in the EAP Region has core backbone connection. It is recommended that the Elazığ province should be linked to the core backbone which currently connects Kayseri with Diyarbakır.

3. **Table 2.5.2.1** shows the speed with which the provinces of the EAP Region are connected to the core internet backbone. Bingöl, Bitlis, Tunceli Ağrı, Erzincan, Bayburt and Gümüşhane provinces are connected to the TTnet backbone with no alternative. To provide communication without hindrance, these provinces can be connected to the Ttnet backbone with alternative. There are two POP points (POP-65 and POP-66) in Erzurum. Similar POP stations should also be considered for the Elazığ, Malatya and Van provinces.

4. ADLS (an ADLS line equipment has 8 kbps input and 640 kbps output speed, and it may allow maximum 144 user termination) is an appropriate technology for the internet access in the region. Because this system uses the existing infrastructure and allows synchronous data and sound transmission on the same carrier, it is an ideal system for the region where there is excess telephone capacity. It is recommended that Erzurum (POP-65), Elazığ (POP-64), Malatya (POP-118) and Van (POP-81) province centers should have similar characteristics to Ankara-Küçükesat (POP-4) in the near future (2003), and such internet access software as FR, ATM, PSTN, ISDN, ADLS should be put into service. For personnel data communication, the ADLS technology has been preferred all over the world. The adaptation of the ADSL technology is of great importance for the EAP Region because of the long distances between the province capitals.

Table 2.5.2.1 Connection Speed and Internet Accessibility In the EAP Region's Provinces

Provinces	Connection Speeds to the Backbone	Connection Status
Ağrı	2x2 Mbps	With no Alternative
Erzincan	2x2 Mbps	With no Alternative
Bayburt	2x2 Mbps	With no Alternative
Bingöl	2x2 Mbps	With no Alternative
Bitlis	2x2 Mbps	With no Alternative
Elazığ	2x2 Mbps	Back-up
Gümüşhane	2x2 Mbps	With no Alternative
Hakkari	2x2 Mbps	Back-up
Tunceli	2x2 Mbps	With no Alternative
Van	2x2 Mbps	Back-up
Ardahan	2Mbps	Back-up
Erzurum	2Mbps	Back-up
Iğdır	2Mbps	Back-up
Malatya	2Mbps	Back-up
Kars	2Mbps	Back-up
Muş	2Mbps	Back-up

Source: Türk Telekom

5. The Virtual POP (VPOP) centers should be formed at the province centers in the EAP Region and they should be franchised to private sector companies. Internet Service Providers (ISP) based in İstanbul, Ankara, İzmir and Adana should be encouraged, with local support, to expand their service area to include those regional provinces which are likely to be centers of attraction in the future such as Elazığ, Malatya, Erzurum and Van. The contributions by local firms should be kept high as much as possible and local firms be subsidized to enable them to make their contributions.

6. With the construction of TTnet network in which ATM is used as a switching device, access to ATM, FR, ADLS, LL as well as the provision of internet access services via PSTN and B-ISDN will be possible. The provision of these services in the EAP Region at the same time with other regions is of great importance.

7. There is a tendency in the world to prefer personal satellite systems or satellite-cable TV as the way of transmitting motion, rather than using terrestrial technologies like cable-TV, ISDN and terrestrial digital-TV, *etc*. Because satellite systems can supply all services provided by traditional cable-TV in a cheaper, faster and low-maintenance form, it is believed that the application of cable-TV system to the region shall not be economical. It should be encouraged that Satellite Master Antenna TV (SMATV) systems are installed in densely populated areas by companies licensed by the Ministry of Transport.

8. There is no main TRT-TV transmission station in the Malatya and Muş provinces. Main transmission stations for TV-1, TV-2 and TV-3 (at 100 KW, 450 KW and 450

KW respectively), should be established in these provinces. The TRT-TV seems to have sufficient numbers of main TV transmission and TV relay stations. The TRT-TV broadcasts cannot be received properly in many provinces of the region even if transmission stations are powerful enough, because the transmitters of private national TVs and local TVs broadcast their programs in a high boosted and unfiltered form. Whether the authority of allocating frequencies nationwide, which lies with the Radio and Television Higher Council (RTÜK), is respected, should be fully tested and regulated on the provincial basis within the framework of National Monitoring System (MMS). Private TV companies use satellites more intensively and they are rapidly acquiring the products of digital technology. As a result, they do not need transmission stations that cost around 15000-20000 dollars, because new technologies enable them to transmit their broadcasts with a single antenna to a whole city. For this reason, investing in satellite and digital equipment is fast becoming a priority.

9. The Malatya province has the largest telephone exchange capacity in the region (169,176), followed by Erzurum (142,746) and Elazığ (121,759). The provinces that have the largest excess capacity are Malatya (22,696), Erzurum (17,274) and Ağrı (11,181). In the centers of Bayburt, Iıdır, Muþ and Tunceli provinces, there is no customer waiting for telephone connection. But there is a telephone demand in other provincial capitals of the EAP Region. Therefore investment in telephone exchanges is needed in these provinces. The largest shortage of telephone exchange capacity is in the Van province with 1,686 telephone demands, Malatya with 1,506, Erzurum with 823 and Ağrı with 756.

10. The practice of directing the deals to 0-822 internet access services, which is provided by Internet Service Providers via TTnet network, to seven regional centers all over the country is introduced. All provinces in the EAP Region has TTnet POP. It can be recommended to Internet Service Providers that a POP station be established only in the Erzurum sub-region, a section of the 7th region. This can also be recommended for the Elazığ, Malatya and Van provinces.

11. The ISDN PRI service is currently available from some telephone exchanges in the Ankara, İstanbul, İzmir, Adana, Antalya, Bursa, Kayseri, Konya, Mersin, Gaziantep, İzmit, Trabzon, Malatya and Samsun provinces. In the provinces of the EAP Region, the implementation of ADSL technology (which uses copper wires, the ordinary telephone cable) rather than the ISDN system should be encouraged.

12. Should all the Virtual POPs (VPOPs) were put into service there are serious doubts about whether the existing network could carry the heavy load. Prior to this, data consumption reports for the provinces of the EAP Region should be prepared. An advance planning (comprising the 2003-2005 period) based on monthly data consumption should be made.

13. The creation of funds in order to finance the construction of communication infrastructure to be used by local industries as well as SMEs in the EAP Region is of crucial importance for the emergence of information society in the region.

14. The formation of video-conferencing systems between the universities of the region and the universities in Ankara, as well as among the universities of the region, can be recommended. Such systems can be established when the ISDN system becomes operational in the EAP Region.

15. SMEs of the region working in the communication, media, data processing, computer hardware and software sectors (the companies that their intellectual capital exceeds their material capital) should be encouraged; be provided with professional courses relating to their business activities; and regional or nationwide marketing studies be conducted regarding such enterprises.

16. Those services which are carried out traditionally by TT such as telephone, fax and internet communication, sale of token, phone cards (magnetic card, smart card, global card, *etc*.), and NMT mobile telephone subscription services, are now provided by franchised companies. The provision of these services by the companies based in the region should be encouraged.

17. The region should be connected to Ankara with underground fiber-optic cables; and the present radio-link and aerial fiber-optic cables should be laid underground. Installation of a SDH radio-link system to connect the EAP Region with the backbone network must be realized.

18. The process of developing the VSAT network as the principle transmission line as an alternative to fiber-optic cables, radio-links and traditional wire transmission lines, should be accelerated. Within this context, an intra-regional network should be created among the provinces of the EAP Region in the first place and then it should be connected with Ankara or Istanbul from a province in the region.

19. Those professional public and private establishments in the region which are processing data (banks, universities, big companies, *etc*.) should be provided with a separate telecommunication service; or, at least a 100% uninterrupted connection should be guaranteed for their data channels.

20. TRT radio and TV programs should be made receivable everywhere in the region.

21. Local TV stations in the region should be encouraged and be provided with program and technological support as well as technical advice.

22. A survey should be conducted in order to create a map of the places covered by NMT and GSM mobile telephone systems in the EAP Region and relay stations should be installed where needed.

2.5.2.2.1 Projects for the Improvement of Telecommunications Infrastructure

1. Specialized working committees should be set up to collect more detailed information that can be used for identifying problems, and studies by such committees should be coordinated. With a view to providing equal access to the internet, such committees should be consist of people from public sector, the universities of the region, Internet

Service Providers, TT and private sector; and a long-term approach should be adopted about internet service provision in the region. Priority should be given to determine in detail the bandwidth of the existing telecommunication network and the rate of utilization of the current bandwidth. Psychical conditions, bandwidths, technological state of the existing radio-link, fiber-optic, and satellite links connecting the regional network with other cities and the national backbone should be mapped. In the future, various internet access systems (such as ISDN, DLS, and especially ADLS) should be made available and the demand for dial-up access services in city centers be reduced.

2. Those services provided by the POP-4 station in Küçükesat, Ankara (LL, Frame-Relay, ATM, PSTN, ISDN and ADLS) should also be made available at POPs in the provinces of the EAP Region with economic potential such as Erzurum (POP-65-66), Elazığ (POP-64), Malatya (POP-118) and Van (POP-81). It will be wise to invest in the ADLS access technology which uses telephone lines for both telephony and internet services, rather than increasing telephone exchange capacity.

3. ADLS should be preferred as the telecommunication technology for the region. In Erzurum, Elazığ, Malatya and Van, ADLS service should be provided either through TTnet network or by the licensed private sector companies. Especially those private companies which use professional data has to be encouraged to use ADLS system.

4. In the provinces mentioned above, the ADLS access technology should be introduced as a pilot project; and, if successful, other provinces of the EAP Region be included.

5. IBS/BRD satellite terminals should be used widely in the provision of telephone communication especially in villages and towns of the eastern Anatolian region where some kind of problems occur in operation of terrestrial telecommunication systems. By building IBS type satellite earth terminals which is not influenced of any geographical conditions and easy for mounting, maintenance and operating, it has been provided to communicate with villages and towns via TURKSAT satellites where no communications facilities provided via terrestrial transmission systems, like radio-links, fiber optic cables, and aerial lines or where some kind of problems occur in operation of the existing systems. A study should be conducted to determine the need for such terminals in the region.

6. Annual and monthly data consumption reports should be prepared for each province in the EAP Region. Based on monthly data consumption, the kind of data network that will be needed in the 2003-2005 period should be estimated.

7. Projection should be made to estimate the broadband need of the EAP Region in the years 2002, 2004 and 2006. To this end, a data map for the region showing bandwidth needs from 64 Kbps to 600 Kpbs should be prepared in 2001.

2.5.2.3. Summary of the Proposed Projects

The reasons for the introduction of the new technologies are explained in detail above. **Table 2.5.2.2** provides a synopsis of the proposed projects. The project costs as prepared by TT are given in **Table 2.5.2.3**.

Table 2.5.2.2: Proposed Projects

Project	Characteristics	Contributions to the EAP Region	2002	2004	2006
Improvement of lines connecting the region with Ankara	SDH network is used for the time being. It is influenced of geographical conditions, causing disconnection.	For uninterrupted communication, the region should be connected to the core backbone alternately.	Connection of the Malatya, Elazığ, Erzurum and Van provinces with the backbone network via STM1 at 155 Mbps	Increasing of the connection speed of the regional provinces with STM1 (155 Mbps)	Connection of all provinces with the backbone network at 166 Mbps,
Use of new technologies to improve data communication infrastructure	Use of the same network for both data and voice communication.	Meeting the demand for data lines by using new technologies,	Use of the new technology in the provinces of Malatya, Elazığ, Erzurum and Van should be made priority.	Use of new technologies in all provinces in order to meet the demand for speed in data transmission	Replacement of ADSL system with the third generation UMTS mobile communication system at the rate of 50%. More use of mobile technologies in data communication
Use of new technologies in publishing	Use of new publishing technologies in line with technological developments in the world.	Utilization of the benefits of new technology in the field of publishing	Improvement of the quality of publications, starting from regional centers.	Improvement of the quality of publications in the region as a whole	Broadcasting all private TV programs on cable-TV and the introduction of pay-TV. Partial digitalization of publishing infrastructure

Table 2.5.2.3: Cost of Telecommunications Projects in the EAP Region, as Prepared by Türk Telekom (TL Million)

PROVINCES	Telecommunication Buildings	Data Processing and Automation Systems	Telephone Exchanges and Network	Purchase of Vehicles	Long Distance Telecommunication Systems			Purchase of Machine and Equipment	Purchase of Vehicles	R&D Labs and Education Centers	TOTAL (PROJECTS)
	1994 E 110030	1995 E 11 0070	2000 E 11 0010	2000 E 11 0050	2000 E 11 0020	2000 E 11 0030	2000 E 11 0040	2000 I 00 1600	2000 I 00 1610	2000 E 11 0060	
AĞRI	17,000	205,000	1,700,000		398,072	250,000	198,000	6,000		2,774,072	5,548,144
ARDAHAN	12,000	205,000	1,100,000		134,464	150,000	198,000	4,000		1,803,464	3,606,928
BAYBURT	17,000	205,000	999,681		117,008	150,000	198,000	3,000		1,689,689	3,379,378
BİNGÖL	27,000	205,000	1,000,000		130,870	300,000	198,000	5,000		1,865,870	3,731,740
BİTLİS	27,000	205,000	1,000,000		109,914	150,000	198,000	6,000		1,695,914	3,391,828
ELAZIĞ	30,000	205,000	1,500,000		369,835	350,000	198,000	6,000		2,658,835	5,317,670
ERZİNCAN	52,000	205,000	1,600,000		139,038	150,000	198,000	8,000		2,352,038	4,704,076
ERZURUM	142,000	213,000	2,500,000	22,000	543,317	300,000	198,000	9,000	15,000	3,942,317	7,884,634
GÜMÜŞHANE	89,000	205,000	1,200,000		72,343	150,000	198,000	4,000		1,918,343	3,836,686
HAKKARİ	157,000	205,000	1,300,000		295,345	300,000	198,000	5,000		2,460,345	4,920,690
IĞDIR	12,000	205,000	1,000,000		74,396	150,000	198,000	4,000		1,643,396	3,286,792
KARS	17,000	205,000	1,300,000		229,816	150,000	198,000	4,000		2,103,816	4,207,632
MALATYA	78,000	205,000	1,958,014		366,288	350,000	198,000	7,000		3,162,302	6,324,604
MUŞ	62,000	205,000	1,254,756		431,910	350,000	198,000	5,000		2,506,666	5,013,332
TUNCELİ	23,000	205,000	1,102,960		173,809	300,000	198,000	6,000		2,008,769	4,017,538
VAN	77,000	205,000	1,584,394		525,628	350,000	198,000	8,000		2,948,022	5,896,044
TOTAL	**839,000**	**3,288,000**	**22,099,805**	**22,000**	**4,112,053**	**3,900,000**	**3,168,000**	**90,000**	**15,000**	**37,533,858**	75,067,716

Source: Türk Telekom, EAP Province's Investment Program of Year 2000

Table 2.5.2.4: Strategies to be Implemented in Telecommunication Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st period (2001-2005)	2nd period (2006-2010)	3rd period (2011-2020)	
Under development of telecommunications sector in the region	Use of cyberspace in government offices	Integration of regional governmental departments with National Information Master Plan for Turkey as proposed in the plan	Training of government personnel so that they can use computer and the internet	All sub-regions
	Establishment of government information system	Inclusion of the EAP Region in the fiber-optic transmission network		All sub-regions
	Encouragement of widespread use of electronic trade			
	Formation of an information network like Kobi-net	Replacement of the existing radio-links and aerial fiber-optic lines with an underground network		
	Encouragement of SMEs to set up their own WEB sites	Provision of a separate communication system and continuous data stream for private and public establishments processing data		
	Encouragement of local TV station in the region			
	Enlargement of coverage area of such mobile telephone systems as NMT and GSM	Provision of state TV services through franchised companies		
		Increasing the number of relay stations		

Table 2.5.2.5: Current State of Telecommunication Infrastructure in the EAP Region

EAP PROVINCES	POPULATION ESTIMATE IN MID-1999	INSTALLED LINE CAPACITY (DECEMBER 1999)	(1) CAPACITY DENSITY (%)	SUBSCRIBERS IN DECEMBER 1999 (NUMBER)	(2) SUBSCRIBER DENSITY (%)
Ağrı	472,637	56,076	11,86	45,168	9,56
Erzincan	117,950	29,785	25,25	22,252	18,87
Bayburt	97,518	19,403	19,90	17,301	17,74
Bingöl	230,771	32,642	14,14	28,820	12,49
Bitlis	341,499	47,401	13,88	37,023	10,84
Elazığ	522,609	130,778	25,02	125,964	24,10
Gümüşhane	274,792	65,699	23,91	58,126	21,15
Hakkari	878,204	153,107	17,43	139,452	15,88
Tunceli	149,961	32,319	21,55	29,403	19,61
Van	230,881	24,854	10,76	21,585	9,35
Ardahan	145,848	24,990	17,13	22,420	15,37
Erzurum	315,613	56,586	17,93	48,748	15,45
Iğdır	842,455	181,874	21,59	157,512	18,70
Malatya	433,150	40,328	9,31	29,057	6,71
Kars	74,108	23,560	31,79	18,844	25,43
Muş	793,264	94,746	11,94	87,956	11,09
TOTAL EAP	5,921,260	1,014,148	17,13	889,631	15,02
TOTAL TURKEY	**64,385,000**	**19,679,009**	**30,56**	**18,054,047**	**28,04**
SHARE OF EAP REGION (%)	9.20	5.15	-	4.93	-
(1) Number of telephone lines per 100 capita					
(2) Number of telephones per 100 capita					

Source: Türk Telekom 1999

Table 2.5.2.6: Telecommunication Infrastructure in the Provinces of the Region

PROVINCES	INSTALLED CAPACITY OF EXCHANGES	TELEPHONE NETWORK (Double Line)		FIBER-OPTIC CABLE	END USER
	(Line)	Principal	Local	(Km)	(Number)
Ağrı	56,076	89,590	115,030	420	14,519
Erzincan	29,785	45,890	50,760	158	8,994
Bayburt	19,403	33,590	39,740	94	4,286
Bingöl	32,642	54,100	69,630	339	7,608
Bitlis	47,401	71,710	90,830	397	11,832
Elazığ	130,778	225,850	367,500	741	42,984
Gümüşhane	65,699	96,500	119,930	876	16,162
Hakkari	153,107	210,910	305,740	669	38,802
Tunceli	32,319	57,500	66,450	190	9,234
Van	24,854	39,490	52,340	20	4,054
Ardahan	24,990	48,560	64,700	270	5,472
Erzurum	56,586	86,610	100,520	717	16,890
Iğdır	181,874	272,230	353,230	789	60,720
Malatya	40,328	51,520	70,740	218	11,070
Kars	23,560	40,060	46,610	137	9,282
Muş	94,746	165,840	252,680	522	19,344
TOTAL EAP	**1,014,148**	**1,589,950**	**2,166,430**	**6,557**	**281,253**
TOTAL TURKEY	**19,679,009**	**30,050,110**	**42,740,140**	**58,770**	**6,678,732**
SHARE OF THE EAP REGION (%)	**5.15**	**5.29**	**5.07**	**11.16**	**4.21**

Sources: Türk Telekom 1999

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2.6. TRADE AND CONSTRUCTION

2.6.1. WHOLESALE AND RETAIL TRADE SECTOR

2.6.1. Wholesale and Retail Trade Industry

Trade is one of the key sectors in the context of development of the region, since one of the greatest difficulties of producers in the region has always been the problem of marketing their produce.

Plan suggests to improve transportation infrastructure, train qualified personnel in trade, establish Economic Development Agency (EDA) or an alternative organization for providing counselling services and directing entrepreneurs, set up autonomous selling cooperatives for agricultural products organised in product matter and for classification, packing and marketing of the products, institute sectoral foreign trade companies active in providing finance, transportation, assurance and costuming, activate real estate investment associations active in constructing store, antrepo, office building, site for wholesalers, center for work and trade, create marks in relatively some advantaged products, increase the number of border gates, open border gate of Armenia when political condition is suitable, open agents of Institute of Turkish Standards for solving the problems in trade sector and giving way to agriculture and industry sectors.

2.6.1.1. Summary of the Current Situation

While the share of trade sector in the EAP region GDP is 13.6 % in 1987, it reaches to 16.3 % in 1996. The portion of the trade sector in the Turkey's GDP is about 20 % in the period of 1987-1996 and 19.4 % in 1998 (SIS, GDP by Provinces, 1987-1996). While the portion of trade sector in the employment of the EAP Region is 2.3 % in 1970, it increases to 3.7 % in 1990 and 4.2 % in 1995. The share of trade in total employment of Turkey in those years was 4.5 %, 7.9 % and 9.1 %, respectively.

Trade sector has an important place in all economic activities of the EAP Region. According to the results of the 1992 Census of Industry and Workshops, in the region there were 37744 workshops and total employment in these workshops were 88683 persons. These numbers corresponds to 6 % of total number of workshops and 7 % of total employment in Turkey in general (SIS, 1992). Elazığ, Erzurum, Malatya and Van have the greatest share in the region with respect to number of workshops and employment.

When the foreign trade structure of the region is examined, it is realized that the total exports of the EAP Region constituted 4 per thousand of that of Turkey in 1987, nearly 2 per thousand between the years of 1988-1995, and 4.3 per thousand in 1996. Although the share of the EAP Region in the total imports of Turkey was realised above 2 % in 1991 and 1996, it remained below 2 per thousand in other years (1988-1995) (SIS, Foreign Trade Statistics 1987-1996).

Ağrı, Erzurum, Malatya and Van have the highest export shares among the provinces of the region. As for imports, Malatya has the highest share. Van, Kars, Erzurum, Iğdır and in recent years Ağrı obtained an increasing exports capacity.

It is the trade sector, which ensures that the goods produced in other economic sectors reach to the consumers by delivering them to consumption points, storing and

distributing. Thus, trade sector assumes an important function in getting the economy work, converting the goods into cash or income, and satisfying the needs of consumers by making the products available to them. Being unable to carry out this task sufficiently creates a serious bottleneck that prevents the economy from developing. It would be impossible to continue production without taking goods produced to the consumers via a good marketing and converting them into cash. The most significant problem of the producers in the Eastern Anatolia, especially in agriculture has been the marketing problem for a long time. There are many conditions for improving production such as education of producers, financial support, etc. However, to increase agricultural production it is necessary to overcome one more psychological handicap related with marketing of products. This is because producers in agriculture have lived together with the marketing difficulty for so long. For this reason, every effort for increasing agricultural production should come up with a solution proposal for the marketing problem as well. Psychological handicap means producer's belief in being able to market his production, in case he increased his production. Of course, small increases in production quantity will able to reach marketing opportunities within the present marketing channels. However, if realisation of great increases in production quantity is being planned, it is compulsory to examine matter of marketing and find solution. As a matter of fact, the EAP Master Plan suggests a serious production increase in the region. Because, even in the most pessimistic scenario in the EAP Master Plan, income per capita is projected to rise to TL 632 million from TL 204.8 million, that is three times of an increase in 20 years in 1987 prices. As a result it means that gross national product of the region will increase three times. To increase production to such level and remain in that level, even rise more means that marketing problem is solved. That is to say trade sector is doing its responsibility in the best way.

We could examine the functions of trade sector in the region in three categories:

a) Making goods available to the consumers by bringing them from other regions of Turkey and foreign countries, thus meeting some of the needs of the regional consumers,

b) Helping the regional producers solve their marketing problem by marketing their products both in and out of the Region on the one hand, and helping them meet some of their needs on the other,

c) Assisting consumers in producing marketable products and increasing their market shares by providing accurate and sufficient information about the quality and type of goods they demand.

As it seems, there are important duties for trade sector. However, to realise these expectations the Eastern Anatolian Trade Sector should first undergo a process of change and evolution. The reasons for this need for change and evolution could be enumerated as follows:

a) Thanks to technological advancements the distances get shorten and a rapid globalisation process has been experienced both within the country as well as internationally. This situation opens the domestic

market of the region into foreign competition, however, at the same time makes it easy to reach the markets in other regions of Turkey and abroad.

b) As technology improves and competition rises, quality of submitted goods increases continuously. In improving quality calibration, standardisation and packing are getting more and more important. But it is highly difficult to provide calibration, standardisation and packing in agricultural products by the producer.

c) Since it will not be possible to consume the entire production within the Region once the growth and production targets suggested by the EAP Master Plan are achieved, the targeted markets of the trade sector should be the entire Turkey market and the foreign markets. Thus, it will be possible to achieve a continued growth in the Region if the organization is set up in accordance with such a goal.

d) In recent years a serious change has been experienced in retail trade. Big companies have accessed to this sector with developed marketing technology and large amount of capital. As a result, not only markets or supermarkets where only food and cleaning materials, etc. are sold but also huge shopping centers where every kind of consumption goods are sold have been expanded in big cities. This trend, highly preferred by the customers due to important advantages it brings, will be extended in the Eastern Anatolian Region as well. The Eastern Anatolian trade sector should evaluate the possible implications of this change in the region and prepare itself to take advantage of this development together with regional producers.

e) In order for the Eastern Anatolian Region to reach the development level projected for the year 2020, the quantity of investments ranges between $80.3 billion and 107 billion according to various scenarios designed. This huge investment could create a scale that makes possible the production of investment goods in the region. Evidently, investments will not stop in 2020 and will continue in the years to come. Furthermore, establishments that will start production with these investments will demand raw material and intermediary goods not produced in the region. This is exactly where the trade sector comes into the scene. If trade sector can get organized and work in such a way that the whole country and foreign markets are set as the target, it could create the opportunity to market the investment goods mentioned above outside the region as well. As such, there would be higher chances to set up establishments with optimum scale.

2.6.1.2. Macro Targets

Macro targets that wholesale and retail trade sector should realise in the period of 2000-2020 are stated in the context of three different development scenarios specified in the "Development Scenarios" section. These targets are summarized in **Table 2.6.1.1.** For the Eastern Anatolian Region to reach the targets suggested in these scenarios, each sector and hence wholesale and retail trade sectors should achieve their own targets. Wholesale and retail trade sectors should increase GDP in minimum 4.1 times and in maximum 7.6 times in 20-year period for reaching these targets. An investment of $7.9 billion in minimum and $12.6 billion in maximum will be required for realising this. Job opportunities for 167.000 and 197.000 individuals will emerge when the targets are achieved. Another characteristic of the sector is that most of the investments (96-97 %) will be made by the private sector. That is to say, approximately all of the investments, minimum $7.9 billion, will be realised by private entrepreneurs of the Eastern Anatolian Region or entrepreneurs from outside the region (other regions of Turkey and/or foreign countries).

2.6.1.3. Public Sector Activities and Projects

There is a need for some work, leadership, guide and coordination task by the State for the wholesale and retail trade sector so that it can realise the investment of $7.9 billion in minimum within 20 years, and while doing this, assisting, even guiding this development in the context of the aforementioned conditions. These duties assigned for the State are explained below.

2.6.1.3.1. Eliminating Infrastructure Insufficiencies

Trade relations of the region with surrounding countries and other regions of the country should be improved. In this respect these following projects should be put into implementation:

a) Highways that will be improved with regard to quality of transportation:

- Ağrı-Tutak-Patnos-Erciş Highway
- Muş-Varto-Hınıs-Köprüköy Highway
- Erzincan (Tanyeri)-Pülümür-Tunceli-Kovancılar Highway
- Bingöl-Genç-Diyarbakır Highway
- Malatya-Hekimhan-Kangal-Sivas Highway

b) Quality of railroads should be improved by revising the railroad connections with neighbouring countries.

c) Opportunities of cargo transportation in present airports in the Eastern Anatolian Region should be increased and landing of foreign planes to the regional airports for the target of cargo transportation should be permitted.

d) The number of border gates should be increased.

e) The problems related to providing electric energy should be solved for development of the Eastern Anatolian Free Trade Area.

f) Turkish Standards Institute should establish agencies in the Region.

Table 2.6.1.1: Wholesale and Retail Trade Sector's Macro Targets

Scenario A1

	Erzurum Sub-region	Malatya-Elazığ Sub-region	Van Sub-region	EAP
2000-2020 Period Total GDP Growth Rate (%)	471	373	386	414
2020 GDP (Million $)	2,043	1,981	499	4523
2020 Production Value or Revenue ($ Million)	3,632	2,944	806	7,382
2000-2020 Public Sector Investments ($ Million)	105	125	92	322
2000-2020 Private Sector Investments ($ Million)	2,509	3,427	1,664	7,600
2000-2020 Total Investments ($ Million)	2,614	3,552	1,756	7,922
2000-2020 Employment Increase (thousand persons)	57	64	46	167

Scenario A2

	Erzurum Sub-region	Malatya-Elazığ Sub-region	Van Sub-region	EAP
2000-2020 Period Total GDP Growth Rate (%)	658	508	835	607
2020 GDP (Million $)	2,711	2,549	962	6,222
2020 Production Value or Revenue ($ Million)	4,596	3,953	1,222	9,771
2000-2020 Public Sector Investments ($ Million)	120	138	105	363
2000-2020 Private Sector Investments ($ Million)	3,639	3,638	2,628	9,905
2000-2020 Total Investments ($ Million)	3,759	3,776	2,733	10,268
2000-2020 Employment Increase (thousand persons)	62	72	47	181

Scenario A3

	Erzurum Sub-region	Malatya-Elazığ Sub-region	Van Sub-region	EAP
2000-2020 Period Total GDP Growth Rate (%)	879	565	1092	755
2020 GDP (Million $)	3,504	2,787	1,226	7,517
2020 Production Value or Revenue ($ Million)	5,164	4,092	1,083	10,339
2000-2020 Period Public Sector Investments ($ Million)	131	152	138	421
2000-2020 Period Private Sector Investments ($ Million)	4,075	4,325	3,750	12,150
2000-2020 Period Total Investments ($ Million)	4,206	4,477	3,888	12,571
2000-2020 Period Employment Increase (thousand persons)	72	75	50	197

2.6.1.3.2. Qualified Personnel Training

To increase exports of the region, there is a need for qualified personnel trained in foreign trade who can speak foreign languages. The government should take necessary measures. For this purpose, necessary arrangements in the curriculum of regional trade high schools and universities should be made. Furthermore, special attention should be paid to in-service training of the personnel in exporting firms and in-service training programmes should be organised with cooperation of the regional Trade Chambers and these should be continuous.

2.6.1.3.3 Contribution to Solve the Problem of Finance

Finance, as a basic and general problem for the region, is equally important for trade sector, especially for exports. Difficulties of assigning source to the regional private sector from the public sources are evident caused by the finance problems of the public sector. It is necessary to pay attention in solutions on providing source assignment in increasing quantity from the system of Turkish Banking. Together with source allocation, cost cheapness is significant. Interest subsidy is taken into consideration in supplying cheapness in credit costs that will be assigned from the public sector to the region. This method will burden least to the state compared with direct source assignment. This matter is suggested as a different project. Project could be undertaken as a Special Commission Study under the supervision of State Planning Organization. Participation of related public institutions, Central Bank, Finance experts of universities, representatives from Banks Association and private banks and Chambers of Industry and Trade of the region should be provided.

2.6.1.3.4. Organization

In regards to the issue of organization, there are important tasks that should be carried out by the public sector. These are establishing an **"Economic Development Agency"** which will be the brain of development efforts of the region **or an alternative organization**, establishing **" Agricultural Sales Cooperatives"** in agriculture, and establishing **"Sectoral Foreign Trade Companies"** to increase exports from the region.

a) Establishment of Economic Development Agency

Economic Development Agencies are important organizations used by developed countries as a means for regional development. In various countries of the world different variety of this regulation take places. The Eighth Five Year Development Plan Regional Development Special Commission Report talks about this issue in detail. It is believed that such an organization is vital for the Eastern Anatolian Region as a world experience. In this respect, in the part related with manufacturing industry in the Eastern Anatolian Master Plan (Section 2.3.1.3) reasons of establishment of an Economic Development Agency or an alternative organization and anticipations and suggestions related with the shape of establishment of EDA (EKA), duty, authority and responsibilities are explained in detail. It is accepted that EDA will take important duties and functions with regard to improvement of the Eastern Anatolian trade sector. In this part, this aspect of the subject will be examined.

As indicated in the Manufacturing Industry section, suggested Economic Development Agency will not be a Development Bank. Nor will it be an establishment distributing credits to public and private sectors. Instead, it will be the brain, organiser, director, coordinator and guide of the efforts and activities for development in the region.

Implementation of the Eastern Anatolia Master Plan successively depends on having an institution such as Economic Development Agency as the address to be in contact. This is because successful implementation of the Master Plan depends on getting various detailed works done as proposed. A team is needed who can understand what is written in the plan and be able to execute the plan and direct local people in this regard.

Within this framework, EDA should take an active role in the development of the Eastern Anatolian trade sector. It is mentioned above that activities of trade sector are wholly private sector ones and it is necessary realising all investments by private sector for reaching the targets of trade sector in the context of the EAP Master Plan. Responsibilities of public sector are duties rather related with institutionalisation of sector and improvement of transportation conditions. Activities of EDA are especially important for reaching the targets of trade sector. It is stated in the project list in **Table 2.6.1.4** that it is necessary to give responsibility to EDA as a "responsible establishment" and/or "cooperating establishment" in implementing projects formulated in the context of targets, principles and policies in the EAP Master Plan. For this reason, establishment suggested in the Master Plan is inevitable.

EDA, while researching new investment opportunities for the region, should pay special attention in production opportunities based on exports to neighbouring and near

countries of the Eastern Anatolia (Iraq, Iran, Caucasian Countries, Turkish Republics and Russia).

b) Improvement of Agricultural Sales Cooperatives

It is well known that one of the most important problems of the Eastern Anatolia is marketing. This problem constitutes an important bottleneck in improvement of agricultural sector. The present trade sector in the region could not provide enough help to solve the problem. Measures that tradesmen will take for becoming influential and projects that will be executed are mentioned below. However, for having more effective structure of wholesale and retail trade sector in the region, establishment of their own marketing organisations and being active in marketing of producers should be supplied. For such an activity the most suitable organizational type is Selling Cooperatives for Agriculture. The organization of Selling Cooperatives in product base is possible. Thus, producers producing the same product by cooperating could establish an organization specialised in marketing. This organization could set up establishment for marketing the products in preferable conditions and processes on the product (classification, packing, etc.). There are various agricultural products suitable such a kind of organization in the Eastern Anatolia; egg, honey, apricot, potato, broadbeans are some of them. It is mentioned in the Master Plan that there could be much important increases in production of some of them.

After the Master Plan is started to be implemented, products proper for such an organization should be determined by a project, organizational principles based on these products should be defined and implementation should be carried out by the Ministry of Agriculture. In this proposal it is not suggested to provide financial aid and subsidy to these cooperatives. What is expected from the state is guiding and directing these organizations. This proposal is completely in conformity with the concept of IMF suggesting autonomous structure of Agricultural Sales Cooperatives.

c) Establishment of Sectoral Foreign Trade Companies

The organization of the Eastern Anatolian wholesale and retail trade sector so as to increase regional exports utmost level has crucial importance for the development of the region. But the present structure of trade sector is not suitable for realising an export leap. For this reason a new organization needs to be encouraged for exports which is a different area of specialisation.

State policy also should take exports into consideration. In this respect state has done regulations affecting organization in type of sectoral foreign trade companies for making SMEs active in exports. Sectoral foreign trade companies are active in fields in matters of export (finance, supply, transportation, insurance, customs, etc.). Sectoral foreign trade companies that will be established in the regions prior in development should have a capital of five billion TL and at least five partners. Partners should be a little or middle size companies employing 200 workers in maximum. Any of partners have 20 % of the company's capital. Selling Cooperatives for Agriculture and Associations could also set up Sectoral Foreign Trade Companies.

In the context of this regulation 31 sectoral foreign trade companies have been established until now. The number of partner companies to these companies active in various fields is 1110. Of these companies 3 are located in Gaziantep, 1 in Diyarbakır, and 1 in Kahramanmaraş.

One of the organizational projects, which will be executed according to the Eastern Anatolian Master Plan, should be related with establishment of sectoral foreign trade companies in the region. The project should be executed by the cooperation of the SPO, Undersecretariat of Foreign Trade, Economic Development Agency, Chambers of Trade and Industry in the region and Association of Eastern Anatolian Exporters. Sectoral foreign trade companies which will be established should be active with the cooperation of Economic Development Agency in matters of searching markets, assisting establishment of relations with abroad and in this respect realising organizations such as fair, exhibition, business trip, etc., finding solutions for problems of finance, providing raw material, transportation, insurance, customs, improving technical ability level of foreign trade personnel of members by organising education programmes for increasing the exports of its members.

Sectoral foreign trade companies should examine markets of Iraq, Iran, Caucasian Countries, Turkish Republics and Russia for foreign trade and develop suggestions for increasing exports. However, lowness of income in these countries could appear as an handicap in development of export; for this reason other countries of the world should be targeted for export activities.

A project in this matter should be prepared and in which cities and what kind of companies will be establish should be determined. These companies shouldn't limit their activities with agricultural products and at the same time compose production branches that will be newly developed in the region.

d) Development of Cooperation Between Local Establishments

The importance of promotion in marketing is great. For this reason, it is necessary to participate in fairs at home and abroad and take place in other promotion activities. In this respect general purpose promotion is significant as much as promotion of definite production that will be one of activity subjects of Economic Development Agency which is suggested to be set up. For providing anticipation of regional establishments to these fairs, organising fairs in the region and working in general introduction activities, to develop communication and cooperation between public and civil establishments, to work as a organizer and coordinator institution will be duties of Economic Development Agency or an alternative organization.

Other responsibilities of Economic Development Agency or an alternative organization should be supporting coordination between Chambers of Trade and Industry in the region, working for their becoming more functional and influential and thus, realising participation of private sectors in development efforts of the region more effectively.

2.6.1.4. Private Sector Activities and Projects

Measures that should be taken by public sector and projects suggested to be executed for development and reaching the targets proposed in the Master Plan of wholesale and retail trade sector of the Eastern Anatolian Region are related with eliminating infrastructure insufficiencies of the sector, creating preferable conditions for businessmen of the region. Basic activities in scope of the sector will be executed by private sector. As a result gross revenue of wholesale and retail trade sector will reach to $4.5 billion by increasing 5.1 times by the end of 2020 (compared to 2000) and to provide this rise an investment of $7.9 billion will be realised in the period of 2000-2020. These numbers belong to ***A1*** scenario proposing the smallest development speed. For realising ***A2*** and ***A3*** scenarios suggesting higher development speeds investments cost $10.3 and $12.6 billion are needed. As a result of this gross revenue of wholesale and retail trade sector will be realised as $6.2 or $7.5 billion respectively instead of $4.5 billion.

To supply necessary project stocks for realising investment capacity in such dimensions there is a need for establishments possessing basic information for directing private sector and capacity and ability of producing projects by using these knowledge and assisting private sector by counselling services. The most significant of these establishments is Economic Development Agency or an alternative organization. This establishment will develop investment projects and give counselling services by paying attention to principles, targets, strategies and priorities of the Master Plan and project suggestions and formulations and give counselling service in implementation of these projects. It is impossible to count and know definitely all the projects, which will be realised during the 20 years implementation period of the Master Plan at the moment. It is mentioned that 64 feasibility reports will be prepared as addition to the Master Plan. These projects are rather related with sectors outside the trade sector. This project packet is a very small part of projects that will be executed throughout the Master Plan. Thus, there will be a need for serious service of identification and improvement of projects. For accomplishment of the Master Plan successively the mentioned activity of identification and improvement of projects should be directed by a central unit understanding principle, target and thought of the Master Plan. In this respect, Economic Development Agency or an alternative organization becomes significant.

2.6.1.4.1. Private Sector's Activities of Organization and Association

The role of organization for targets and assistance and solidarity among private sectors in the Eastern Anatolian region is highly important for reaching the targets in the Master Plan successfully. For this reason, participation of Chambers of Industry and Trade is proposed in the establishment and activities of Economic Development Agency or an alternative organization. Institution of sectoral foreign trade companies as another organization suggestion is crucial for indulging of the Eastern Anatolian private sector into abroad and marketing products of the Eastern Anatolia. Consequently, Chambers of Industry and Trade and Economic Development Agency should associate with each other.

It is necessary to cooperate and evaluate this opportunity where cooperation is possible for sectoral foreign trade companies. Anticipating fairs either at home or abroad,

organising fairs and exhibitions in the Eastern Anatolian region and providing to take part in these organizations of foreign firms and establishments, consequently creating cooperation chance, lobbying to local and central governments for common problems are some examples in the matter of association. Chambers of Industry and Trade and Economic Development Agency or an alternative organization could take responsibility.

Chambers of Industry and Trade of the region should improve cooperation between chambers and develop communication and association between businessmen active in various fields in the Eastern Anatolian Region by means of common committees and councils for the target of improving cooperation and common investment opportunities of businessmen in the region. Chambers of Industry and Trade, in this respect, should make works for education of their members and their personnel. Economic Development Agency or an alternative organization is proposed to have responsibility of organizer, coordinator and director establishment.

2.6.1.4.2. Establishment of Real Estate Investment Partnership

In our country, the model of multi-partner companies have been tried for channelling small and local savings into investments and in this way, both small savings in the region of investment and that of Turkish workers in abroad are directed to industrial investments. However, as a result of the mistakes made in choosing right project area, a remarkable portion of them have been unsuccessful caused by imbalances between investment costs and quantity of savings, insufficiencies of knowledge and culture in managing the industrial establishments of company partners and etc. In fact, it is significant to canalise little saving directly to investments in removing finance difficulties of development efforts and expand ownership to base. **Real Estate Investment Partnerships**, became active by the notifications of the Capital Market Board (SPK) and have expanded in the last years are put into agenda as an influential and advantageous mean in directing little savings to investments.

Real Estate Investment Partnerships are established and acting in frame of decisions of the Market of Capitals Law and Turkish Trade Law. These establishments target to provide income or profit by investing their sources of cash money in real estates, means of market of capitals, projects of real estate and rights based on real estates and selling or renting them. To the scope of definition of real estate office, residence, business center, trade center, hotel, hospital, school, commercial stores, commercial parks and similar immovables are included. Real Estate Investment Partnerships could purchase and sell these kinds of real estates, construct one or more aforementioned immovables in purchased estates and sell and rent them and thus, deliver shares of profit to partners. The foundation capital of Real Estate Investment Partnerships must be 1 trillion TL in minimum. These establishments must submit at least 49 % of their capitals to public.

The uses of Real Estate Investment Partnerships with regard to targets of the EAP Master Plan: to reach to purposes of the Master Plan, it is necessary to make numerous physical investments such as residence, commercial store, hotel, hospital, wholesaler sites, building of factory and little industry site, etc. However, entrepreneurs who wish to found and manage this kind of establishments could have enough sources. When owners of little

savings take part in these investments, there couldn't emerge difficulties similar to companies with multipartners had faced in the past and enterprise is not resulted with unsuccessfulness. Indeed, Real Estate Investment Partnerships don't possess the authority of managing immovables that they have purchased or constructed. They must sell or rent these real estates. If services of clearing, security, etc. are necessary for establishments that they submitted for rent, they must do these services by means of a manager company in place of renters. This regulation gives way for separation between owner of physical establishment and thus owner of capital and entrepreneur who demands to perform industrial and commercial activity by using the establishment. Since submit to the public of Real Estate Investment Partnership and quoting in bourse and processing its shares in bourse are compulsory, both owners of little savings find opportunity of using their money in physical investments and accumulations of little saving possessors are being secure, because these partnerships are under the control of autonomous supervisor companies and CMB (SPK). On the other hand, since Real Estate Investment Partnership doesn't have the right of interfering the management of its physical establishments, expert entrepreneur, renter and manager of establishment, has the chance of profitable and effective management.

This model creates a very suitable situation for industrial investments. When Real Estate Investment Partnership constructs a building and rents it to a production company, the company must provide machine and equipment only. As known, it is very easy to finance machine and equipment by means of "leasing" and seller credit. It is also valid for the establishments such as store, antrepo, office building, wholesaler site, center for business or trade necessary for wholesale and retail trade sector. Tradesmen will not be compulsory to give money for construction of such establishments and use his saving for machine, equipment and need of management capital in limited quantity.

By the above mentioned reasons establishments of Real Estate Investment Partnerships should be encouraged by participation of businessmen in the region, Province Private Administrations and owners of little savings and this matter should be examined as a subject of different project. Project should be executed by Economic Development Agency or an alternative organization and Economic Development Agency should take part in Real Estate Investment Partnerships. These partnerships should possess a strong capital base; it will be useful to set up one Real Estate Investment Partnership active in whole region. Since providing estate for successfulness of Real Estate Investment Partnership is significant, special privileges should be supplied in providing estate from Estate Office or other public institutions by means of some legal regulations. After Real Estate Investment Partnership providing cheap estate and evaluating this, by selling or renting it Partnership will reach the level of high profitableness and have opportunity of supplying new sources from market of capital continuously.

2.6.1.4.3. Private Sector Investment Projects

It is mentioned above that private sector should make an investment costs between 7.9 and 12.6 billions SU Dollars in wholesale and retail trade sector. It is possible to view these investments under two groups.

a) Investments to Meet the Increased Demand Stemming From Population and Income Growth

These investments are related with, on the one hand, goods that should be bring outside the region, on the other hand, goods of wholesale and retail trade both produced and consumed in the region for meeting the need of the region. Wholesale trade investments target to supply storing and delivery of mentioned goods to retailers. Investments of retailers will be in type of enlarging present shops or opening new one.

The sector of retailers is the first business branch which entrepreneurs looking for as a new work opportunity, having some savings or possessing a chance of borrowing money. It also has capacity of creating employment for many peoples. Since as mentioned before, GDP in the region will increase 5.1 times in the 20 years period. Per capita income will rise three times. The numbers of per capita income are given in the **Table 2.6.1.2**. This increase means rise of life standards. Thus, both consumption per person and variety of demanded products and product quality as parallel to income increase will rise.

The population increase in the region will be limited relatively. Projections indicate that the rate of total population increase will be remained at the level of 21.7 % in the 20 years period. In fact, there will be an increase of 300 % in per capita income. Consequently, increase in wholesale and retail trade will be affected by the increase in the level of income. In this respect, a higher increase in consumption of goods different from foods and an inclination towards better in quality and relatively luxurious goods should be expected. The per capita income in the Eastern Anatolian region in 2020 is estimated to be 32 % higher than that of Turkey in 2000. For this reason, it is possible to think that consumption patterns in the provinces possessing income near to the average of Turkey will valid for the Eastern Anatolian region in 2020.

With respect to per capita income and population density, an unbalanced distribution will be appeared in the Eastern Anatolian Region. According to the **A1** scenario, while per capita income in Malatya-Elazığ Sub-region is TL 821 million 1997 prices, it will be TL 548 million for the Erzurum Sub-region and TL 547 million for the Van Sub-region. Population will be dense in big cities. Population of total 18 settlement units possessing a population more than 50.000 persons will rise to 2.835.000 persons from 2.228.000 persons by increasing 605.000 individuals. Consequently, 46.5 % of total population increase of the region will realised in settlement units possessing a population more than 50.000 persons. Population estimations of the region are given briefly in the **Table 2.6.1.4** and **Table 2.6.1.5**. Share of urban consumption behaviours in consumption models will take an important place.

All these developments will affect the structure of retail trade and distribution of investments with respect to place and subject. Malatya will be the center of the whole region together with Elazığ and leader of the region with regard to variety of products by high-level consumption per person.

Primarily Malatya, and then Elazığ, Erzurum and Van will be the cities where modern shopping centers are established and improved as rapidly expanded in big cities of Turkey. For this reason, businessmen of the region should be prepared to get share form

this development. Shopping centers will be a investment field for real estate investment partnerships. Modern shopping centers that combine the shopping, entertainment and spare times' activities will change the daily life of the cities where they will be established.

Table 2.6.1.2: Income Per Capita by Year

Scenario A1

Years	Erzurum Sub-region		Malatya-Elazığ Sub-region		Van Sub-region		EAP	
	Million TL	$	Million TL	$	Million TL	$	Million TL	$
2000	180	1,189	308	2,034	165	1,090	213	1,407
2005	224	1,479	375	2,476	209	1,380	265	1,750
2010	293	1,935	484	3,196	286	1,889	349	2,305
2015	401	2,648	629	4,154	398	2,628	470	3,104
2020	548	3,619	821	5,422	547	3,612	632	4,174

Scenario A2

Years	Erzurum Sub-region		Malatya-Elazığ Sub-region		Van Sub-region		EAP	
	Million TL	$	Million TL	$	Million TL	$	Million TL	$
2000	180	1,189	308	2,034	165	1,090	213	1,407
2005	236	1,558	393	2,595	217	1,433	278	1,836
2010	337	2,225	532	3,513	318	2,100	391	2,582
2015	495	3,269	722	4,768	479	3,163	561	3,705
2020	712	4,702	985	6,505	712	4,702	797	5,263

Scenario A3

Years	Erzurum Sub-region		Malatya-Elazığ Sub-region		Van Sub-region		EAP	
	Million TL	$	Million TL	$	Million TL	$	Million TL	$
2000	180	1,189	308	2,034	165	1,090	213	1,407
2005	242	1,598	409	2,701	230	1,519	289	1,908
2010	365	2,410	568	3,751	352	2,325	423	2,793
2015	569	3,758	792	5,230	555	3,665	634	4,187
2020	876	5,785	1095	7,231	876	5,785	944	6,234

Note: a) 1$ = 151,428 TL. (Mid-1997 value)

b) Per capita income of Turkey in 2000 is estimated as 476 millions TL. (Master Plan acceptance, 1997 prices)

b) Investments for Marketing the Regional Products

Activities and investments of businessmen of the region under this headline have special importance for the regional development. It is useful to examine activities and investments in this part.

Marketing Crop Produce

The Eastern Anatolian Master Plan proposes to reduce the share of fields of cereal grains to 28 % from 54 %, reduce the portion of fallow lands to 7 % from 31 %, in turn, increase the portion of fodder plants fields to 55 % from 7 % by changing product design seriously. Little rises are mentioned in lands of family of broadbeans and industrial plants. Furthermore, production fertility will increase by implementation of suitable projects. A serious increase in quantity of production is expected. Production numbers of these production increases, which are important for marketing, are given in the **Table 2.6.1.3**.

Table 2.6.1.3: Present and Possible Crop Production Quantities of EAP (ton)

Product	Present Production	Possible Production	Increase
Lentil	4,333	40,610	36,277
Chickpea	42,188	97,900	55,712
Bean	36,475	88,075	51,600
Potato	391,597	1,385,010	993,413
Sunflower	2,890	9,250	6,360
Pasture Fodder Plants	5,171,256	18,311,110	13,139,854

As seen from the table the number of production increase reaches a few times more than the present production levels. Rise of production quantities to these levels and remain there belongs to marketing of these products in this quantity. For this tradesmen and selling cooperatives for agriculture play an important role. To make marketing successful it is necessary to give opportunity to tradesmen and selling cooperatives for agriculture of setting up establishments for storing, picking out and packing of lentil, chickpea, bean and potato. As stated before, real estate investment partnerships could found and rent these establishments to tradesmen and selling cooperatives for agriculture.

Most of additional production of pasture and fodder plants are not expected to be marketed since they will be used in establishments for meeting the need. However, three millions tons of fodder plants (alfalfa, sainfoin, vetch, clover, etc.) are estimated to be marketed far from their original lands. This process will take place rather in a way of marketing extra product of Malatya region in Erzurum, Kars and Ağrı regions. There will be a need for temporary storing and baling service for this marketing activity.

Another important matter for the regional tradesmen is apricot marketing. The need for establishments using modern technology for drying apricot and marketing is stated in the Agriculture Sector Master Plan. This subject is also an activity in the field of responsibility of wholesale trade sector.

Marketing Animal Products

It is acknowledged that the most important part of agricultural activities of the region is animal feeding. It is indeed the most important one among all economic activities. Implementation of numerous projects for improving animal feeding is proposed in the scope of Master Plan. Projects of developing ox feeding for milk, ox feeding, sheep feeding, poultry farming for egg, poultry farming for meat and beekeeping are some of them. By implementing these and other projects there will be significant increases in animal products of the region.

Businessmen of the region should make a different work on finding new markets for these products by accepting these production rises as a data. Works in this matter could be divided into three parts.

i) Possessing Suitable Stores for Preserving Animal Products: Storing activity should be considered in broader sense from meat storing to storing egg and honey. Storing tradesmen shouldn't be owner of a store directly. What important is storing in the region and sending products to outside the region as processed as much as possible.

ii) Activity of Packaging: This process is closely related with below mentioned the third process. Tradesmen are not needed for processing product. Tradesmen will give their own mark to product during the process of packing. He will realise packing in various types according to demands and necessities of market. If needed, he could process animal products himself to some extent. However, he does not need to have an establishment either. He can get this work done by someone else.

iii) Creating Trademarks and Establishing Connections: This will be the most important activity of the regional tradesmen. In this matter, “Vanet” is an example that businessmen of the region should follow. The trademark of Vanet has taken a strong place. Tradesmen of the region could repeat the same thing in different products by advertisement and other methods of introduction. However, precondition of accomplishment is quality guarantee and quality standardisation. Each of these activities is a matter of investment like founding a production plant.

Above proposed activities for trade sector of the region is viewed differently from production activities. Production and marketing are different specialisation subjects. Activities of animal production of the region are in type of small units. It is understood that this situation will continue in the coming 20 years. Small producers could not submit his products to market as suitable to the present demands of consumption market. This matter is a very different specialisation subject and needs serious investment and particular work of quality control. An important part of investment will be expended for advertisement and similar activities of taking place in market and remaining there. Producer will have

opportunity of marketing his products easily after doing all these works and constituting well working marketing system.

It is suggested that aforementioned views should be taken into consideration as a project and put in implementation after a detailed preparation. It is proposed that project should be executed and coordinated by suggested Economic Development Agency or an alternative organization. Trade chambers, farmer represents and selling cooperatives for agriculture should participate in these works.

Marketing the Products of Mining and Manufacturing Industries Produced in the Region

Rising mining production by utilizing mines of the region, increasing industry production and product variety by establishing new manufacturing industry are suggested with the implementation of the EAP Master Plan. While establishments in this sector are founding, it will be useful to pay attention to both Turkey and abroad as targeted market in determining production scale. Marketing of products in the sector is realised by marketing units of producer firms rather than free businessmen. For this reason, training of personnel and managers of firms active in mining and manufacturing industry sectors in marketing, encouraging and improving cooperation between firms, preparing a separate and detailed marketing plan and cost estimation in the process of feasibility will be proper. If these are done, it will be possible to marketing marble, ponza and perlit in Turkey and abroad, producing in the region and exporting various products of manufacturing industry needed by the neighbouring countries.

Marketing activity is focused on matters of survey, establishment of relation, finding consumer, promotion, etc., since almost all works related with preparing products for market about products of mining and manufacturing industry are carried out in production plant. The success in these issues is depended on quality and price of the product first, and then excellence of production system. Realising all of these depends on vision of entrepreneur. A different survey should be done after putting the Master Plan into implementation about what kind of an approach that entrepreneurs should have in case of preferring export instead of local market and shaping his invests in this way, and What responsibilities the public should take in this matter.

2.6.1.5. Implementation of Trade Sector Projects

All of the projects that are projected to be implemented in the context of activities of Trade Sector in the EAP Master Plan are put together in **Table 2.6.1.6**. In this table implementation years, implementing authority and establishments of cooperation are also indicated. Although some of the activities (increasing the number of border gates, opening of agencies of Turkish Standards Institute) that are called as project in the table are measures that should be executed by the public, it is found useful to include them in the table. Some of the projects in the table suggest establishing new institutions (such Economic Development Agency). These institutionalisation projects need any or very little expenses characteristically. It seems impossible to make cost estimation for the remaining

projects at this point. The costs of these projects can be determined after detailed feasibility studies. However, investment size of these projects shown in **Table 2.6.1.6** are in the range of total investments of Trade Sector given in the **Table 2.6.1.1.**

Table 2.6.1.4: Project List for Trade Sector

Name of Project	Implementation Period	Responsible Establishment	Establishment of Cooperation
Improving Highway of Ağrı-Tutak-Patnos-Erciş	2006-2010	General Directorate of Highways	
Improving Highway of Muş-Varto-Hınıs-Köprüköy	2006-2010	General Directorate of Highways	
Improving Highway of Erzincan (Tanyeri)-Pülümür-Tunceli-Kovancılar	2006-2010	General Directorate of Highways	
Improving Highway of Bingöl-Genç-Diyarbakır	2006-2010	General Directorate of Highways	
Improving Highway of Malatya-Hekimhan-Kangal- Sivas	2006-2010	General Directorate of Highways	
Increasing the Quality of Railroads Connections with Neighbouring Countries	2005-2020	Republic of Turkey State Railroads (TCDD)	
Improving Cargo Transportation in Airports and Permitting Foreign Planes to Land	2000-2005	State Airports Management (DHMİ)	
Increasing the Number of Border Gates	2000-2010	Customs Undersecretariat	
Opening Agency of the Turkish Standards Institute in the Region	2000-2005	Turkish Standards Institute (TSE)	
Training Qualified Personnel of Foreign Trade at the Level of Middle and High School	2000-2020	Ministry of National Education (MNE) and Council of Higher Education (HEB)	Economic Development Agency or Alternative Organizations, Regional Universities, Trade Chambers
Organising In-Service Courses for Firm Personnel on Foreign	2000-2020	Economic Development Agency or alternative organizations	Trade Chambers

Trade			

Table 2.6.1.4: Project List for Trade Sector (Continued)

Name of Project	Implementation Period	Responsible Establishment	Establishment of Cooperation
Work of Special Specialisation Committee in issue of Increasing Credit Transfer to the Region of Private Banks	2000-2002	State Planning Organization	Treasury, Banks Association, Private Banks Agents, Economic Development Agency or alternative organizations, Chambers of Industry and Trade
Establishing Economic Development Agency or Alternative Organization	2000-2001	State Planning Organization	Province Private Administrations, Chambers of Industry and Trade, Treasury
Establishing Agricultural Seles Cooperatives	2001-2010	Ministry of Agriculture and Economic Development Agency or alternative organizations	Provincial Governments
Establishing Sectoral Foreign Trade Companies	2002-2020	Economic Development Agency or alternative organizations	Chambers of Industry and Trade
Participating in Fairs and Exhibitions and Introducing the Region	2002-2020	Chambers of Industry and Trade and Economic Development Agency or alternative organizations	Private Sector
Organising Fairs and Exhibitions in the Region	2002-2020	Chambers of Industry and Trade and Economic Development Agency or alternative organizations	Private Sector
Setting Up Coordination Committees between Chambers of Industry and Trade	2002-2003	Chambers of Industry and Trade and Economic Development Agency or alternative organizations	

Table 2.6.1.4: Project List for Trade Sector (Continued)

Name of Project	Implementation Period	Responsible Establishment	Establishment of Cooperation
Founding Real Estate Investment Partnership	2002-2003	Economic Development Agency or alternative organizations	Provincial Governments, Chambers of Industry and Trade
Establishing Trade Centers in the Big Cities	2005-2020	Private Sector	Real Estate Investment Partnership and Firms, EDA or an alternative organization
Founding Establishments of Picking Out, Calibration and Packing of Broadbeans	2005-2010	Private Sector	Real Estate Investment Partnership and Firms, EDA or an alternative organization
Baling Fodder Plant and Marketing inside the region	2005-2010	Private Sector	Real Estate Investment Partnership and Firms, EDA or an alternative organization
Potato Storing and Marketing	2005-2010	Private Sector	Real Estate Investment Partnership and Firms, EDA or an alternative organization
Storing Animal Products and Marketing	2005-2010	Private Sector	Real Estate Investment Partnership and Firms, EDA or an alternative organization
Work of Trade Sector Master Plan	2001-2003	Private Sector	Chambers of Industry and Trade, Provincial Governments and Economic Development Agency or alternative organizations

Table 2.6.1.5: Strategies to be Implemented in Trade Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011-2020)	
Infrastructure and Transportation	Betterment of Present Airports	Improving Transportation Network	Improving Transportation Network	All Sub-regions
	Establishing Modern Trade Sites			Primarily Malatya and Provinces of Erzurum, Elazığ, Van
Finance and Credit	Increasing Incentives for Free Trade Area			
Entrepreneurship	Opening National and International Fairs and Exhibitions	Opening National and International Fairs and Exhibitions	Opening National and International Fairs and Exhibitions	All Sub-regions
Organization	Organization of Trade Firms in the form of Exporters Associations and Foreign Trade Companies, etc.	Organization of Trade Firms in Type of Exporters Associations and Foreign Trade Companies, etc.	Empowerment and Expansion of Trade Firms and Farmer Organizations	All Sub-regions
	Reorganization of Trade Chambers as Giving Better Assistance to Members in Activities of Export and others	Reorganising of Trade Chambers as Giving Better Assistance to Members in Activities of Export and others		
	Organization of Farmers as Producers Associations	Organization of Farmers as Producers Associations		
General	Implementation of Trade Sector Master Plan	Implementation of Trade Sector Master Plan	Implementation of Trade Sector Master Plan	

2.6.2. CONSTRUCTION SECTOR

2.6.2. Construction Sector

The construction demand in a region is basically a function of population, level of income per person and the size of total economic activity. Although population in the EAP Region has increased, since the level of income per person has remained low and the size of total economic activity has been small, the size of the construction sector has been relatively small as well.

Even when the modest of the three scenarios is implemented, income per person in the region and the size of total economic activity will rise significantly and population will increase though growth rate falls, consequently demand for construction will increase. To meet the demand properly the Plan proposes especially encouragement of extensive production of construction materials sensible to transportation, foundation of new concrete factories, production of pumice firm against earthquake and perlite having high heat insulation property that has an important reserve in the region and exploiting them in production of light construction materials, improvement of industry of prefabricate construction equipment, development and extension of centers for training of apprentices for supplying qualified manpower to sector, development of solidarity and cooperation between settled construction firms in the region for solving common problems, establishment of companies involved in machinery and equipment management with partnership of undertaker firms to be able to undertake constructing complex and large buildings and decrease costs, and giving priority to the local contractors of the region in the regional works by adopting an approach similar to that of the World Bank's adjudication system giving priority to undertaker firms of country where project is implemented in international projects. Plan, furthermore, states the need of a regional establishment that will be providing counselling services and directing businessmen and local establishments in matters of construction sector and suggests that Economic Development Agency or alternative organization can assume these functions.

2.6.2.1. Summary of the Current Situation

The construction sector does not have high share in the GDP of the region as well as Turkey. The share of construction sector in the GDP of Turkey and region reached 8 % at the maximum in the period of 1987-1996; and it has remained between 5-6 % in recent years. Although the share of the construction sector stayed the same approximately in Turkey and the Region, there seem to be important differences between the average of the sector and values of the Eastern Anatolia Region, since income per capita in the Eastern Anatolia Region is much smaller than the country average. As seen from the table in the Report of "Present Situation and Analysis" it is appeared that when total areas of buildings opened to settlement are divided to population, construction area per 1000 persons is differentiated between 607 m² and 709 m² in Turkey and 206 m² - 246 m² in the Eastern Anatolia Region in the period of 1990-1996. These values give an idea about the dimensions of construction sector in the Eastern Anatolia Region.

Even though it has a relatively small share in the economy, the construction sector works as a moving force behind the economy by means of its backward links. The

construction sector has taken an important role in the revitalization and development of the economy in the past 30 years. Data of surveys of "Input-Output Table" done for the Eastern Anatolia Region indicate that these backward link effects are also valid for the Eastern Anatolia. Consequently, development of construction sector in the Eastern Anatolia shall increase employment seriously and create new work fields and investment opportunities for mining and production sectors giving inputs to construction sector.

Construction sector is composed of subsectors of "building construction" and "non-building construction". Non-building construction consists of construction activities almost totally realised by the public sector such as highways, railways, airport, sewerage, drinking water drainage and telephone network. It is not possible to find construction sector different from these two subsectors in the national income tables. "Statistics of Construction and Installation Workshops" which has been initiated by the State Institute of Statistics in recent years give information about the activities of non-building construction sector. However, these data couldn't be obtained according to provinces. Consequently, to follow this subsectors is possible only in base of country. According to aforementioned data of the State Institute of Statistics, the share of non-building construction in the overall national construction sector ranges between 15 and 17 %. It would not be misleading to assume the same rates for the Eastern Anatolia Region. Since non-building construction activities are carried out by the public sector, it is possible to assume that at least 15 % of the construction activities in the Eastern Anatolia Region belong to initiatives of the public sector.

In the subsector of building construction detailed statistics can be found. The numbers given in the "Present Situation and Analysis" Report indicate that the share of the Eastern Anatolia Region in construction sector of Turkey is also valid approximately for the subsector of building construction as well. The rate of buildings opened to settlement in the Eastern Anatolia in the period of 1990-1998 to that of Turkey in the same period is 3.8 %. This rate is 4.2 % in residences, 2.3 % in commercial and social buildings, and 4 % in the buildings used for social and other purposes. These numbers show that the backwardness of commercial and industrial structure of the Eastern Anatolia is reflected in the construction sector, because the share of commercial and industrial buildings of the region is 2.3 % in Turkey. When it is looked at the distribution of total construction in the Eastern Anatolia Region according to construction type, same situation can be seen. The portion of commercial and industrial constructions in the total construction of the Eastern Anatolia is 12.2 %; this rate is 20.2 % for Turkey **(Table 2.6.2.1)**.

Table 2.6.2.1: Percentage Distribution of the Total Area of Building Construction in Turkey and Eastern Anatolia by Construction Type

Types of Building	EAP Region	Turkey	EAP/Turkey
Residence	83.7	76.2	4.2
Commercial and Industrial Buildings	12.4	20.2	2.3
Buildings used for social and other purposes	3.8	3.6	4.0
Total	**100.0**	**100.0**	**3.8**

As seen from the **Table 2.6.2.1**, the highest share either in the EAP Region or in Turkey in building construction belongs to residence construction. Number of constructed in the EAP Region in the period of 1990-1998 is given with respect to provinces in **Table 2.6.2.2.**

Table 2.6.2.2: Distribution of the Number of Buildings Built In the EAP Region by Year and by Province (Total Number of Apartments in Multi-floor Buildings)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	Total	Percent Distribu-tion
Ağrı	12	27	25	97	40	61	50	14	77	403	0.5
Bingöl	78	113	66	661	294	185	117	258	52	1,824	2.2
Bitlis	4	35	24	109	117	72	82	92	88	623	0.8
Elazığ	2,443	3,398	4,560	3,884	2,985	2,453	3,224	4,039	3,307	30,293	37.3
Erzincan	1,038	907	165	281	153	1,290	341	536	487	5,198	6.4
Erzurum	1,884	1,665	1,175	1,718	1,066	1,391	1,603	2,070	1,771	14,343	17.6
Gümüşhane	174	198	165	174	172	150	187	254	179	1,653	2.0
Hakkari	25	22	12	23	61	36	0	0	80	259	0.3
Kars	134	132	142	131	92	74	117	95	86	1,003	1.2
Malatya	2,060	2,054	3,042	1,686	1,552	1,494	1,709	1,713	2,481	17,791	21.9
Muş	118	94	84	177	509	325	283	143	69	1,802	2.2
Tunceli	290	25	40	111	126	77	32	82	64	847	1.0
Van	7	275	215	218	395	271	526	615	990	3,512	4.3
Bayburt	19	56	166	104	174	75	102	77	90	863	1.1
Ardahan	0	0	0	3	0	1	0	0	0	4	0.0
Iğdır	0	0	0	105	47	82	81	225	359	899	1.1
EAP Total	**8,286**	**9,001**	**9,881**	**9,482**	**7,783**	**8,037**	**8,454**	**10,213**	**10,180**	**81,317**	**100.0**
Turkey Total	**232,018**	**228,570**	**268,886**	**269,694**	**245,610**	**248,946**	**267,306**	**277,056**	**238,958**	**2,277,044**	
Share of EAP in Turkey	**3.6**	**3.9**	**3.7**	**3.5**	**3.2**	**3.2**	**3.2**	**3.7**	**4.3**	**3.6**	

As understood from the **Table 2.6.2.2**, the share of the EAP Region in Turkey according to the number of constructed residence differs between 3.2 % and 4.3 %. The average of the 1990-1998 period is 3.6 %. In this period totally 81.317 residences are opened to settlement in the EAP Region. 76.8 % of these residences are in the three big cities (Elazığ, Erzurum and Malatya). Elazığ has 37.3 % of these itself. These numbers are consistent with the rapid population increase and economic development experienced in the mentioned cities in the period of 1990-1998.

When looked at distribution of residence construction on the basis of owners of these constructions, there seem to be some differences between the EAP Region and Turkey. Distribution of residence construction on the basis of construction owners appears in the **Table 2.6.2.3**. As seen from the table, in the period of 1990-1998, while 67 % of residences is constructed by private sector in Turkey, this portion reduces to 56,3 % in the EAP Region. On the other hand, while the share of cooperatives in Turkey is 28.4 %, this rate in the EAP Region rises to 39,5 %. The portion of state establishments is about the same in Turkey and EAP Region. Majority of cooperatives in residence construction compared with the average of Turkey stems from both insufficient development of private sector and the low income level in the Eastern Anatolia compared with Turkey in general.

Table 2.6.2.3 Distribution of the Number of Houses Permitted to Settle In the EAP Region and Turkey In 1990-1998 Period by Owner

Owners of Constructions	EAP Region	%	Turkey	%	EAP/ Turkey
Private Sector	45,800	56.3	1,525,936	67.0	3.0
Construction Cooperatives	32,120	39.5	645,807	28.4	5.0
Public Establishments	3,397	4.2	105,301	4.6	3.2
Total	**81,317**	**100.0**	**2,277,044**	**100.0**	**3.6**

80 % of residences built by the cooperatives and 78 % of residences constructed by private sector are located in Elazığ, Malatya and Erzurum. Erzurum has the highest share in residences of cooperatives with 31 % and Elazığ in private sectors residences with 48 % among the EAP Region provinces.

There is not enough knowledge about companies active in construction sector in the Eastern Anatolia Region. According to 1992 Census of Industry and Workshop, the number of workshops active in construction sector is 249. In the **Table 2.6.2.4** the number of newly founded companies and cooperatives in construction sector in the EAP Region in the period of 1990-1998 is given. 5.2 % of companies and 3.6 % of cooperatives established in Turkey in this period are founded in the EAP Region. The portion of newly established companies in Elazığ, Malatya and Erzurum where 78 % of private sector residence constructions of the region realised is 39.4 %. The portion of newly founded cooperatives is 76.3 %. These data indicate that private sector initiated to develop in other provinces of the region. The number of newly established companies in Bingöl is about equal to that of Erzurum. Bitlis, Muş and Van provinces follow Bingöl closely in the number of newly established companies. It is not possible to say the same thing for the number of cooperatives.

The activities of these newly founded companies are related with residence construction, constructing buildings different from residence (commercial, industrial and social constructions) and non-building construction (highways, bridges, infrastructure constructions, etc.). But, there is no detailed information about non-building construction sector which is supposed to have a portion of 15 % in the Gross Product of Construction sector.

Table 2.6.2.4: Number of the Construction Companies and Cooperatives Established in the EAP Region in 1990-1998 Period

Provinces	Number of Founded Companies		Number of Founded Cooperatives	
	Total	%	Total	%
Ağrı	141	6.6	18	2.4
Bingöl	219	10.3	9	1.2
Bitlis	206	9.7	9	1.2
Elazığ	257	12.0	153	20.8
Erzincan	52	2.4	33	4.5
Erzurum	234	11.0	224	30.4
Gümüşhane	34	1.6	11	1.5
Hakkari	86	4.0	5	0.7
Kars	81	3.8	6	0.8
Malatya	349	16.4	185	25.1
Muş	155	7.3	22	3.0
Tunceli	26	1.2	12	1.6
Van	211	9.9	37	5.0
Bayburt	38	1.8	8	1.1
Ardahan	19	0.9	3	0.4
Iğdır	26	1.2	1	0.1
EAP Total	**2,134**	**100.0**	**736**	**100.0**
Turkey Total	**52,500**		**20,390**	
Share of the EAP in Turkey (%)	**4.1**		**3.6**	

2.6.2.2. Macro Targets

Within the framework of the EAP Master Plan targets construction sector of the EAP should also realise certain targets by 2020. In this respect, it is proposed that by 2020 gross product of construction sector will increase 4.6 times and reach to 2,380 millions of US dollars from 513 millions of US dollars which is the estimated value for 2000. These numbers, being the targets of ***A1*** scenario, reach higher values than ***A2*** and ***A3*** scenarios (**Table 2.6.2.5**). For accomplishing these targets, public and private sectors should increase the production capacity of construction sector by means of extensive investments. It is expected that 7.6 % and 9 % of total construction investments will be realized by the public sector. The remaining part of the construction investments will be realized by the private sector.

To increase its own capacity, construction sector should reserve important part of investments to machinery and equipment. As a matter of fact, according to data of Statistics of Construction and Installation Workshop by the State Institute of Statistics 73% of investment expenses of construction sector are done in machinery and equipment, 18% in construction of buildings or non-buildings and 9 % in estates. Most of the investment expenses of construction sector to increase its own production capacity will be done by purchasing machinery and equipment from outside of the region. Only 18 % of the public and private investments will create an additional demand for the EAP Region.

As parallel to increased capacity of construction sector, it is anticipated that employment will rise by 144.000 people in the sector with the increase in demand for construction caused by investments in other sectors in the region.

Table 2.6.2.5: Construction Sector Macro Targets

Scenario A1

	Erzurum Sub-region	Malatya-Elazığ Sub-region	Van Sub-region	EAP
Overall growth rate of GDP for 2000-2020 (%)	389	370	290	364
2020 GDP (Million $)	1,172	845	363	2,380
2020 Production Value or Revenue (Million $)	1,975	1,901	858	4,734
2000-2020 Period Public Sector Total Investments (Million $)	422	620	317	1,359
2000-2020 Period Private Sector Total Investment (Million $)	7,568	4,953	4,114	16,635
2000-2020 Period Total Investments (Million $)	7,990	5,573	4,431	17,994
2000-2020 Employment Increase (thousand persons)	58	48	38	144

Scenario A2

	Erzurum Sub-region	Malatya-Elazığ Sub-region	Van Sub-region	EAP
Overall growth rate of GDP for 2000-2020 (%)	538	439	297	460
2020 GDP (Million $)	1,532	971	370	2,873
2020 Production Value or Revenue (Million $)	2,173	2,492	1,083	5,748
2000-2020 Period Public Sector Total Investments (Million $)	557	719	356	1,632
2000-2020 Period Private Sector Total Investment (Million $)	8,090	5,441	4,517	18,048
2000-2020 Period Total Investments (Million $)	8,647	6,160	4,873	19,680
2000-2020 Period Employment Increase (thousand persons)	63	58	45	166

Scenario A3

	Erzurum Sub-region	Malatya-Elazığ Sub-region	Van Sub-region	EAP
Overall growth rate of GDP for 2000-2020 (%)	661	494	418	558
2020 GDP (Million $)	1,826	1,070	482	3,378
2020 Production Value or Revenue (Million $)	2,602	2,630	1,090	6,322
2000-2020 Period Public Sector Total Investments (Million $)	607	732	521	1,860
2000-2020 Period Private Sector Total Investment (Million $)	8,401	5,574	4,797	18,772
2000-2020 Period Total Investments (Million $)	9,008	6,306	5,318	20,632
2000-2020 Period Employment Increase (thousand persons)	68	60	48	176

2.6.2.3. Construction Sector Demand

To reach the targets of expected production and gross product of the Eastern Anatolia construction sector, demand for construction sector should be in sufficient level. For this reason, it is wise to examine demand for construction closely.

To view construction sector under four groups seems useful as stated below;

a) Residence construction,

b) Commercial and industrial building construction,

c) Social, sportive, cultural, religious building construction,

d) Non-building construction,

Demand for construction stemning from each of the categories mentioned above is based on different reasons.

Residence construction increases in accordance with population rise, migrations between settlement units, improvement in income level. Public residences take a little part in total residence demands.

Public does not appear in trade sector naturally and departed from mining and industrial activities to a great extent. For this reason, demand for construction of commercial and industrial buildings increases as a result of private sector efforts of increasing of its own production capacity as parallel to economic developments in the region.

Demand for constructions of social, sportive etc. buildings rises in parallel to the need for such buildings; however, nearly most of them are financed by the public. Although private sector has making investments in fields of health and education in the last years, it shouldn't be expected from private sector to be active in these subjects in the

Eastern Anatolia Region. Thus, in addition to the need, the sources reserved by the public for this field constitutes a limiting factor.

Non-building construction rises according to infrastructure demand of the regional economy and since these needs are financed by the public, demand for construction becomes limited with the amount of sources public could reserve.

Under these circumstances demand for residence construction and demand for commercial and industrial building construction are determined totally by private sector. Demand for social, sportive etc. building construction and non-building construction are determined according to sources that the public reserved for this purpose together with needs for this type of buildings.

To meet the demand for residence in the Eastern Anatolia Region in the period of 1990-1998, totally construction of 81,317 residences were completed and opened to settlement by using the available sources. This number means approximately 9,035 residences annually. In fact, construction sector accomplished to open more than 20,000 residences to settlement in 1997 and 1998. Only 4.2 % of these residences is financed by the public and remaining 96 % by the private sector.

In the "Residential Development" part of the EAP Master Plan demand for residence for the period of 2000-2020 is estimated and following results are provided.

2001-2005 demand for residence: 67,714 residences (13,542 residences in a year)

2006-2010 demand for residence: 70,143 residences (14,029 residences in a year)

2011-2020 demand for residence: 186,484 residences (18,648 residences in a year)

Total demand for residence : 324,341 residences

If estimated demand for residence is realised, it could be stated that construction sector could reach this production level when the present construction level of construction sector of the region is taken into consideration. However, when construction sector reach level of meeting the need of this demand for residence, its yearly capacity will be at the level of constructing 18,000-20,000. That is to say the present production level will be doubled. Indeed, for reaching the targets of the most pessimistic scenario of ***A1*** gross product of construction sector should rise 4.6 times. Despite this target, residence construction constituting 83 % of the regional construction sector could indicate an increase by one time. In this situation it is necessary to supply increases in fields of non-building constructions to catch the targets.

Construction of commercial and industrial buildings still composes 12.4 % of the regional construction sector. These kinds of constructions in Turkey in general constitute 20 % of the construction sector. Consequently, it is necessary to initiate a significant investment effort in mining, manufacturing industry and trade sector. But to sustain this high level of investment and will be a topic for another study.

Social, sportive etc. buildings as another branch of building construction subsector constitute nearly 4 % of construction sector of both Turkey and the region. Additional demands that will be created in this branch that the public determines its construction capacity will not provide serious increases in the value added of construction sector, even though meet the all needs of the region.

Non-building construction subsector has a higher capacity compared to the of non-residence alternatives mentioned above. It is estimated that its share in building construction subsector is still at the level of 15 %. If the Eastern Anatolia is thought to have long lasted infrastructure needs, it is understood that providing extra sources to non-building construction as much as possible by the public will make positive effects on the regional construction sector.

2.6.2.4. Construction Sector Activities and Projects

2.6.2.4.1. Preparation of Construction Master Plan

For the purpose of providing development of construction sector a separate "Master Plan" should be prepared to determine the potential of the region in this field, necessary measures to be taken, develop implementation proposals and projects.

2.6.2.4.2. Increasing All Public Investments to the Maximum Level

As explained in the section where the demand for construction sector is examined, the public sector has an important responsibility in reviving construction sector of the EAP Region. Because public sector has the potential to affect the construction sector directly by means of investments; even possesses the chance of directly making infrastructure investments and thus increasing production of construction sector. The public owns a share of 22 % in total gross product of construction sector through various public investments. Consequently, policy of increasing this share as much as possible by transferring more resources to the region and reviving the regional economy should be implemented.

2.6.2.4.3. Encouraging Investments in the Manufacturing industry and Mining which Provide Input to Construction Sector

To be successful the construction firms need cheaper and quality input. In this framework production of especially inputs sensitive to transportation in an extensive way becomes important. A considerable increase in construction capacity will rise demand for construction materials. This high demand will make it possible to set up establishments with optimum scale. Therfore, production of inputs not very sensitive to transportation will also be possible.

2.6.2.4.4. Measures and Projects for the Regional Construction Sector to Adopt and Use Modern Construction Technologies and Various Construction Materials

One of the duties for the public is to take measures to give a modern structure to the regional construction sector. One of the elements of modern construction sector is having establishments of manufacturing industry producing cheap and quality construction materials as stated under the heading **2.6.2.4.3**. There is a need for encouragement to set up such establishments as parallel to increased construction capacity in the region.

In addition quality and cheap input, various materials are needed. For this reason to increase the production of perlite and pumice in the region and produce light construction materials from them should be encouraged.

Construction materials industry abroad should be examined and potentialities of materials, which are produced but not used in Turkey yet, should be evaluated and necessary steps should be taken to produce the suitable ones in the Eastern Anatolia.

It is necessary to set up new concrete factories to supply basic input of the sector in addition to the present ones to meet the demand for concrete that will be created by the projected increase in gross output of the construction sector. There is sufficient potential in the region for the production of brick and similar materials as other basic inputs of the sector and setting up establishments to rise production of these materials should be provided.

It is important to pay attention in measures for the regional construction firms getting information in modern and improved construction technologies in the world and putting these firms in a position of able to use them. If firms need to make invests for using these technologies, measures of encouragements should put into force in this matter.

There should be efforts for founding establishments of production of construction carrying systems or constructing buildings suitable for cold climate of the region and strong against earthquake by developing industry of prefabric construction elements.

Since the need for trained and qualified manpower is high for the construction quality, centers for education of apprentices should be developed and expanded for training of manpower and additional measures should be taken to train qualified manpower at the middle, high schools an university level.

There are extensive reserves of basalt and construction stone mines in the EAP Region. Most of the houses in villages in the region are constructed from weak clay bricks. For the purpose of expanding utilitization of construction stones stronger, healthier and more aesthetic than clay bricks a project work should be initiated.

2.6.2.4.5. Encouragement of Residence Construction

The subject of meeting the need for residence in the region and in this way reviving construction sector should be viewed in the scope of a different project. The methods by

which construction cooperatives that could play an important role to accomplish this aim could be encouraged should be examined again in the context of this project. Measures such as giving credits with low interest rates relative to other regions and providing additional credits for construction cooperatives should be taken into consideration in this framework.

Public Housing Administration (TOKİ) might have helped by supplying credits with reduced interest rates and estates. TOKİ application in Kars in December 2000 could be given as an example. Furthermore, municipalities could have priority in getting credits when they provided estates for 400 residences according to the "Regulation About Housing Estates and Producing Urban Environment and Crediting on Estates of Municipalities" dated November 14th, 1992.

For making construction cooperatives produce quality constructions necessary measures should be taken and projects on the matter for providing education of cooperative administrators should be developed.

2.6.2.4.6. Giving Priority to the Companies of the Region in Auctions

A similar regulation that the World Bank implemets as giving privileges to contractors of sitecountry in international auctions should be preferred for the purposes of providing bigger shares from public investments to contractors of the region and thus giving assistance to capital accumulation. As known, the World Bank gives the responsibility of the work of construction to native contractor even if native contractor gives 15 % higher construction offer than the lowest offer in an international auction. Necessary regulations should be done for realising such a practise in the Eastern Anatolia Region.

2.6.2.4.7. Activities of Organization and Solidarity in the Construction Sector

It is necessary to establish association organizations for solidarity to improve relations between contractors of the region, associate for solving common problems, increase the quality of contractor services by determining professional standards. The regional Chambers of Industry and Trade should be more active for accomplishing these tasks. In this respect, the regional Chambers of Industry and Trade should work together by founding common committees and increasing opportunities to work together by increasing cooperation and communication among its members. The first duty of these committees and Chambers of Industry and Trade should be to make members participate in fairs in abroad, organising fairs in the region, create opportunities for working together with foreign businessmen and construction companies.

It is needed that proposed Economic Development Agency should be active in construction sector for execution of the aforementioned projects and works properly. An organization which will have responsibility of being pioneer on behalf of the public in execution of above mentioned measures and projects, provide businessmen and local organizations to behave in accordance with defined targets and practise counselling service

is required. Economic Development Agency (or alternative organisation) should perform these duties in construction sector as in other sectors.

2.6.2.4.8. Foundation of Machinery and Equipment Operating Companies

In evaluating construction sector in the Eastern Anatolia Region, one of the subjects that will be examined should be whether this sector will have the responsibility of contractorship of the large and complex infrastructure investments. To accomplish this, contractor companies should possess big, expensive, and highly specialized machinery and equipment. However, it is highly difficult to find works for these machines continuously under prevalent conditions in Turkey. Therefore this situation could lead to a big park of inactive machines. To prevent such a waste and make having responsibility of constructing great infrastructure constructions easy, investments to machinery and equipment parks by different companies and contractors and renting necessary machines from these companies should be encouraged. Establishment of such kinds of companies by the partnership of contractor firms of the region could be suitable.

2.6.2.5. Implementing Construction Sector Projects

All projects proposed to be implemented within the scope of activities of Construction Sector in the EAP Master Plan are given in the **Table 2.6.2.6**. Moreover, implementation year, implementing authority, establishments that will be cooperated are also indicated in the table. A part of activities ("increasing public investments to the maximum level", "giving priority to the regional companies in auctions") in the table mentioned as project is measures that the public should implement, it is found proper to include them in the table. It seems impossible to estimate costs of the projects, which are characterised as "project" in the classical sense at the moment. The costs of these projects could be determined after detailed feasibility reports are done.

Table 2.6.2.6: List of Projects Which is in Favor of the Development of the Regional Construction Sector

Project	Implementing Period	Responsible Authority	Cooperating Establishment
Increasing Public Investments to Maximum Level	2001-2020	Investor Public Establishments	SPO
Encouraging Investments in Production of Construction Materials	2003-2020	Undersecretariat of the Treasury	Economic Development Agency or the Alternative Organization
Utilizing and Encouraging Modern and Advanced Construction Technology	2003-2020	Undersecretariat of the Treasury	Economic Development Agency or the Alternative Organization
Taking measures for Increasing Perlite and Pumice Production and Expanding its use	2003-2020	Undersecretariat of the Treasury	Economic Development Agency or the Alternative Organization
Importing New Construction Materials from Abroad and Producing them in the Region	2003-2020	Economic Development Agency or the Alternative Organization, Private Sector	Chambers of Trade and Industry
Increasing Production of materials such as Concrete, Brick, etc.	2002-2020	Economic Development Agency or the Alternative Organization, Private Sector	Chambers of Trade and Industry
Setting up Establishments for Production of Construction Carrier Systems and Prefabricate Construction Equipments	2005-2020	Economic Development Agency or the Alternative Organization, Private Sector	Chambers of Trade and Industry
For Providing Qualified Workpower Organising Education Programmes in Various Levels	2002-2020	MNE, Ministry of Labour and Social Security	Economic Development Agency or the Alternative Organization, Chambers of Trade and Industry
By rising Production of Basalt Stone and Other Construction Stones Providing Construction of Healthful and Quality Residences in Countryside	2005-2020	Economic Development Agency or the Alternative Organization	Provincial Governors, Chambers of Trade and Industry
Encouraging Residence Construction	2001-2020	Undersecretariat of the Treasury	Economic Development Agency or the Alternative Organization
Giving Priority to the Regional Companies	2001-2003	Undersecretariat of the Treasury	
Improving Solidarity among the Regional Construction Firms	2002-2010	Economic Development Agency or the Alternative Organization	Chambers of Trade and Industry
Preparing Construction Master Plan	2001-2003	SPO	Economic Development Agency or the Alternative Organization, Chambers of Trade and Industry

Table 2.6.2.7: Strategies to be Implemented in Construction Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2011-2020)	
Climate	Founding Establishments for Producing Ready Construction Equipment	Founding Establishments for Producing Ready Construction Equipment	Founding Establishments for Producing Ready Construction Equipment	Primarily Malatya, Erzurum, Elazığ, Van Provinces
	Application of Modern Construction Technologies	Application of Modern Construction Technologies	Application of Modern Construction Technologies	
Providing Input	Increasing Mining Production Usable for Construction Materials	Increasing Mining Production Usable for Construction Materials	Exploiting Export Potentiality in Industry of Construction Materials	Erzurum Elazığ, Malatya, Erzincan, Bitlis
	Encouraging Industry of Construction Materials Based on Local Raw Materials	Encouraging Industry of Construction Materials Based on Local Raw Materials	Encouraging Industry of Construction Materials Based on Local Raw Materials	Erzurum, Elazığ, Erzincan,Van, Malatya Bingöl, Muş
	Educating Of People in Using Local Construction Materials	Educating Of People in Using Local Construction Materials	Educating Of People in Using Local Construction Materials	
Public Investments	Allocation of resources which will Provide Maximum Increase in Public Investments	Allocation of resources which will Provide Maximum Increase in Public Investments	Allocation of resources which will Provide Maximum Increase in Public Investments	All Provinces
Construction Cooperatives	Giving Credits with Low Interest Rates to Cooperatives and Education Cooperative Administers	Giving Credits with Low Interest Rates to Cooperatives and Education Cooperative Administers	Giving Credits with Low Interest Rates to Cooperatives and Education Cooperative Administers	All Provinces
Qualified Workpower	Improving Centers for Apprentice Education	Improving Widespread Education	Improving Widespread Education	Malatya Erzurum, Elazığ, Van
General	Making Legal Arrangements to Provide Advantages to Contractors of the Region in Auctions			All Provinces
	Preparing and Executing Construction Sector Master Plan	Executing Construction Sector Master Plan	Executing Construction Sector Master Plan	

2.7. TOURISM AND CULTURE

2.7. TOURISM AND CULTURE

There has not been an adequate level of development in the tourism sector of the EAP Region despite its various natural and cultural resources, due to its relative distance to the domestic and external centers that create tourism demand and due to the terrorist actions from the second half of the 1980s up to the end of the 1990s.

Relative distance of the Region has made it necessary to prepare a tourism plan that is mainly airway oriented. The plan envisages arrangement of tours of different duration with hubs of Van, Malatya and Erzurum centres, development of the winter tourism in the Erzurum Sub-region, declaration of the Mount Ararat as a national park and arrangement of its surrounding area, and construction of on road rest area facilities to meet the demand generated by the transit traffic on the Ağrı-Erzincan highway. Moreover, since the Region presents wide opportunities in terms of water and mountain sports, thermal tourism and eco tourism, it is also deemed appropriate to take advantage of those opportunities. Hosting capacity in Erzurum, Malatya and Van needs to be increased significantly in time according to the plan.

The plan empahises both the development of tourism and the necessity of restorating and preserving cultural assets of the Region and suggesting projects in that direction.

Tourism is a sector that generates high level of employment with a relatively low level of investment. Provided that it is developed in the Region as envisaged, it shall contribute to a great extent to the solution of the unemployment problem in the Region.

2.7.1. Summary of the Current Situation

The Ministry of Tourism has prepared turism inventory for provinces and determined potential areas according to tourism types. The summary of potential areas report is presented in the **Appendix 2.7.1.**

On the other hand certified cultural assets list prepared by the Ministry of Culture, Preservation of Cultural and Natural Assets General Directorate, is given in **Table 2.7.22.**

Natural and caltural values of the Region have been mapped, according to their level of importance, through Geographic Information System technique by the Ministry of Civil Works and Resettlements. Those information are presented in the **Figure 2.8.2**.

Touristic Importance of the Region

- The Region has an important potential for winter sports and mountaineering tourisms.
- It has a potential for providing enjoyable times for fans of exploration tourism as a Region that is newly explored and possesses mythologies.
- The myth of the Mount Ararat, the myth of Noah's Arc, the myth of the creation of men and Van Lake Monster are attractive mythologies.
- There are important excavation areas to inspire archaeologists.

- There are very precious cultural assets to attract tourists.
- Tourism activities that shall utilise the great potential of fishing in the Region have a success prospect.
- There are large number of lakes and rivers with a high touristic potential in the Region. There are high potentials for surfing, canoeing, skiing, touring by motorcycles, racing with sailing boats.
- There are hot spring waters with a high capacity.

2.7.2. Strategies for Improving the Tourism

There are four major strategies identified in order to rapidly develop the tourism sector in the Region :

- Developing the winter sports; Promoting the existing winter tourism potential and hardware by arranging winter olimpics,
- Developing a wide spectrum of tourism types and forms, arranging tours, securing diversification in tourism,
- Giving importance to the legend of the Mount Ararat and the Noah's Arc that could easily be promoted,
- Restoring and supporting by new investments assets like on the road rest areas, regional shopping centre, fish farms, hot spring facilities and recreation areas and developing a "Modern Silk Road."

Proposed strategies are arranged according to the period and presented in the **Table 2.7.21**.

2.7.3. Tourism Master Plan

Tours arranged by taking into account the fact that the regional tourism could be developed around airports are shown in **Graph 2.7.1.** There are three main centres in the graph. Those are Van, Erzurum and Malatya. The reason why the basic element of the plan is connected to airways is primarily the short duration of tourists in general. The second reason is that sine qua non of attracting tourists into the Region is minimisiation of transportation costs.

Transportation costs in touristic tours is maximum 40 % of all travel expenditures. A transpost cost above this level would reduce the attraction of the Region.

Tourism development areas in the order of importance are analysed below.

2.7.3.1. Van Tourism Development Region, the Mount Ararat Tourism Project

Van airport is suitable for international passenger carriage. The most important obstacles in the way arranging tours are hosting, camping and providing security systems for climbing the Mount Ararat. Van-based three, five and eight days tours could be suggested as follows:

2.7.3.1.1. Van-based Three Days Tours Attractions

Van Castle, Van Museum, Aktamar Island, Güzelsu Castle, Ahlat Selçuk Graveyard, Nemrut Crater Lake, Ayaniş (Urartu city), Van-Çavuştepe, Tilkitepe, Çarpanak Island.

2.7.3.1.2. Van-based Five Days Tours Attractions

In addition to the three days tours; Bitlis, Adilcevaz (Bitlis), Yüksekova, Ağrı, Muradiye Waterfalls, Ishakpaşa Palace, Climbing the Mount Ararat by cable-car and coming back without camping.

2.7.3.1.3. Van-based Eight Days Tours Attractions

In addition to the five days tours; Camping nearby the Nemrut Crater Lake, climbing to the Mount Süphan from Adilcevaz district, Camping in Serdarbulak location in the Maunt Ararat, four days climbing to the Mount Ararat, Camping nearby the Lake Van, water skiing, tour by motorised boat, horse riding, para-gliding activity, sport activities in the Nemrut Skiing Centre, and a tour with baloon around the Mount Ararat could be suggested as an attraction.

2.7.3.1.4. Necessary Conditions for Van-based Tourism

The most important problem regarding the identification of the conditions is related to the number of tourists. The critical data with respect to tourist numbers connected to tours is the passenger capacity of airplanes. The bigger the airplanes are the smaller would be the travel expenses. Another important point is that; in a tour that guarantees 80 two ways passengers, it is possible to get a discount up to 80 %. Assuming that average passenger number is 100, one may estimate 1000 tourist per day carried by 10 airplanes in the tourism season. There is no need to arrange camping areas for three days and five days tours. However, it is necessary to arrange camping areas for the Lake Nemrut and the Mount Ararat.

Tourism certified number of beds in Van is 1071. Number of beds with Tourism Investment Certificate under construction is 874. In the first period of the development plan 1945 touristic beds could be put into service. Moreover, there are quality municipality certified hotels have 842 beds capacity (as for the year 1997). Depending on the characteristics of the tours Bitlis and Ağrı could contribute to tourism respectively by their three stars 82 and 613 beds capacities.

There is a need for additional hosting capacity taking into account the fact that all hosting demand shall not be in the form of hotels and there should be other forms of hosting.

It is projected that there would be 150,000-200,000 tourists visiting the Region in 2005 provided that promotion is done effectively, the tours are orginised well, the security system is adequate, there are discounts for airport services, and sale of oil at minimum price.

For the period up to 2010-2020 years, it could be accepted that there is going to be an increase parallel to the number of tourists visiting Turkey. **Table 2.7.1.** shows the existing and the expected tourist numbers in three different periods

Table 2.7.1: Projections of Tourist/Year and Bed Capacity in Van Tourism Centre

	1998	2001	2005	2010	2020
Foreign	18,776	80,000	150,000	500,000	1,000,000
Domestic	145,751	200,000	300,000	500,000	1,000,000
Tot. Num. of Tourists	**164,527**	**280,000**	**450,000**	**1,000,000**	**2,000,000**
Number of Tourism Certified Beds	1,071	1,945	3,000	6,000	12,000
Nuber of Municipality Certified Beds	842	1,000	2,000	4,000	8,000
Number Of Holiday Villages	---	---	400	800	1,600
Camping	----	40 Units	100 Units	200 Units	400 Units
Youth Camps	40 Units	80 Units	100 Units	200 Units	400 Units
Total Number of Beds	**2,033**	**3,305**	**6,000**	**12,000**	**24,000**

Note: Total beds are calculated on the basis of average three beds in each unit.

Table 2.7.2: On-going Projects in Van Region

Project Name	Location	Start-End Date	Project Cost (Million TL.)	2000 Allocation (Million TL.)
Airport Taksirut Construction	Van	2000-2001	7,201,950	1
Public Library	Van-Başkale	1992-2000	160,000	110,000
Open Sport Facilities	Van-100. Yıl Üni.	1998-2002	830,775	70,000

2.7.3.1.5. Proposed Projects

The following projects are proposed for the tourism sector in the Region.

- **Declaration of Van as a Tourism City:** The surrounding area of the Lake Van should be declared as a "Tourism Development Site" in order to create a favorable environment for investments to be done in the province of Van in terms of incentives and finance. It is necessary to complete 1/25.000 Territorial Plan that would cover shores of the Van Lake.
- **Ahlat Resort Point Project:** In that context, what is proposed is a centre in which promotion of Ahlat is done, written documents are presented for research, guides are employed, and exhibitions and promotions as well as resort areas are arranged. Accommodation may also be provided in this area for people conducting scientific research.
- **Realisation of the Ahlat Castle Restoration Project:** It is important to complete this project which is already included in the Annual Investment program for the

year 2000, in a short time. Necessary investment allocation should be given to this project in 2001 for that purpose.

- **Arranging Camp Area for the Nemrut Crater Lake:** Realisation of a camping area project and a project of camp-caravan covering 30 units.
- **Holiday Village Projects:** 4 holiday villages with a capacity of 400 beds on the shores of the Lake Van, providing attractions like bicycle, canoe, sailing boat, water ski, water bicycle, parachute, and various other water sports.
- **The Mount Ararat National Park Project:** Declaration of the Mount Ararat as a National Park and preparation of 1/25,000 scale Territorial Plan (Tourism Development Project). The following hardware are suggested for that purpose:

* Climbing Route : Climbing by horse and mule
Climbing by donkey
Climbing by foot

* Break and Resort facilities:
Restaurants
Cafeterias
Sunbathe Sites
Observation by binocular

* Mechanical Facilities: Telecabin, telesiage
1. Break: 2600 m., driving nearby.
2. Break: 3000 m., climbing by telecabin.
3. Break: 3800 m., climbing by telesiage.

- Identification of suitable points for Para-gliding and the planning for Para-gliding Training Centre.

* Arrangement of the locations shown in the **Graph 2.7. 2.** as camping grounds for the Mount Ararat (Serdarbulak, Haciosman Camping grounds)

* Establishment of a Security System by Horses: Communication system by radio, SOS help system, keeping doctors and nurses at the health centres.

* Security Systems by Camera: A security system using cameras Controlled from One Centre.

* A Mountain Museum, the model of the Mount Ararat, exhibition of existing flora, fauna and cultural assets, exhibition of the research conducted by mountaineer İskender IĞDIR and others, The Legend of Noah's Arch, arrangement of International Mountaineering meeting in this location, etc.

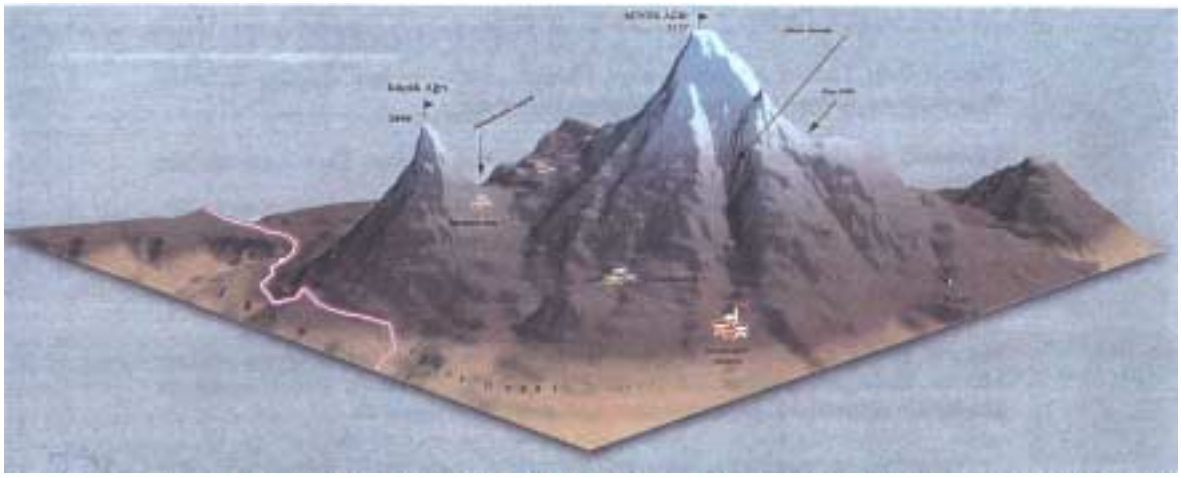
* Van Lake Combined Tour Project: A combined tour that shall unite the tours suggested above.

As observed in the below graph, tours by sea bus, minibus, foot and mule are combined in that project.

With the projects suggested above it is also important to complete the on-going projects given in the **Table 2.7.2.**

The Lake Van Combined Tour

Figure 2.7.2: Camping Grounds for the Mount Ararat



Source: Atlas Periodical, Vol:85 No:2000/04, page; 159 drawing by İskender IĞDIR

2.7.3.2. Malatya Tourism Development Area

Malatya Airport has to be developed into suitable conditions for international transport. There are different tourism attractions in this Region. The most important attraction in the Region is Commagene placed on the Nemrut Mountain. Tourists are attracted by the remnants at that location and observe the sunrise and sunset.

There are two alternative roads to Nemrut Mountain. The first route is from Adıyaman side and the second and the shorter route in better conditions is from Malatya side.

Moreover, there are alternatives in the Region depending on three and five days tours (**Graph 2.7.1**).

2.7.3.2.1. Three and Five Days Tours

Three Days Tours

- **Nemrut Mountain Tours:** Climbing down and upward tours to be arranged from Adıyaman or Malatya directions, observation of sunrise and sunset.

- **Excursion Place Alternatives in the Surrounding Area:** Tours to Darende, Balıklıtahma Stream Canyon, tours to Battalgazi, Dam lakes.

- **Revitalization of the Old Harput City (Elazığ):** Realisation of "Harput Region Museum" project and its introduction to tourism with open and closed sites in order to exhibit excavated assets in the entire Region.

- **Munzur Valley National Park:** Tours to Munzur Valley where the most delicious rainbow fish are available, observation of rainbow fish jumping underground lake in Kirkgözler, tracking and scientific tours.

Five Days Tours

Five days tours may present the following choices.

- Nemrut Mountain + Harput Region Museum tour

- Nemrut Mountain + Munzur Valley National Park tour

- Nemrut Mountain + Darende Balıklıtohma Canyon tour

2.7.3.2.2. Domestic Tourists

Domestic tourists are observed to constitute the majority particularly among the visitors for the Nemrut Mountain, as it is seen in the **Table 2.7.3**.

Table 2.7.3: Number of Overnight Persons and Overnight Stay in Elazığ, Malatya and Adıyaman (1998)

Location	Number of Overnight Persons			Number of Overnight Stay		
	Foreign	Domes.	Total	Foreign	Domes.	Total
Malatya	2,791	35,380	38,171	6,580	65,854	72,434
Elazığ	37	10,538	10,575	46	13,605	13,651
Sivrice (Lake Hazar)	71	2,034	2,105	208	6,909	7,117
Adıyaman	5,922	22,966	28,888	6,308	28,504	34,812
Gölbaşı	534	2,910	3,444	569	4,964	5,533
Kahta	670	1,525	2,195	693	2,134	2,825
Total	**10,025**	**75,353**	**85,378**	**14,404**	**121,968**	**136,372**

Source: The Ministry of Tourism

It is observed that İnönü University Medical Faculty is developing and gaining importance in terms of health services. That is why, health tourism needs to be developed taking into consideration the opportunity to provide medical services in specialised fields in Malatya instead of transporting the patients to Ankara or İstanbul cities.

2.7.3.2.3. Current Accommodation Facilities and On Going Projects

The number of tourism certified beds in Malatya and Elazığ in the Region are respectively 587 and 205 (1999 data). The number of beds in the accommodation facilities under construction with Tourism Investment Certificate are 298 in Malatya and 286 in Elazığ. As a result, the capacity to be reached in 2001 is 1,376 beds. 1,258 Municipality Certified beds used for business tourism can be added to this capacity.

Priority must be given to the following on-going projects in Malatya Tourism Centre and those facilities must be rearranged for tourism services (**Table 2.7.4).**

Table 2.7.4: On-going Projects in Malatya Tourism Centre

Project Name	Location	Start-End Date	Project Cost (Million TL)	2000 Allocation (Million TL)
Culture Centre	Malatya-Centre	1993-2001	1,443,200	1,000
Culture Centre	Malatya-Akçadağ	1993-2000	676,346	125,600
Culture Centre	Tunceli-Centre	1992-2001	950,000	200,000

2.7.3.2.4. Proposed Projects

There are five projects to be considered in Malatya Region.

- **Nemrut Commagene Research Centre Project:** There is imaginary multivision exhibition of Nemrut Commagene Tumulus in the Turkish pavilion in the Hannover Expo Fair (in Germany). A similar project might be realised in Malatya and introduced as Commagene Research Centre to visit. The Commagene remnants that are defined as the 8th Wonder of the World and taken into the list of World Cultural Heritage by UNESCO could be protected by projects planned and implemented through this Centre.

- **Sport Centres Project:** The second project group includes establishment of sport centres in dam lakes. Those centres, that would serve to the camping ground demand generated by sport clubs and supplying facilities for all sport activities, could also be integrated with the sport departments of the universities. Camping grounds may be classified into different age groups and integrated with activities like golf, riding, and surfing. It is even possible to create "Thematical Parks" like Disneyland. Recreational tours could be organized in dam lakes.

- **Youth Camps Arrangement Project:** It is possible to arrange youth camping grounds classified into different age categories and serving also the local youth at the national and international level. It is possible to arrange farming tourism, trekking, canoeing, rafting, bicycle riding, para-gliding, and horse riding activities, as well as open training courses for foreign languages, pre-school education, guide services, and animation. It is noted that the youth camping arranged in 2000 have been successful.

- **Harput Region Museum Project:** Realisation of "Harput Region Museum" project and its introduction to tourism with open and closed sites in order to exhibit excavated assets in a safe and skilled manner in the entire Region. That Museum should have a documentation centre to serve all scientific studies. Regional Museum could host to various congresses as well as function as a scientific research centre.

- **Munzur Valley National Park:** Expansion of the area declared as National Park, making an inventory of the flora and fauna, determination of sites under total protection, protection-development sites, and tour routes within 1/25.000 scale National Park Project and Arrangement of observatory and resort areas within 1/500 scale are considered in that context. It is suggested that a horse using security system and SOS help system should be established to introduce this area to tourism.

2.7.3.2.5 Expected Number of Tourists and Overnight Stay Demand

If the above listed projects are completed, The tourism potential of the region would be much more diversified and extend over all seasons.

Table 2.7.5. shows the projections regarding potential tourist visitors to the Region and their overnight stay demand.

Table 2.7.5: Malatya Tourism Centre Tourist/Year and Bed Capacity Projections

	1998	2001	2005	2010	2020
Foreign	3,776	10,000	20,000	50,000	100,000
Domestic	184,084	200,000	300,000	500,000	1,000,000
Tot. Num. of Tourists	**187,860**	**210,000**	**320,000**	**550,000**	**1,100,000**
Number of Tourism Certified Beds	792	1,376	2,000	3,000	5,000
Nuber of Municipality Certified Beds	1,258	1,500	2,000	3,000	5,000
Number Of Holiday Villages	---	---	200	400	1000
Camping	----	60 Units	120 Units	200 Units	1000 Units
Youth Camps	40 Units	100 Units	200 Units	300 Units	1000 Units
Total Number of Beds	**2,170**	**3,356**	**5,160**	**7,900**	**17,000**

Note: Total beds are calculated on the basis of average three beds in each unit.

2.7.3.3. Erzurum Tourism Development Region

Erzurum Airport has to be developed into suitable conditions for international transport. Preparations for tourism development in the Region have already been completed.

There are different tourism attractions in this Region. It would be useful to classify tourism activities into winter and summer tourism first in developing the proposals.

2.7.3.3.1. Tour Alternatives for Winter Tourism

There are following winter tourism centres in the Region.

- Erzurum Ski Centre (Palandöken Boğazı, Konaklı, Gez Plateau)
- Sarıkamış (Kars) Ski Centre
- Sakaltutan (Erzincan) Ski Centre
- Kop Mountain (Bayburt) Ski Centre
- Zigana (Gümüşhane) Ski Centre

The Ministry of Tourism finished Erzurum Ski Centre development study in 1993. In this study particularly skiing classification analyses were given an attention, classifying tracks according to skill levels.

It is decided that the Gez Plateau is appropriate for low skill, Palandöken Strait for high skill and Konaklı for all skill levels. There is no information about the variation of skill levels in those studies conducted in the past in Turkey. However, one should expect a change in skill levels as a result of training.

Suggested number of visitors for the Palandöken Strait Ski Centre is presented below.

	Year 1993	Year 2003
Daily visitors	3,400	9,300
Visitor of Special House	5,000	14,200
Visitors staying in Erzurum	10,200	23,400
Visitors staying in hotels, etc.	15,400	70,100
Total	**34,000 visitors**	**117,000 visitors**

Visitors who do not involve in skiing activities are assumed to be 20 % of total visitors. It is projected that number of visitors to Konaklı, Gez Plateau and Hınız Strait shall respectively be 14,300, 10,600 and 6,500.

It is observed that those involved in winter sports have different tendencies. The following is the finding of a questionnaire conducted in winter sport centres in France in 2000.

Activities demanded at ski centres are as follows:

	%
• Ski Alpine	43.5
• Tours	30.6
• Skiing from top to bottom	11.3
• Long tours	9.9
• Other winter sports	7.8
• Cultural tourism	7.7
• Show surfing	4.0
• Other activities	25.3

Source: L'Expresse: 10.02.2000 p:79

Accommodation of those involved in winter sports also present differences. It is not correct just to construct hotels as accommodation facilities. There are alternatives other than hotels such as holiday villages, Chalet, Pension, Apart-Hotel, second house.

Table 2.7.6 gives the current and planned bed capacity for the proposed winter sport centres.

Table 2.7.6: Current, Planned Beds and Mechanical Facilities in Winter Sport Centres

Centres	Operation Certified Beds	Investment Certified Beds	Planned Beds	Mechanical Facility	
				Current Person/hour	Planned Person/hour
Palandöken	1,306	743	10,000	5,200	8,700
Sarıkamış	231	1,104	2,625	2,600	2,600
Erzincan	188	80	---	---	---
Kop Dağı	75	---	320	---	1,600
Zigana	54	---	420	---	2,400
Total	**1,854**	**1,927**	**13,365**		

Source: The Ministry of Tourism Publications Gen. Dir. 1999.

Long winter in the Region is an important data. The number of tourists visiting the Region is given in the **Table 2.7.7.**.

Table 2.7.7: Tourists Visiting Erzurum Ski Centres (1998)

Provinces	Foreign	Domestic
Erzurum	8,081	324,321
Kars	3,408	55,424
Gümüşhane	162	16,466
Bayburt	56	7,565
Erzincan	658	81,539
Total	**12,365**	**485,315**

Source: The Ministry of Tourism Publications Gen. Dir.

Looking at tourist numbers according to countries top five countries are: the Union of Independent States, Iran, the USA, Japan and the Benelux countries.

It is difficult to know the future demand to the Region from different countries. But it is known that Israel is desiring to make an investment in the Region. The demand shall be increased if the relations with Syria, Iraq and Iran have been improved.

The region may be significant centre for domestic tourism. For that purpose airway prices to Erzurum at winter times should be at the lowest possible level or price discounts should be arranged for group tours. Moreover, discounted express train travel to Erzurum shall increase the demand.

Uludağ and Kartalkaya are high income oriented ski centres. That is why construction of cheaper accomodation facilities (two and three stars) is important for the Region that has a big potential for winter sports. The demand for winter sports should be expected to be high in a country that shall have more than 80 million population in 2020. Therefore, young generation should be stressed and the number of facilities like oberj and hostel oriented to students should be increased.

Winter sports need to be re-evaluated for the reasons given above and arranged according to the suggestions given below.

2.7.3.3.2. Re-arrangement of Winter Tourism

In the Alps of the European countries like France, Switserland, Austria and Italy, where winter tourism is perceived as a real sector, ski centres are classified into three groups according to their altitude.

- Lower centres that are below 1,500 m. altitude, close to city centres and has a 3-4 weeks ski season.
- Mid level centres between 1,500-2,750 m. altitudes, majority of which have a ski season of at least 2 months
- Upper level ski centres above 2,750 m. altitude that present at least three months of skiing opportunity depending on their accessibility.

On the Palandöken-Hınıs Straits-Büyük Ejder Hills skiing is performed between 2,150-3,100 m. altitudes. That is why they have the longest ski season. There are also some other potential ski resorts in the same area.

Konaklı-Kırkkulak Hill	- 3,084 m.
Ülkeralan-Ebuzulal Hill	- 3,036 m.
Yağmurcuk-Karakaya Hill	- 2,754 m.
Namlıkar Hill	- 2,715 m.

As seen from those resources the problem is to develop the region with a high potential. In that context it is necessary to study the region in terms of the types of precipitation (rain and snow), the amount of showering, spatial distribution of shower, formation of snow, the period of permanent show, avalanche, and the temperature. The advantages of the region vis-à-vis the Alps in the framework of global warming also need to be studied.

Arrangement of a “Winter Olympics” is a strategic alternative for the promotion of the region. It is possible to envisage the arrangement of “Winter Olympics” in the region as suitable in the third period (2011-2020) provided that the preparations are completed. Particularly the investments in the Konaklı development area should be re-arranged according to the possibility of winter Olympics and the village hosting the winter Olympics needs to be planned.

According to the wide range of alternatives given above, projections with respect to the number of visitors to the region are given in the **Table 2.7.8**. Those numbers can be revised according to developments in each five years. However, it is important to make necessary arrangements by taking the characteristics and potential of the region into account.

Table 2.7.8. Estimates of the Number of Tourist/Year for Erzurum-based Winter Tourism

Provinces	1998		2005		2010		2020	
	Foreign	Domest.	Foreign	Domest.	Foreign	Domestic	Foreign	Domestic
Erzurum	8,080	324,321	20,000	600,000	50,000	1,000,000	200,000	2,000,000
Kars	3,408	55,424	20,000	150,000	50,000	500,000	160,000	1,000,000
Erzincan	658	81,539	2,000	150,000	5,000	250,000	10,000	500,000
Gümüşhane	162	16,466	500	20,000	1,000	30,000	1,000	50,000
Bayburt	56	7,565	200	15,000	500	50,000	1,000	50,000
Total	12,365	485,315	42,700	935,000	106,500	1,830,000	372,000	3,600,000

2.7.3.3.3. Tour Alternatives for Summer Tourism

The region is providing wide opportunities including coastal (lake, sand, sun) tourism. Though the alternatives vary according to the form and type of tours, the following tour alternatives may be suggested.

- **Three and Five Days Tours Alternatives (Graph 2.7.1**)

  - **Sport Tourism:** Water sports, plateau sports, trekking, rafting, canoeing, golf, tour by bicycle or motorcycle, fishing, and cave tourism.
    Locations : Çoruh and Firat Rivers, Tortum Lake, Erzurum (Palandöken), Erzincan (Ergan, Munzur), Bayburt (Sultan Murat, Limonlu), Gümüşhane (Erikbeli, Taşlı, Elceğiz, Konukbeli, Kadırga, Karagöller Plateaus and Plains and Üçbacaktepe Cave)

  - **Eco Tourism:** Bird and animal observatory, living in nature: Çıldır Lake, Tortum Waterfall, Sarıkayalar Waterfall (Bayburt), Girvelik Waterfall (Erzincan), Karagöl, Gelinpınar Waterfalls (Pülümür)
    Animals to be observed are: dear, roe, mountain goats with hooked horn, wild goat, Bear, wild pig, fox, lynx, badger, corn-poppy, sable and rock marten. Among birds are; sparrow hawk, piebald owl, falcons, snake eagle, in local names mezgeldek, kızılakbaba, and tof; snakes and, reptiles.

    Reservation areas need to be arranged in order to protect the species and observation towers need to be built.

    Endemic plants and trees can be added to the rich animal and bird species cited above. The region is particularly rich in endemic threes.

    Eco tourism is an environment friendly tourism by its nature, and thus accommodation needs to be in the form of arranging camp-caravan grounds.

  - **Health Tourism:** covers recreation, resting, treatment in open air (Climatisme), hot springs, mineral waters, Cave treatment, soft (eco) tourism, stress reduction types.

There are four important centres for hot spring tourism. Diyadin (Ağrı), Pasinler (Erzurum), Köprüköy (Erzurum), Kötek (Kars). Hot spring tourism is very important for the intra-regional tourism.

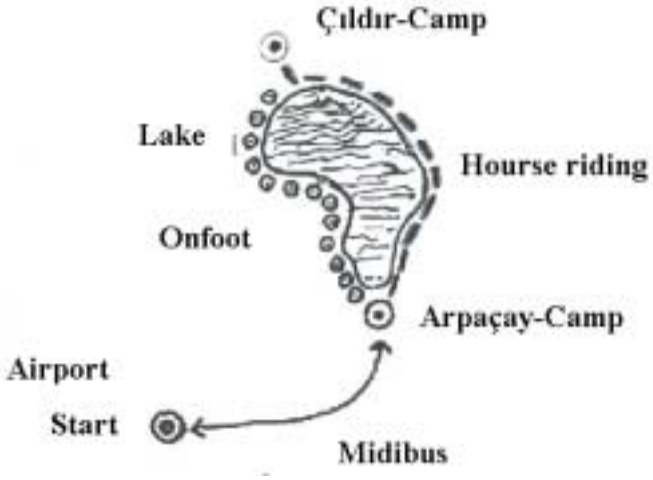
- **Eight Days Tour Alternatives**

Those are suggested to be combined tours. Combined tours mean the usage of Airway + Highway + Walking + Riding + 4x4 vehicle driving + Rafting + Canoe. There are three combined tours suggested for the region given below.

Combined tours are economically useful when they are arranged two way. And it is important that they should be used by tourists going and coming from break points.

a) Tortum Combined Tour

b) Çıldır Combined Tour



2.7.3.3.4. Proposed Projects

Revision of the Erzurum Ski Center Development Study: Revision of winter sport projects completed, planning of winter sports centers in a way covering a large area in stead of partial planing, planning of a winter Olympics village in Konaklı center, increasing the bed capacity planned.

Arrangement of Winter Olympics Project: Formation of Olympic Committee, preparing projects for the facilities, inclusion of the Sarıkamış Ski Center into the project.

Arrangement of Combined Tours Project: Producing alternative projects for tours in which different forms and types of tourism are combined, preparation of feasibility reports for the projects, preparation of projects for the arrangement of Tortum and Çıldır combined tours, identification of camping grounds.

Erzurum Regional Museum Project: Realisation of "Erzurum Region Museum" project and its introduction to tourism with open and closed sites in order to exhibit excavated assets in a safe and skilled manner in the entire Region. That Museum should have a documentation centre to serve all scientific studies. Regional Museum could host to various congresses as well as function as a scientific research centre. For instance, it shall have a laboratory in order to detect measures to preserve the articles against moisture, heat, and sun light.

Ani City Museum Project: Digging, Restitution, Restoration and site arrangement activities should continue, Ani City models and maps should be exhibited in a museum, and some important pieces should be exhibited in the museum by this project.

Foreign Language Learning and Vocational Training Project: Those are the projects that aim at arranging the ski centers designed for winter usage in a way to make them appropriate for summer use as well.

2.7.3.3.5. Necessary Accommodation Demand

Parallel to the diversification of the tourism forms and types there is a need to diversify accommodation types.

The most important problem in accommodation is the capacity utilisation rate for the facilities. Generally this is around 27-30 %. It is assumed in the projections that a bed shall serve approximately 100 tourists in a year. That means 33 % capacity utilisation rate.

Projected bed numbers for the development centres under the above given assumption are presented below.

Table 2.7.9: Erzurum Centre Bed Capacity Projections

Number of Bed	1998	2005	2010	2020
Tourism Certified (Bed)	1,306	2,000	5,000	10,000
Municip. Certified (Bed)	3,460	4,000	5,000	10,000
Holiday Village (Bed)	---	200	200	600
Oberj Hostel (Bed)	---	200	300	600
Camping(Units)	---	120	240	480
Youth Camp (Units)	---	30	60	120

Table 2.7.10: Kars Centre Bed Capacity Projections

Number of Bed	1998	2005	2010	2020
Tourism Certified (Bed)	299	1,000	1,000	2,000
Municip. Certified (Bed)	696	1,000	2,000	4,000
Holiday Village (Bed)	---	---	200	200
Oberj Hostel (Bed)	---	30	60	120
Camping(Units)	---	---	100	200
Youth Camp (Units)	---	30	60	120

Table 2.7.11: Erzincan Centre Bed Capacity Projections

Number of Bed	1998	2005	2010	2020
Tourism Certified (Bed)	188	200	500	1.000
Municip. Certified (Bed)	820	1.000	2.000	4.000
Holiday Village (Bed)	---	---	---	---
Oberj Hostel (Bed)	---	---	---	---
Camping(Units)	---	---	---	---
Youth Camp (Units)	---	60	120	240

Table 2.7.12: Gümüşhane Centre Bed Capacity Projections

Number of Bed	1998	2005	2010	2020
Tourism Certified (Bed)	129	200	700	700
Municip. Certified (Bed)	361	400	450	500
Holiday Village (Bed)	---	---	---	---
Oberj Hostel (Bed)	---	---	---	---
Camping(Units)				
Youth Camp (Units)	---	60	120	240

2.7.3.4. On-road Resting Facilities

There is a significant transit traffic starting from Gürbulak (Ağrı), Dilucu (Iğdır) border gates going through the route of the Ağrı, Erzurum, Erzincan, Sivas highways. There is a need for constructing multi-purpose resting facilities on that route particularly used by the Iranian tourists that made 260 000 entries and 200 000 exits just in 1998.

Location selection criteria for the on-road resting facilities are given below:

a) Accessibility Criteria

- To be close to break points of the passenger and tour buses,
- Providing parking grounds,
- Integrated with petroleum sale,
- Owning a wide scenic view.

b) Distance Criteria

- To be on the route to airport,
- To have recreation centres,
- To be a break point for tours for historical sites,
- To be in an appropriate position for regional shopping,
- To be in a distance to transport hot spring water (Hot springs can be transported 8-10 km. via pipelines),
- To have nearby forests, cervanserais, rivers, etc. attractive for tours,
- To be adjacent to lakes, dam lakes, small lakes etc.,
- To be protected from strong winds in terms of micro-climatic conditions,
- To have a suitable topography, and development areas for the future,
- To have infrastructure like electricity, natural gas, telephone, water, sewerage, and water purification.

After the identification of locations in the framework of the criteria given above what is proposed is construction of "On-road Resting Facilities" that also provide accommodation facilities.

Large scale On-road Resting Facilities providing a great range of alternatives may also be declared as Tourism Development Centres.

Two projects should be given a special attention.

- "Resting Facility," where the Pasinler Hot Spring water is transported to the road side or hot spring is produced through drilling on the road side, may be declared as a Tourism Development Centre.

- "Resting Facility," where the Diyadin Hot Spring water is transported to road side or hot spring is produced through drilling on the road side, may be declared as a Tourism Development Centre.

2.7.3.5. Preserving Historical Heritage and Cultural Assets

There are many archeological sites in the Region to be excavated. The ones that are already in place require maintenance and repair.

There is a need for multi-dimensional protection on the site areas. Among the issues to be treated in that framework are the following.

- Prevention of illegal excavation activities on the site areas,
- Prevention of the usage of stones from the site areas as a construction material due to ignorance,
- Prevention of usage of those areas as recreation fields and the destruction of the relics in that process,
- Protection of excavated works against bad weather conditions,
- Taking measures to prevent the changes in colours and shapes of the works due to different humidity and warmth levels,
- Prevention of writing sentences and names on the works by the visitors,
- Elimination of drainage and drying problems in the excavation fields due to insufficient allocation, and protection of sun-dried brick structures,
- Prevention of natural and man-made harmful effects upon the Nemrut Mountain Commagene Stells

The following projects have to be given priority in order to solve the above mentioned problems.

- **Ani City;** excavation, restitution, restoration and protection activities and site arrangement

- **Ayanis (Urartu) (on the North of the Lake Van);** Covering the temple discovered in 1998, undertaking the drainage, excavation, restitution, restoration activities, taking measures for environmental protection, building roads,

- **Akdamar Island**; undertaking excavation, restitution, restoration activities, transport of potable water by pipeline, site arrangement, prevention of use as a recreation area,

- **Van Castle;** undertaking excavation, restitution, restoration activities,

- **Kars Castle;** undertaking excavation, restitution, restoration, site arrangement activities,

- **Çifte Minareli Camii (Erzurum) restoration and site arrangement**; realisation of the Erzurum Regional Museum,

- **Satala (Gümüşhane) ancient city**; undertaking excavation, restitution, restoration, site arrangement activities,

- **Realisation of the Harput (Elazığ) Protection and Development Project**; opening the Regional Museum with open and closed parts,

- **Protection of the Nemrut Commagene Stells**, preparation and application of excavation, restitution and restoration projects.

There are a total number of 33 “Cultural Centre” and “Public Library” projects for the Region included in the 2000 Annual Investment Program (**Table 2.7.9**). The current libraries, museums, cinema halls, opera and ballet halls and cultural centres are given in the **Table 2.7.18-19-21**.

Those centres need to be re-arranged according to modern technology. “Internet Caffes” should serve to cultural centres. Moreover, those centres should have the infrastructure for watching films through “on-line” channel.

2.7.4. Cultural Activities

Social, cultural, environmental and economic effects of touristic development are topics that are debated. There is particularly an attention upon the positive and negative effects of tourism in social and cultural fields.

However, there is a new cultural structure being created through Internet. It is possible to access infinite number of information sources through Internet. Individuals could be senders and not only receivers of the cultural products of the developed countries and present their ideas to everybody by means of a simple modem.

There are efforts to make automatic translation of messages from one language to another over the WEB be possible in the near future. That would accelerate the cultural interaction. Today one has to learn English in order to communicate. That is why it is important to provide free language training courses in the cultural centers.

The integration of television, telephone and computer is speeding up. Through this way the individuals shall be the producers and consumers of recreational and information products all at the same time. Hospitality of individuals as well as their success in social and cultural relations shall accelerate the cultural interaction.

There are some other factors supporting and strengthening cultural interaction. The rich folklore potential of the Region is among the priority topics.

Folklore (Folk Dance)

Folk dances stylizing the way of life in the Region are very rich and diversified. There is a need to teach those dances to younger generations and to make them performed. Moreover, there is a need for performing animation activities in the touristic facilities as a source of income.

Folk dances that reflect the local way of life and should be emphasized are as follows:

- Sarı Çivil, Şeyh Şamil, Terekeme, Azerbaijan and Karabağ dances (Kars, Ardahan, Iğdır, Bayburt)
- Hey Nare, Kol Sallama, Aşırma, Bar (Erzurum)

- Ağır Halay, Koçerliler (Hakkari)
- Papuri, Kekekvan, Lorke (Van)
- Herkusta, Hançer-Bıçak (Muş)
- İki ayak, Lorke (Tunceli)
- Sarı Bülbül, Ağrı Gülüm (Ağrı)
- Çayda Çıra, Keban Çiftetellisi, Yavuz, Kafkas (Elazığ)
- Karşılama, Ayı Oyunu (Erzincan)
- Derino, Lorke (Malatya)
- Koçeri, Küccarı (Bitlis)
- Delili, Bingöl Halayı (Bingöl)

Traditions – Customs

There are very special rituals in the Region in which different cultures mixed up throughout millenniums. Among those rituals are Nevruz, Hıdrellez, Koç Katımı, Kurban and Şeker Religious Holidays, pray for rain, commemoration of the independence days of provinces and districts once occupied by foreigners, marriage ceremony, cirit game, circumcision ceremonies, and fiestas.

There are festivals organized today in order to preserve them. These festivals which are introduced below should be promoted.

Erzurum and Van fairs have a tradition going back very old times. Moreover, commemoration of the independence days of provinces and districts once occupied by foreigners are among the traditional festivals.

Locations and dates of fiestas and festivals arranged in the Region are given below:

- Malatya Apricot Festival (July 20-22),
- Arapgir Grape Harvest Fiestas (September 1-7),
- Sivrice Çöl Fiestas and Ağrı Fiestas Elazığ,
- Adilcevaz Walnut Festival (October) Bitlis,
- Ahlat Culture week (August), Bitlis
- Ahilik Culture Week (October 11-17), Erzincan,
- Refahiye Honey Festival (August 5),
- Kemaliye Carpet Festival (July 23-25),
- İliç Cheese Festival (September 2-4),
- Kemal Sheep Shearing Fair (August 2),
- Dede Korkut Culture and Art Festival (July 13-20), Bayburt,
- Kadırga Plateau Fiestas (3rd week of July), Gümüşhane,
- Rosehip Pestil Culture tourism Fiesta (September), Gümüşhane,
- Aşık Emrah Festival (September), Van-Erciş,
- Chess Festival (August), Bahçesaray.

Cousin (Gastronomy)

Regional cousin is very rich. It is important to prepare documents for promotion and make research on the nutrition content.

Yellow cheese (kaşar), bagged cheese (tulum), oğma cheese, and herb (otlu) cheese are famous cheese varieties. Among the priority topics to be promoted is honey varieties that are produced at plains containing a high variety of flowers and endemic plants. Promotion and research are also required for meals like bread in oven (tandırda ekmek), kebab varieties, lahmacun, çiğ köfte, and the like. Endemic plants and natural healing methods of the Region are in need of research and publications.

Art and Music

Almost all art activities are a cultural phenomenon. That is why culture is debated, criticized and developed by artists, writers and thinkers.

Among the art branches to be developed are theater, painting, and plastic arts. There is a decrease in the number of visitors to theaters and museums in the recent years.

There should be contests, prizes and promotion for the artists in order to develop the significance and diversity of art activities.

Civil society organizations established for the research and development of local music and musical instruments should be promoted and developed.

Architecture and Decoration

Civil architecture examples and inside and outside decorations are in a sense the subject matter of art department. Authentic city and architecture are important among the topics discussed today. Efforts must be intensified to protect the identity of cities. Protection of authentic urban parts is an important issue for the tourism. Modern architecture and city planning have learned much from tourism. Using local materials and shaping the structures in conformity to the local climatic conditions are gaining importance.

Handicrafts, Costume

The characteristics of the Region have been explained in the part on handicrafts. What is stressed here is the significance of daily and ritual costumes and decoration. Dresses and head decorations unique to the Region are important elements.

Table 2.7.13: On-going Cultural Equipment Projects

Project Name	Province-District	Start-End Date of the Activity	Project Cost (Million TL)	Estimated Spent Money as of the end of 1999 (MillionTL)	Allocation for 2000 (Million TL)
Cultural Centre	Ağrı-D.Beyazıt	1997-2001	1,270,490	370,490	125,000
Cultural Centre	Ağrı-Centre	1993-2001	120,000	189,834	150,000
İshak Paşa palace Restoration – Site Arran.	Ağrı-D.Beyazıt	1998-2002	750,000	96,250	120,000
Cultural Centre	Bingöl-Centre	1993-2001	984,000	169,327	150,000
Cultural Centre	Bingöl-Adilcevaz	1997-2001	246,000	7,920	1,000
Ahlat Cas.Rest.Prj.Pre.	Bitlis-Ahlat	1995-2001	10,000	1,500	1,000
District Public Library	Bitlis-Mutlu	1993-2000	160,000	75,000	65,000
District Culture Centre	Bitlis-Ahlat	1990-2001	880,680	113,920	100,000
Cultural Centre	Bitlis-Centre	1992-2001	1,200,000	179,266	400,000
Cultural Centre	Bitlis-Hizan	1992-2001	1,200,000	174,870	150,000
Cultural Centre	Bitlis-Tatvan	1992-2001	1,200,000	186,314	400,000
Cultural Centre	Elazığ-Centre	1995-2002	1,394,000	164,440	150,000
Cultural Centre	Erzurum-Olur	1997-2001	246,000	27,894	1,000
Cultural Centre	Erzurum Narman	1997-2001	246,000	26,254	1,000
Cultural Centre	Erzurum-Hınıs	1992-2001	750,000	148,066	100,000
Cultural Centre	Gümüşhane	1995-2001	716,309	111,303	15,000
District Public Library (2 units)	Gümüşhane	1999-2001	250,000	-----	40,000
District Public Library	Gümüşhane-Kelkit	1999-2001	125,000	-----	20,000
District Public Library	Gümüşhane-Şiran	1999-2001	125,000	-----	20,000
District Public Library	Hakkari-Şemdinli	1993-2000	180,000	130,000	50,000
Cultural Centre	Hakkari-Centre	1992-2001	1,300,000	225,742	200,000
Cultural Centre	Hakkari-Yüksekova	1993-2001	1,200,000	17,030	200,000
Ani City Restoration	Kars	1994-2002	500,000	168,054	100,000
Cultural Centre	Malatya-Akçadağ	1993-2000	676,346	176,346	125,000
Cultural Centre	Malatya-Centre	1993-2001	1,443,200	25,709	1,000
Cultural Centre	Muş-Centre	1992-2001	1,200,000	185,086	150,000
Cultural Centre	Muş-Varto	1992-2000	998,043	198,043	500,000
District Public Library	Tunceli-Mazgirt	1995-2000	170,000	160,000	100,000
Cultural Centre	Tunceli-Centre	1992-2001	950,000	267,240	200,000
District Culture Centre	Tunceli-Ovacık	1994-2001	594,200	79,767	10,000
District Public Library	Van-Başkale	1992-2000	160,000	50,000	110,000
Cultural Centre	Bayburt-Centre	1991-2001	1,300,000	278,211	125,000
Cultural Centre	Iğdir-Centre	1993-2001	1,200,000	347,522	200,000
Cultural Centre	Ardahan	1999-2001	656,000	5,000	1,000
District Public Library	Ardahan-Hanak	1993-2000	200,000	180,000	20,000

Source: SPO. 2000 Annual Investment Program.

2.7.5. Cost and Employment Possibilities of the Proposed New Projects

There is a need for making separate projections for investment costs of suggested projects. That is why cost values are not given below the proposed projects. This part is related to cost and employment projections.

- **Hotel, Holiday Village and Motels**

Cost per bed are given below according to the form of tourism (**Table 2.7.14**). There is need for a separate calculation of costs for projects like regional museums, and regional sport complexes.

Table 2.7.14: Investment Costs for Hotel, Holiday Village, Motel and Pensions

Accommodation Unit	Cost Per Bed (Billion TL)
5 Stars Hotel	15.6
4 Stars Hotel	10.8
3 Stars Hotel	7.7
2 Hotel with Restaurant	4.8
2 Stars Hotel	3.3
1 Stars Hotel	2.8
1 Degree Holiday Village	8.0
2 Degree Holiday Village	5.6
Motel	3.8
Pension	2.5

Source: Turkish Development Bank. January 2000 prices.

- **Camping Grounds**

Camping grounds are determined as units. There are tent like accommodation facilities for 2-4 persons, caravan and automobile parking space, One unit covers approximately 100-150 m² space.

For a camping ground with 25 units or 100 beds capacity; 4 toilets, 4 lavatories, 2 showers, a total space of 3O m² is required.

Moreover, per person area required include; 8 m² game area, 10 m² green area and 400 m² children game area. In that case for a camping ground with 100 persons capacity the required area is planned to cover between 1.6 and 3.2 ha. space.

- **Telesiage**

They are the most environment friendly mechanical facilities. Their cost is relatively lower than that of cable railway. For instance, the telesiage facility of Isparta Davraz Ski Centre dated 31.05.2000 was bid for 597 Billion TL.

Table 2.7.15: Number of Employment Generated in Erzurum Tourism Development Region

Type of Facility		PERIODS			
		2005	2010	2020	Total
Tourism Certified Hotel	Number of Beds	2,500	4,200	8,700	15,400
	Employment	2,500	4,200	8,700	15,400
Municipality Certified Quality Hotel	Number of Beds	5,000	2,000	7,000	14,000
	Employment	2,000	800	2,800	5,600
Holiday Villages	Number of Beds	200	400	800	1,400
	Employment	40	80	160	280
Second House Apart Hotel	Number of Beds	500	1,000	1,500	3,000
	Employment	50	100	150	300
Camping	Number of Beds	500	1,000	2,000	3,500
	Employment	25	50	100	175
Oberj Hostel	Number of Beds	200	400	800	1,400
	Employment	10	20	40	70
TOTAL	**Number of Beds**	**8,900**	**9,000**	**20,800**	**38,700**
	Employment	**4,625**	**5,250**	**11,950**	**21,825**

As a result a direct employment for 21,825 persons shall be generated through 38,700 beds.

Taking 20 % indirect employment generation, 38,700 x 0.20 = 7,740 indirect additional employment shall be generated.

Table 2.7.16: Number of Employment Generated in Malatya Tourism Development Region

Type of Facility		PERIODS			
		2005	2010	2020	Total
Tourism Certified Hotel	Number of Beds	2,000	1,000	2,000	5,000
	Employment	1,200	600	1,200	3,000
Municipality certified Quality Hotel	Number of Beds	2,000	1,000	2,000	5,000
	Employment	600	300	600	1,500
Holiday Villages	Number of Beds	200	200	600	1,000
	Employment	40	40	120	200
Camping	Number of Beds	480	320	2,400	3,200
	Employment	24	16	120	160
Youth Camp	Number of Beds	400	400	2,800	3,600
	Employment	20	20	140	180
Total	**Number of Beds**	**5,080**	**2,910**	**9,800**	**17,800**
	Employment	**1,884**	**976**	**2,180**	**5,040**

Number of employment generated by tourism in the Van Tourism development Region are given in the **Table 2.7.17**. Employment generated during the construction of those facilities and indirect employment are not included in those numbers.

Table 2.7.17: Number of Employment Generated in Van Tourism Development Region

Type of Facility		PERIODS			
		2005	2010	2020	Total
Tourism Certified Hotel	Number of Beds	3,000	3,000	6,000	12,000
	Employment	1,800	1,800	3,600	7,200
Municipality Certified Quality Hotels	Number of Beds	2,000	2,000	4,000	8,000
	Employment	600	600	1,200	2,400
Holiday Villages	Number of Beds	400	400	800	1,600
	Employment	80	80	160	320
Camping	Number of Beds	400	400	800	1,600
	Employment	20	20	40	80
Youth Camp	Number of Beds	400	400	800	1,600
	Employment	20	20	40	80
Total	**Number of Beds**	**6,200**	**6,200**	**12,400**	**24,800**
	Employment	**2,520**	**2,520**	**5,040**	**10,080**

As a result a direct employment for 10,800 persons shall be generated through 24 800 beds. Taking 20 % indirect employment generation, 24,800 x 0.20 = 4,960 indirect additional employment shall be generated.

Employment to be Generated

The principles used to calculate direct and indirect employment generated by the tourism sector are presented below.

Table 2.7.18: Direct Employment Generated Per Bed by Accommodation Type

Accommodation Type	Employment Per Bed
Hotel 5 Stars	1.0
Hotel 4 Stars	0.6-0.9
Hotel 3 Stars	0.4-0.6
Hotel 2 Stars	0.3-0.4
Hotel 1 Stars	0.2-0.3
Apart Hotel. Pension	0.1
Holiday Villages	0.1-0.2
Camping-caravan	0.5
Second House	0.5
Hostel, Youth Camp	0.1

Source: Bovy and Lawson (1998), Tourism and Recreation, pp. 37-38.

On top of the above given employment there is also additional employment though they change from country to country.

Additional meal services	0.02
Recreation, Sport, Culture	0.05
Shopping + services	0.01
Management and technical services	0.02

Indirect employment changes from country to country as well. It is generally higher in the developing countries. There are some examples given below.

Indirect Employment Per Bed:

Port Camarque (France)	5 %
Verbier (Switserland)	8.5 %
Zerwalt (Switserland)	34 %

The sector where the highest number of indirect employment generated is the transport sector. It is also effective in wearing apparels, textile and communication sectors. Naturally, indirect employment depends on the features of the touristic site.

As a result of 17 800 beds proposed for 2020 there is going to be 5 040 persons direct employment and 1 782 persons additional indirect employment.

2.7.6. Summary of the Proposed Projects With Respect to Development Regions

Van Tourism Development region depends primarily on two projects. The first one is the Mount Ararat National Park and the second one is the Environment Arrangement Plan for the Lake Van.

Table 2.7.19: Van Tourism Development Region Project Summaries

VAN SUB-REGION	PERIODS OF PROPOSED PROJECTS		
	2001-2005	2006-2010	2011-2020
Hotel	1,000 Beds	3,000 Beds	6,000 Beds
Municip.Certified Hotel	1,000 Beds	2,000 Beds	4,000 Beds
Holiday Village	400 Beds	400 Beds	800 Beds
Camping	60 Units	100 Units	200 Units
Youth Camp	60 Units	100 Units	200 Units
The Lake Van Environment Arrangement Plan	1/25,000 Scaled Plan Preparation	Infrastructure Realisation	Superstructure Realisation
Ahlat Break Centre	Completing the Centre	Accommodation Annexes	
Ahlat Castle Restoration	Excavation and Arrangement	Excavation and Arrangement	Excavation and Arrangement
Nemrut Crater Lake Camping Ground	Realisation of 60 units	Arrangement of Camp, Caravan Grounds	Tour on the Lake
The Mount Ararat National Park	1/25.000 Scaled Environment arrangement Plan, Break and Resting Facilities, Camping Arrangement, Mechanical Facilities, Security System with Horses, Security System with Cameras	Para-gliding Training Centre Climbing via Telesiage	International Contest of Para-giding
Bitlis Ski Centre	Mechanical Facility	Mechanical Facility	Mechanical Facility

Table 2.7.20: Malatya Tourism Development Region Project Summaries

MALATYA-ELAZIĞ SUB-REGION	PERIODS OF PROPOSED PROJECTS		
	2001-2005	2006-2010	2011-2020
Hotel	500 Beds	1,000 Beds	2,000 Beds
Municip.Certified Hotel	500 Beds	1,000 Beds	2,000 Beds
Holiday Village	200 Beds	200 Beds	600 Beds
Camping	60 Units	80 Units	800 Units
Youth Camp	100 Units	100 Units	700 Units
Commagene Research Centre	- A Replication of Turkish Pavilion in the Hannover Expo 2000 - Protection Projects for the Stells	- Digging and Protection of Stells	- Digging and Protection of Stells
Harput Regional Museum	Museum Project, 1/1000, 1/50 Arrangements	Openning and Presentation of the Museum	Development of Activities in the Museum
Munzur National Park	1/10000 Scaled National Park Project 1/500 Scaled arrangements	Project Application	Arrangement of Flora-Fauna Observation Areas
Sport Complexes	Establishing Sport Centres at 2 Sites	Establishing Sport Centres at 4 Sites	Orginising Sport Festivals

Table 2.7.21: Erzurum Tourism Development Region Project Summaries

ERZURUM SUB-REGION	PERIODS OF PROPOSED PROJECTS		
	2001-2005	2006-2010	2011-2020
Palandöken Ski Centre	1,000 Beds	3,000 Beds	5,000 Beds
Konaklı Ski Centre Olympic Village	1,000 Beds	2,000 Beds	5,000 Beds
Sarıkamış Ski Centre	1,000 Beds	1,000 Beds	2,000 Beds
Erzincan	200 Beds	500 Beds	1,000 Beds
Gümüşhane (Zigana)	100 Beds	400 Beds	400 Beds
Bayburt (KopDağı)	100 Beds	300 Beds	300 Beds
Holiday Village	200 Beds	400 Beds	800 Beds
Oberj – Hostel	200 Beds	400 Beds	800 Beds
Camping: Oltu	30 Units	60 Units	120 Units
Tekkale	30 Units	60 Units	120 Units
Tortum	30 Units	60 Units	120 Units
Çıldır	30 Units	60 Units	120 Units
Girvelik	30 Units	60 Units	120 Units
Erzurum Regional Museum	1/1000 Scaled Museum project	Opening of the Museum	Activities in the Museum
Ani City Museum	Excavation and Environment arrangement	Excavation and Environment arrangement	Excavation and Environment arrangement
Break Centres:			
Diyadin	100 Beds, Trade Centre, Resting Facilities, Transport of Hot Spring Water	400 Beds Hotel Commerce-Recreation Resting	400 Beds Hotel Commerce-Recr. Resting
Pasinler	100 Beds, Trade Centre, Resting Facilities, Transport of Hot Spring Water	400 Beds Hotel Commerce-Recreation Resting	100 Beds Hotel Commerce-Recreation/Resting

Erzurum Tourism Development Region should be developed rapidly especially for serving to domestic tourism. University students should be promoted to combined tours and those tours should be turned into international activities.

Particularly break centres and on-road resting facilities need to be planned urgently and the demand generated by the Iranian tourists need to be studied.

Table 2.7.22: Strategies to be Implemented in Tourism Sector

BOTTLENECK (LIMITING FACTOR)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Development of Highways	Development of highways between Ağrı (Gürbulak) and Kilis (Öncüpınar) border gates	International project for the Trans-Asiatique Motorway	Development of Erzurum-Bakü Erzurum-Tahran highways	Erzurum and Elazığ Sub-regions
Use of Sea Buses	A short route for Van-Tatvan travel by sea busses. Expansion of the impact area of the Van airport.	Integrated plan for fish farms and touristic facilities and their inclusion into tour routes.	Using sea busses in the Keban Dam Lake	Keban Dam Lake and the LakeVan
Inadequacy of on-road facilities	Increasing incentives for on-road resting facilities (arranging a touristic transition route with Iran)	Integration with the SAP tourism development project	Developing break points for short and medium term tour routes	All Sub-regions
Arranging Combined Tours (4x4 land vehicles riding+ trekking	Arrangement of combined tour routes and transfer points	Incentives and promotions for the arrangement of combined tours	Establishing centers for combined tours	Alahüekber, Ağrı, Süphan, Nemrut (Muş) Artos (Van) Mercantepe (Erzincan) Munzur (Tunceli)
Arranging motorcycle tours	Establishing a committee for arranging tours by motorcycle and determining the tour route	Promotion of the tour route with motorcycle and preparations for Arranging tours	Annual arrangement of motorcycle tours	Van and Elazığ Sub-regions
Arrangement of Winter Olympics in the Region	Establishment of Olympic Committee and project preparation for the arrangement of facilities	Application and promotion of the projects	Arrangement of winter Olympics in the Region. Arranging annual winter tournaments. Constructing large scale sport complexes in all three sub-regions.	Erzurum, Ağrı, Gümüşhane, Kars Erzincan
Development of sport tournaments	Performance of international tournaments in the Region	Performance of a part of Olympics to be hosted by Turkey in the Region	Construction of Aqua park-arberatum botanic gardens	Sub-regions

Table 2.7.22: Strategies to be Implemented in Tourism Sector (Continued)

BOTTLENECK (LIMITING FACTOR)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD 2001-2005	2nd PERIOD 2006-2010	3rd PERIOD 2011-2020	
Protection of flora reserve areas	Protection of reserve areas to increase population	Integration of reserve areas with the tour routes	Opening of Elazığ, Erzurum and Van museum complexes	Sub-regions
Development of museums (Museum+Congress Centre+open air museum)	Preparation of regional museum projects in three sub-regions	Opening of Ani (Kars) Ishakpaşa (Ağrı) Ayanis (Van) Harput (Elazığ) Ahlat (Bitlis) open-air museums.Completion of excavation activities and promotion	Construction of cable-car facility	Sub-regions
Making the Mount Ararat a focal point for tourism	Declaration of the Mount Ararat as a National Park and preparation of tourism development plans	Telesiage infrastructure and construction of resting facilities telesiage transfer points	Establishment of the Mount Ararat para-gliding festivals	The Mount Ararat
Developing the para-gliding activity	Training for para-gliding, inclusion of para-gliding into sport contests	Establishment of the Mount Ararat para-gliding center		The Mount Ararat

APPENDIX 2.7.1: Tourism Potential in the Provinces According to the Provincial Tourism Inventory and Tourism Development Plan Prepared by the Ministry of Tourism

1- AĞRI PROVINCE

A- CULTURAL TOURISM
- Ancient Cities: Patnos
- Religious Tourism: The Mount Ararat
- Silk Road: İshakpaşa Palace (Doğubeyazıt)

B- THERMAL TOURISM: Diyadin Hot Springs (Diyadin) Dambat Hot Spring (Centre)

C- WINTER TOURISM: Zado Mountain and Küpkıran (Centre and Diyadin)

D- ECO TOURISM
- Plateau tourism: Sinek, Aladağ,Mezik (Centre and Diyadin)
- Ornithology (bird observation) tourism: The Mount Ararat and surroundings
- Photo safari: The Mount Ararat
- Botanical (plant study) tourism: The Mount Ararat surroundings and rural area
- Camp-caravan tourism: Centre,Doğu Beyazit, Diyadin
- Cave tourism: Diyadin, Doğu Beyazıt

E- TOURISM ORIENTED SPORT ACTIVITIES
- Hunting tourism: Diyadin, Doğu Beyazıt
- Tracking: The Mount Ararat

F- YOUTH TOURISM: The Mount Ararat

2- ARDAHAN PROVINCE

A- WINTER TOURISM: Yalnızçam-Uğurlu Mountain Winter Sports Centre

B- ECO TOURISM
- Plateau tourism: Centre; Yalnızçam Plateau, Bilbilan Plateau, Göle; Okçuoğlu Plateau
- Ornithology (bird observation) tourism: Çıldır Lake (Akçakale Island)
- Photo safari: Çıldır Lake (Akçakale Island)
- Botanical (plant study) tourism: Posof surroundings
- Camp-caravan tourism: Çıldır Lake bay

C- TOURISM ORIENTED SPORT ACTIVITIES
- Diving tourism: Çıldır Lake
- Wind Surfing: Çıldır Lake
- Bicycle tours: Çıldır Lake surroundings
- Fishing by fishing line: Çıldır Lake

- Tracking: Yalnızçam Plateau (Centre), Bilbilan Plateau, (Göle) Okçuoğlu Plateau (Göle), Posof surroundings (Posof), Hanak surroundings (Hanak)
- Tracking with horse: (Centre) Yalnızçam Plateau, Okçuoğlu Plateau (Göle)

3- BAYBURT PROVINCE

A- CULTURAL TOURISM
- Ancient Cities: Aydıntepe (Hart) Ancient City and Underground City
- The Silk Road: Taşhan (Centre)

B- WINTER TOURISM: Kop Mountain Ski Resort

C- ECO TOURISM
- Plateau tourism: Sultan Murat, Limonlu Plateaus
- Ornithology (bird observation) tourism: Sultan Murat Plateau, Çoruh Valley
- Photo safari: Çoruh Valley
- Botanical (plant study) tourism: Kop Mountain
- Camp-caravan tourism: Kop Mountain Ski Centre

D- TOURISM ORIENTED SPORT ACTIVITIES
- River tourism (canoe-rafting): Çoruh River
- Fishing by fishing line: Çoruh River and various Branches
- Tracking: Kop Mountain
- Tracking with horse: Çoruh Valley, Kop Mountain

4- BİTLİS PROVINCE

A- LAKE TOURISM
- Coastal tourism: Van Lake

B- CULTURAL TOURISM
- Ancient Cities: Adilcevaz City (Adilcevaz),
- Religious tourism: Ulu Mosque (Centre), Ahlat Kümbets-Ulu Kümbet, Hüseyin Timur Kümbet, Buğatay Aka Kümbet, Hasan Padişah, Erzen Hatun, Emir Bayındır and Keşiş Kümbets
- The Silk Road: Hazo Hanı (Centre), Papşin (Hüsrev Paşa) Hanı (Centre), Eleman Caravanserai (Tatvan), Başhan (Tatvan)

C- THERMAL TOURISM: Çukur (Güroymak), Nemrut Mountain Krateri, Alemdar Hot Spring, Köprüaltı, Ilıcak (Germap) Hot Spring, Değirmen Hot Spring, Yam Acısuyu (Yolazi) Küçük Hot Spring, Yılan Dirilten Mineral Water

D- WINTER TOURISM: Bitlis Ski Resort (Centre), Sapgör (Dideban), Nemrut Mountain, Rahva

E- ECO TOURISM
- Photo safari: Van Lake bay, Kümbets
- Botanical (plant study) tourism: Süphan Mountain, Sapgör Mountain

F- TOURISM ORIENTED SPORT ACTIVITIES
- Bicycle tours: Van Lake Bay
- Fishing by fishing line: Van Lake, Nazik Lake, Aygir Lake
- Tracking: Süphan Mountain

5- ELAZIĞ PROVINCE

A- CULTURAL TOURISM
- Ancient Cities: Harput City, Sarıgöl Höyük, Kövenk Höyük, Sivrice City Ruins
- The Silk Road: Katırhan (Baskil District), Denizli Caravanserai (Keban District)

B- THERMAL TOURISM: Kolan Hot Spring (Karakoçan), Dabakhane (Harput), Centre

C- ECO TOURISM
- Ornithology (bird observation) tourism: Hazar Lake, Keban Dam Lake
- Photo safari: Hazar Lake
- Camp-caravan tourism: Keban Dam, Karakaya Dam and Hazar Lake Coastal Areas
- Cave tourism: Buzluk Cave (Harput)

D- TOURISM ORIENTED SPORT ACTIVITIES
- Diving tourism: Keban Dam Lake
- Wing surfing: Hazar Lake, Keban Dam Lake, Karakaya Dam Lake
- Bicycle tours: Hazar Lake surroundings
- Fishing by fishing line: Hazar Lake, Keban Dam Lake
- Tracking: Fırat River Valley

E- YOUTH TOURISM: Hazar Lake (Present), Firat University Campus (Present)

6- ERZİNCAN PROVINCE

A- CULTURAL TOURISM
- Ancient Cities: Altıntepe Urartu Ancient City, Küçüktepe Höyük, Saztepe Höyük
- The Silk Road: Mamahatun Caravanserai (Tercan)

B- THERMAL TOURISM: Erzincan Centre

C- WINTER TOURISM: Munzur Mountains, Ergan Mountain, Sakaltutan Ski resort

D- ECO TOURISM
- Photo safari: Munzur Mountains, Kemaliye, Girlevik Waterfall
- Botanical (plant study) tourism: Munzur Mountains
- Camp-caravan tourism: Girlevik Waterfall

E- TOURISM ORIENTED SPORT ACTIVITIES
- River tourism (canoe-rafting): Fırat River
- Fishing by fishing line: Fırat River
- Tracking: Munzur Mountains

7- ERZURUM PROVINCE

A- CULTURAL TOURISM
- Religious tourism: Çifte Minaretli Medrese (Centre), Yakutiye Medresesi (Centre), Ulucami (Atabey Mosque) (Centre), Üç Kümbets (Centre)
- The Silk Road: Hacı Bekir Han (Aşkale), Karasu Village (Aşkale), Taşhan (Centre)

B- THERMAL TOURISM: Pasinler Hot Springs, Ilıca Hot Springs, Köprüköy (Deliçermik), Hot Springs of Hölenk and Akdağ

C- WINTER TOURISM: Palandöken Winter Sports Centre

D- ECO TOURISM
- Plateau tourism: Lower and Upper Tekman Plateau, Alabayır Gökoğlan (Tekman), Uzunçayır (Aşkale), Dumlu Umudum (Centre), Otlutepe (Narman), Tortumkale, Uncular (Tortum), Ilica Tortum nearby Aynalıkale Plateaues
- Photo safari: City Centre, Palandöken
- Camp-caravan tourism: Erzurum-Kars highway (Horasan)
- Cave tourism: Possible

E- TOURISM ORIENTED SPORT ACTIVITIES

- River tourism (canoe-rafting): Çoruh River (Erzurum-İspir)
- Fishing by fishing line: In Aras and Çoruh Rivers, Oltu, Tortum and Hınıs Streams and Tortum Lake
- Tracking: Palandöken

F- CONGRESS TOURISM: Erzurum

G- YOUTH TOURISM: Palandöken

8- GÜMÜŞHANE PROVINCE

A- CULTURAL TOURISM
- Ancient Cities: Santa Ruins (Centre District),
- The Silk Road: Zigana Caravanserai,

B- WINTER TOURISM: Zigana Winter Tourism Centre

C- ECO TOURISM
- Plateau tourism: Erikbeli, Taşli, Elceğiz, Konukbeli (Kürtün), Kadırga, Karagöller, Zigana (Torul)
- Photo safari: Plateaus, Tomara Waterfall, Caves
- Botanic (plant study) tourism: Plateaues
- Camp-caravan tourism: Karagöller, Zigana Plateau (Torul), Tomara (Şiran)
- Cave tourism: Karaca (Centre), Arılı (Torul); Kartalkaya Ardıçlı, Buz Cave, Kaban Başı (Centre)

D- TOURISM ORIENTED SPORT ACTIVITIES
- Bicycle tours: Between plateaues
- Fishing by fishing line: Kürtün-Kalis Stream
- Tracking: Between plateaues
- Tracking by horse: Between plateaues

E- CONGRESS TOURISM: Fair Area (Centre)

F- GOLF TOURISM: Zigana Plateau (Torul)

9- HAKKARİ PROVINCE

A- CULTURAL TOURISM
- Ancient Cities: Yüksekova Hirvata Village Ruins (Yüksekova)

B- WINTER TOURISM: Sat Plateaues, Yüksekova, Cilo Plateaues, Golan Plateau, Berçelan Plateau.

C- ECO TOURISM
- Plateau tourism: Sat, Yüksekova, Cilo, Golan and Bervelan Plateaues
- Ornithology (bird observation) tourism: Yüksekova
- Photo safari: Cilo and Sat Mountains, Plateaues
- Botanical (plant study) tourism: Cilo and Sat Mountains and Plateaues

D- TOURISM ORIENTED SPORT ACTIVITIES
- Fishing by fishing line: Zap River
- Tracking: Cilo and Sat Mountains

10- IĞDIR PROVINCE

A- CULTURAL TOURISM
- The Silk Road: On the Route (Harmandöven Caravanserai)

B- ECO TOURISM
- Plateau tourism: Aralık (Gömük)
- Ornithology (bird observation) tourism: The Mount Ararat
- Photo safari: The Mount Ararat
- Botanical (plant study) tourism: The Mount Ararat and surroundings

C- TOURISM ORIENTED SPORT ACTIVITIES
- Fishing by fishing line: Aras River
- Tracking: The Mount Ararat
- Tracking with horse: The Mount Ararat

11- KARS PROVINCE

A- CULTURAL TOURISM
- Ancient Cities: Ani (Ocaklı)
- Religious tourism: Menuçehr Mosque (Ani Ruins), Ebul Muammeras Mosque (Boz Minaret), Havariler Church (Kümbet Mosque) (Centre), Ani Ruins, Keçel Church (Aziz Pirkitch Church), Şirli Church (Aziz Gregor Church), Abughamrent Gregor Church, Güvercinli Church (Genç Kızlar Church), Kemsera Kanlı Church, Meryemana Cathedral (Fethiye Mosque), Arak'eeltos Church
- The Silk Road: On the Silk Road route.

B- THERMAL TOURISM: Kötek (Kağızman), Akyaka

C- WINTER TOURISM: Sarıkamış Ski Resort

D- ECO TOURISM
- Photo Safari: Ani Ruins
- Botanical (plant study) tourism: Rural area

E- TOURISM ORIENTED SPORT ACTIVITIES
- Fishing by fishing line: Çengelli Lake (Kağızman), Aygir Lake (Susuz), Sarıkamış
- Tracking: Sarıkamış

12- MALATYA PROVINCE

A- CULTURAL TOURISM
- Ancient Cities: Silahtar Mustafapaşa Caravanserai (Battalgazi-Eski Malatya), Taşhan (Hekimhan), Bedesten (Darende)

B- THERMAL TOURISM: İspendere Hot Spring, Balaban Mineral Waters, Harap şehir Mineral Waters.

C- ECO TOURISM
- Ornithology (bird observation) tourism: Karakaya Dam Lake
- Photo safari: Karakaya Dam Lake
- Cave tourism: Sulu Cave (Doğanşehir)

D- TOURISM ORIENTED SPORT ACTIVITIES
- Diving tourism: Karakaya Dam Lake
- Wind surfing: Karakaya Dam Lake

- Bicycle tours: Nemrut Mountain Eastern side
- Fishing by fishing line: Karakaya Dam Lake
- Tracking: Nemrut Mountain Eastern side
- Tracking with horse: Nemrut Mountain Eastern side

13- MUŞ PROVINCE

A- CULTURAL TOURISM
- Ancient Cities: Varto, Kayaldere ruins.
- The Silk Road: Yıldız Han, Aslanlı Han (Centre)

B- THERMAL TOURISM: Varto, Malazgirt, Bulanık.

C- WINTER TOURISM: Kızıl Ziyaret Hill (Kurtik Mountain), Çizmaklı Burnu, Bağlar Location

D- ECO TOURISM
- Ornithology (bird observation) tourism: Upper Murat River, Yoncalı Surroundings, Hamurpet Lakes (Varto), Haçlı Lake (Bulanık), Kaz Lake (Malazgirt)
- Photo safari: Kaz Lake, Hamurpet Lake
- Botanical (plant study) tourism: Dağlık and Rural area

E- TOURISM ORIENTED SPORT ACTIVITIES
- Akarsa tourism (canoe-rafting): Murat River
- Fishing with fishing line: Hamurpet Akdoğan Lake, Small Hamurpet (Seki) Lake, Haçlı Lake, Kaz Lake.

14- VAN PROVINCE

A- CULTURAL TOURISM
- Ancient Cities: Çavuştepe, Giyimli (Gürpinar), Old Van (Centre), Tilkitepe, İremir Höyük
- Religious tourism: Kaya Çelebi Mosque (Centre), Hüsrevpaşa Mosque (Centre), Çelme Hatun Türbesi (Gevaş), Aliyar Kümbet (Erciş), Aktamar Church (Aktamar Island) Çarpanak Church (Çarpanak Island)
- The Silk Road: On the route

B- THERMAL TOURISM: Defriş ve Dergezin Hot Springs (Muradiye), Doğancı Hot Spring (Erciş), Zereni Hot Spring (Başkale)

C- WINTER TOURISM: Van (Centre) Kurubaş point

D- ECO TOURISM
- Plateau tourism: Norduz Plateau
- Ornithology (bird observation) tourism: Erçek Lake, Van Lake
- Photo safari: Van Lake, Aktamar Island, Muradiye Waterfall
- Botanical (plant study) tourism: Rural area
- Camp-caravan tourism: Van Lake Coastals

E- TOURISM ORIENTED SPORT ACTIVITIES

- Diving tourism: Van Lake
- Wind surfing: Van Lake
- Bicycle tours: Van Lake surroundings
- Fishing by fishing line: Bendimahi Waterfall in the River mounts flowing into Van Lake
- Tracking: Van Lake Bay

F- YOUTH TOURISM: Van Lake Coastal areas

15-TUNCELİ PROVINCE

Inventory not yet prepared

16-BİNGÖL PROVINCE

Inventory not yet prepared

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region

PROVINCE – DISTRICT AND NAME	GROUP	TYPE
AĞRI / CITY CENTER		
Castle Site	Archeologic Site	Archeologic Site
Küpkıran (Harabe Göl) Castle	Military	Castle
Pazi (Eyüp Pasha) Castle	Military	Castle
A.Karahit Village Martyrs Martyrdom	Martyrdom	Martyrdom
Military Martyrdom	Martyrdom	Martyrdom
Airforce Martyrdom	Martyrdom	Martyrdom
Kılıçgedik Martyrdom	Martyrdom	Martyrdom
Münevver and Hünkar Martyrdom	Martyrdom	Martyrdom
AĞRI / DOĞUBEYAZIT		
Kütle	Natural Site	Natural Site
Beyazıt Old Mosque (Gevher Digar Mosque)	Religious	Mosque
Şafi Mosque	Religious	Mosque
Ahmedi Hani Tomb	Cultural	Tomb
İshak Pasha Palace and Complex	Cultural	Complex
Doğubeyazıt Martyrdom	Martyrdom	Martyrdom
AĞRI / DİYADİN		
Tumulus (I.Degree Archeologic Site)	Archeologic Site	Tumulus
Köprü Hot Spring (I.Degree Natural Site)	Natural Site	Natural Site
Yılınlı Hot Spring (II.Degree Natural Site)	Natural Site	Natural Site
Davut Hot Spring (I. Degree Natural Site)	Natural Site	Natural Site
Avnik Castle	Military	Castle
Diyadin Castle	Military	Castle
Kuje Castle	Military	Castle
Tokluca Castle	Military	Castle
Maya Cave	Cave	Cave
Dambat Hot Spring and Mineral Water	Hot Spring	Hot Spring
Diyadin Hot Spring	Hot Spring	Hot Spring
Diyadin Martyrdom	Martyrdom	Martyrdom
AĞRI / ELEŞKİRT		
Tumulus (3. Degree Archeologic Site Area)	Archeologic Site	Tumulus
Toprakkale Mosque	Religious	Mosque
Toprakkale Castle	Military	Castle
Tahir Passage Martyrdom	Martyrdom	Martyrdom
AĞRI / HAMUR		
Hamur (Havaran) Castle	Military	Castle
Kız Castle	Military	Castle
Şoşik Castle	Military	Castle
Sürmeli Mehmet Pasha Tomb	Cultural	Tomb
Hamur Kümbet	Cultural	Kümbet
AĞRI / PATNOS		
Anzavur Hill	Natural	Hill
Giriktepe Tumulus	Archeologic Site	Tumulus
Üç Kümbets	Cultural	Kümbet
AĞRI / TAŞLIÇAY		
Üç Church	Religious	Church
Kızıl Ziyaret Ruins	Cultural	Ruins
AĞRI / TUTAK		
Castles	Military	Castle
Kan Castle	Military	Castle
Zencir Castle	Military	Castle
Karagöz Church	Religious	Church
Damlakaya Village Martyrdom	Martyrdom	Martyrdom

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
ARDAHAN / CITY CENTER		
Castle Site	Archeologic Site	Archeologic Site
Kozan Castle and Around (I.Degree Historic Site Area)	Historic Site	Castle
Karadağ Hill Natural Site	Natural Site	Hill
Kunzut Tower (I.Degree Archeologic Site Area)	Archeologic Site	Tower
Ruins (I. Degree Archeologic Site Area)	Archeologic Site	Ruins
Osmanlı Castle	Military	Castle
ARDAHAN / ÇILDIR		
Akçakale Island (Archeologic + Natural Site Area)	Natural Site Areas	Island, Archeologic and Natural Site
Akçakale	Military	Castle
Karakale	Military	Castle
Kurtkale	Military	Castle
Şeytan Castle	Military	Castle
Church	Religious	Church
ARDAHAN / GÖLE		
Göle Castle	Military	Castle
ARDAHAN / HANAK		
Baltalı Mosque, Beşik Horasan Location Caves (Site Area)	Natural Site	Cave
Kırrav Castle And Around I. Degree Historic Site Area	Historic Site	Castle
Hanak Castle	Religious	Church
Hanak Church	Religious	Church
BAYBURT / CITY CENTER		
Yazıbaşı Tumulus	Archeologic Site	Tumulus
Çorakköy Tumulus	Archeologic Site	Tumulus
Kitre Tumulus	Archeologic Site	Tumulus
Söğütlü Tumulus	Archeologic Site	Tumulus
Tepecik Tumulus	Archeologic Site	Tumulus
Akşar Tumulus (3. Degree Archeologic Site)	Archeologic Site	Tumulus
Kayalık Hill and Water Area (2. Degree Natural Site Area)	Natural Site	Natural Site
Ammonikito Rosso Fasiye (Fasils) (I. Degree Natural Site Area)	Natural Site	Fasil
Çatalçeşme Village Mosque	Religious	Mosque
Konursu Mosque	Religious	Mosque
Pulur Mosque	Religious	Mosque
Ulu Mosque	Religious	Mosque
Bayburt Castle	Military	Castle
Kitre Castle	Military	Castle
Pulur Madrasah	Cultural	Madrasah
Bayburt Castle Church	Religious	Church
Ermeni Church	Religious	Church
Ahi Emir Ahmet Fendi Kümbet	Cultural	Kümbet
Seyyid-i Mahmud Çaldıran Baba Kümbet	Cultural	Kümbet
Sad Büş-Şeria Tomb	Cultural	Tomb
Şeyh Hayran Tomb	Cultural	Tomb
Paşa Oğulları –Kondolots- Galeri Turkish Bath	Cultural	Turkish Bath
Bend Turkish Bath	Cultural	Turkish Bath
Meydan – Çarşı Turkish Bath	Cultural	Turkish Bath
Hafizağa Fountain	Cultural	Fountain
Konursu Fountain	Cultural	Fountain
Paşaoğlu Fountain	Cultural	Fountain
Veysel Efendi Mosque Fountain	Cultural	Fountain

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Balkaymak Bridge	Cultural	Bridge
Korgan Bridge	Cultural	Bridge
Alibaba Martyrdom	Martyrdom	Martyrdom
Çavuş Şehit Osman Martyrdom	Martyrdom	Martyrdom
Garnizon Martyrdom	Martyrdom	Martyrdom
İmaret Hill Martyrdom	Martyrdom	Martyrdom
Army Sub-officers House	Civil Architecture Example	Civil Architecture Example
Government Building	Civil Architecture Example	Civil Architecture Example
Headquarters Building I-II.	Civil Architecture Example	Civil Architecture Example
Madrak Police Station	Civil Architecture Example	Civil Architecture Example
Ziraat Bank Building	Civil Architecture Example	Civil Architecture Example
House and Other (28 Units)	Civil Architecture Example	Civil Architecture Example
Çorak Köy Tumulus	Cultural	Tumulus
Söğütlü Tumulus	Cultural	Tumulus
Tecik – Tepecik Tumulus	Cultural	Tumulus
Yazıbaşı Tumulus	Cultural	Tumulus
Kitre Tumulus	Cultural	Tumulus
BAYBURT / AYDINTEPE		
Underground City	Cultural	Underground City
BAYBURT / DEMİRÖZÜ		
Mülhak Hacı Ferahşad Mosque	Religious	Mosque
Bayram Pasha Castle	Military	Castle
Anonymous Kümbet	Cultural	Kümbet
BİNGÖL / CITY CENTER		
Castle Ruins (Archeologic Site)	Archeologic Site	Castle Ruins
Sebeteris Castle	Military	Castle
Selene Bridge	Cultural	Bridge
BİNGÖL / GENÇ		
Kral Kızı Castle	Military	Castle
BİNGÖL / KİĞI		
Şeyh Hacı Yusuf Tomb	Cultural	Tomb
BİTLİS / CITY CENTER		
Urban 3. Degree Natural (I.Degree Archeologic Site Area)	Natural Site Areas	Urban + Natural + Archeologic Site
Alendar Mosque	Religious	Mosque
Ayn-El Barit Mosque	Religious	C Ami
Beğiye Small Mosque	Religious	Mosque
Çarşı Mosque	Religious	Mosque
Dört Sandık Mosque	Religious	Mosque
Gazi Bey Mosque	Religious	Mosque
Gökmeydan Mosque	Religious	Mosque
Kale Altı Small Mosque	Religious	Mosque
Kızıl Mosque	Religious	Mosque
Kureyşi Mosque	Religious	Mosque
Memi Dede Small Mosque	Religious	Mosque
Mermutlu Mosque	Religious	Mosque
Seydi İbrahim Small Mosque	Religious	Mosque
Sultaniye Mosque	Religious	Mosque

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Şerefiye Mosque	Religious	Mosque
Şeyh Galip Mosque	Religious	Mosque
Şeyh Hasan Mosque	Religious	Mosque
Şeyh İshak Mosque	Religious	Mosque
Taş Small Mosque	Religious	Mosque
Ulu Mosque	Religious	Mosque
Hatibiye Madrasah	Cultural	Madrasah
İhlasiye Madrasah	Cultural	Madrasah
Nuhiye Madrasah	Cultural	Madrasah
Şerefiye Madrasah	Cultural	Madrasah
Yusufiye Madrasah	Cultural	Madrasah
Çıplak Baba Tomb	Cultural	Tomb
Ensari Tomb	Cultural	Tomb
Hacı Yusuf Tomb	Cultural	Tomb
Hoca Hasan Zaviye and Tomb	Cultural	Tomb
İhlasiye Madrasah Nearby Ruins	Cultural	Ruins
II. Şerefhan Tomb	Cultural	Tomb
Kara Baba Tomb	Cultural	Tomb
Küfrevi Tomb	Cultural	Tomb
Memi Dede Tomb	Cultural	Tomb
Nuhiye Tomb	Cultural	Tomb
Saidiye Tomb	Cultural	Tomb
Seyyid İbrahim Tomb	Cultural	Tomb
Martyrdom Tomb	Cultural	Tomb
Şerefiye İmareti	Cultural	Tomb
Şerefiye Tomb	Cultural	Tomb
Şeyh Garip Tomb and Zaviye	Cultural	Tomb
Şeyh Tahir-i Gürgi Tomb	Cultural	Tomb
Şeyh Üryani Mahmut Tomb	Cultural	Tomb
Üç Bacılar Tomb	Cultural	Tomb
Veli Şemseddin Tomb	Cultural	Tomb
Ziyaeddin Han Tomb	Cultural	Tomb
Çıktabur Fountain	Cultural	Fountain
Han Fountain	Cultural	Fountain
Şeyh Tahir-i Gürgi Fountain	Cultural	Fountain
Sinan Bulak Fountain	Cultural	Fountain
Anonymous Inn	Cultural	Inn
Babşin Inn	Cultural	Inn
Başhan	Cultural	Inn
Duhan	Cultural	Inn
El –Aman (Rahva) Inn	Cultural	Inn
Eski Arasta Inn	Cultural	Inn
Hoza Inn	Cultural	Inn
Küfündür Inn	Cultural	Inn
Şehir (Tahir Ağa) Inn	Cultural	Inn
Han Turkish Bath	Cultural	Turkish Bath
Hüsrevpaşa Turkish Bath	Cultural	Turkish Bath
Pasha Turkish Bath	Cultural	Turkish Bath
Şerefhan Turkish Bath	Cultural	Turkish Bath
Bitlis Castle	Military	Castle
Ağacık Bridge	Cultural	Bridge
Alemdar Bridge	Cultural	Bridge
Arap Bridge	Cultural	Bridge
Gazi Bey Bridge	Cultural	Bridge

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Germik Bridge	Cultural	Bridge
Hatuniye Bridge	Cultural	Bridge
Hüsrev Pasha Bridge	Cultural	Bridge
İskender Ağa Bridge	Cultural	Bridge
Keşiş Bridge	Cultural	Bridge
Kışla Bridge	Cultural	Bridge
Bridge (Nearby Hoza Inn)	Cultural	Bridge
Menteşoğlu Bridge	Cultural	Bridge
Mumhane Bridge	Cultural	Bridge
Nemrutlu Bridge	Cultural	Bridge
Obus Bridge	Cultural	Bridge
Pamuk Pazarı Bridge	Cultural	Bridge
Şolik (Şum) Bridge	Cultural	Bridge
Civil Architecture House Examples (200 Units)	Civil Architecture Example	House
BİTLİS / ADİLCEVAZ		
Eski Mosque (Ulu Mosque)	Religious	Mosque
Zalpaşa Mosque	Religious	Mosque
Akcayuva Kümbet	Cultural	Kümbet
Adilcevaz Castle	Military	Castle
Kef Castle	Military	Castle
Kohoz (Zalpaşa) Inn	Cultural	Inn
BİTLİS / AHLAT		
Archeologic Historic Urban Site Area	Other Site Areas	Archeologic + Historic + Urban Site Area
Nekropol Area (I.Degree Archeologic Site Area)	Archeologic Site	Netropol
Ahlat Castle (Citadel)	Military	Castle
Selçuklu Castle	Military	Castle
Ahlat Ulu Mosque	Religious	Mosque
Emir Bayındır Mosque	Religious	Mosque
İskender Pasha Mosque	Religious	Mosque
İskender Pasha Mosque Nearby Entry Gate and Tablets	Religious	Mosque
Kadı Mahmut Mosque	Religious	Mosque
Dede Maksut Tomb	Cultural	Tomb
Erzen Hatun Tomb	Cultural	Tomb
Hasan Pasha Tomb	Cultural	Tomb
Mirza Muhammed Tomb	Cultural	Tomb
Şeyh Necmeddin Tomb	Cultural	Tomb
Abdurrahman Gazi Kümbet	Cultural	Kümbet
Alimoğlu Kümbet	Cultural	Kümbet
Anonymous Kümbet	Cultural	Kümbet
Emir Ali Kümbet	Cultural	Kümbet
Emir Bayındır Kümbet	Cultural	Kümbet
Erzen Hatun Kümbet	Cultural	Kümbet
Hasan Padişah Kümbet	Cultural	Kümbet
Hüseyin Timur Esen Tekin Kümbet	Cultural	Kümbet
Keşiş Kümbet	Cultural	Kümbet
Kitabesiz Kümbet	Cultural	Kümbet
Şirin Hatun Boğatay Ata Kümbet	Cultural	Kümbet
Usta Şakirt Kümbet	Cultural	Kümbet
Yarım Kümbet (Nearby Hasan Padişah)	Cultural	Kümbet
Sultan Hava-I Fountain	Cultural	Fountain

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Ahlat Graveyard (Meydan Graveyard)	Graveyard	Graveyard
Ahlat Museum Garden	Museum	Museum
Historic Graveyard Nearby Hasan Padişah Kümbet	Graveyard	Graveyard
Meydan Graveyard (Akitlar)	Graveyard	Graveyard
Meydan Graveyard (Zaviye)	Graveyard	Graveyard
Bezirhane Gate	Cultural	Gate
Çifte Turkish Bath	Cultural	Turkish Bath
Turkish Bath Ruins (Old Ahlat)	Cultural	Turkish Bath
İskender Pasha Turkish Bath	Cultural	Turkish Bath
Selçuklu Turkish Bath	Cultural	Turkish Bath
Emir Bayındır Bridge	Cultural	Bridge
House Examples from Civil Architecture (50 Units)	Civil Architecture Example	House
BİTLİS / GÜROYMAK		
Haydar Bey Mosque	Religious	Mosque
Aşağı Kolbaşı Village Historic Graveyard	Graveyard	Graveyard
Norşin Kümbet and Graveyard	Graveyard	Graveyard
Çukur Hot Springs	Hot Spring	Hot Spring
BİTLİS / HİZAN		
Nefs-i Hizan Castle	Military	Castle
BİTLİS / MUTKİ		
İkizler Village Church	Religious	Church
BİTLİS / TATVAN		
Şahmiran Inn Mosque	Religious	Mosque
Şeyh Hasan Mosque	Religious	Mosque
Tokaçlı Village Mosque	Religious	Mosque
Eleman Inn	Cultural	Inn
ELAZIĞ / CITY CENTER		
Historic Urban Site Area	Other Site Areas	Historic Site Urban
Hanoğlu Tumulus	Archeologic Site	Tumulus
Yılanlı Island (I.Degree Natural Site)	Natural Site	Island
Archeologic and Natural Site Area (I.Degree)	Natural Site Areas	Island Archeologic and Natural Site Area
Natural Site Area (2.Degree) Hazar Lake	Natural Site	Natural Site
Killiktepe Tumulus (I. Degree Archeologic Site Area)	Archeologic Site	Tumulus
Değirmendüzü Tumulus (I. Degree Archeologic Site)	Archeologic Site	Tumulus
Seli Village Tumulus	Archeologic Site	Tumulus
I.Degree Archeologic Site Area	Archeologic Site	Archeologic Site
Buzluk Cave Natural Site Area	Natural Site	Cave
Örençay, Hintsar Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Tadım Tumulus (II.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Tadım Tumulus Castle (I.Degree Archeologic Site Area)	Archeologic Site	Castle
Hanoğlu Castle	Military	Castle
Tadım Tumulus Castle	Military	Castle
Genefik Castle	Military	Castle
İzzet Pasha Mosque	Religious	Mosque
Ulu Mosque Fountain	Cultural	Fountain
Sarahatun Fountain	Cultural	Fountain

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Alaaddin Bey Fountain	Cultural	Fountain
Yarı Çavuş Fountain	Cultural	Fountain
Kurşunlu Mosque Fountain	Cultural	Fountain
Zeynep Fountain	Cultural	Fountain
İmam Efendi Tomb	Cultural	Tomb
Fatih Ahmet Baba Tomb	Cultural	Tomb
Hırkalı Baba Tomb	Cultural	Tomb
Ankuzu Baba Tomb	Cultural	Tomb
Ahi Musa Tomb	Cultural	Tomb
Kızıl Turkish Bath	Cultural	Turkish Bath
Municipality House	Civil Architecture Example	House
Storage Building	Civil Architecture Example	Building
Old Public Building	Civil Architecture Example	Building
Government Building	Civil Architecture Example	Building
Civil Architecture House Examples (8 Units)	Civil Architecture Example	House
İcadiye Area Martyrdom	Martyrdom	Martyrdom
Değirmen Düzü Tumulus	Cultural	Tumulus
Killik (Tilek) Tepe Tumulus	Cultural	Tumulus
Orençay (Hintsor) Tumuluses	Cultural	Tumulus
Seli (Dilek) Village Tumulus	Cultural	Tumulus
Tadım Tumulus	Cultural	Tumulus
Buzluk Cave	Cave	Cave
ELAZIĞ / BASKİL		
Barsik Castle	Military	Castle
Katır Inn	Cultural	Inn
Ahmet Yesevi Tomb	Cultural	Tomb
Teslim Abdal Tomb	Cultural	Tomb
Derviş Ali Tomb	Cultural	Tomb
ELAZIĞ / PALU		
Tegre Bridge	Cultural	Höyül
ELAZIĞ / MADEN		
Tumulus (I.Degree Archeologic Site)	Archeologic Site	Tumulus
Historic Church	Religious	Church
ELAZIĞ / KOVANCILAR		
Çınaz II. Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Çınaz III. Tumulus (I.Degree Archeologic Site Area	Archeologic Site	Tumulus
Hoşmat Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Sekarat Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Hoşmat (Çakirtaş) Church	Religious	Church
Çinaz II. (Sigan) Tumulus	Cultural	Tumulus
Haşmat Tumulus	Cultural	Tumulus

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Sakarat Tumulus	Cultural	Tumulus
ELAZIĞ / HARPUT		
Ağa Mosque	Religious	Mosque
Ahi Musa Small Mosque and Tomb	Religious	Mosque
Ahmet Bey Mosque	Religious	Mosque
Alacalı Small Mosque	Religious	Mosque
Arap Baba Small Mosque and Tomb	Religious	Mosque
Esediye Mosque and Turkish Bath	Religious	Mosque
Fetih Ahmed Baba Small Mosque and Tomb	Religious	Mosque
Kale Mosque (Small Mosque)	Religious	Mosque
Kurşunlu Mosque	Religious	Mosque
Meydan Mosque	Religious	Mosque
Sara Hatun Mosque	Religious	Mosque
Tabakhane Small Mosque and Hot Spring	Religious	Mosque
Ulu Mosque	Religious	Mosque
Harput (Citadel) Castle and Mint	Military	Castle
Harput Castle	Military	Castle
Anonymous Tomb	Cultural	Tomb
Mansur Baba Tomb	Cultural	Tomb
Murat Baba Tomb	Cultural	Tomb
Nadir Baba Tomb	Cultural	Tomb
Seyit Ahmet Tomb = Zahir Baba Sanctuary	Cultural	Tomb
Tayir Baba Tomb	Cultural	Tomb
Urgan Baba Tomb	Cultural	Tomb
Beşikli Baba Tomb	Cultural	Tomb
Hulven Village Supkevork Monastry (Sağır Monastry)	Religious	Church
Church	Religious	Church
Kızıl Church	Religious	Church
Meryem Ana Church	Religious	Church
Cemşit (Cimşit) Turkish Bath	Cultural	Turkish Bath
Dere Turkish Bath	Cultural	Turkish Bath
Hoca Turkish Bath	Cultural	Turkish Bath
Kale Turkish Bath	Cultural	Turkish Bath
Yeni Turkish Bath	Cultural	Turkish Bath
Nearby Meydan Mosque Fountain	Cultural	Fountain
Üç Lüleli Fountain	Cultural	Fountain
Harput Civil Architecture Examples	Civil Architecture Example	Civil Architecture Example
Building Over Tannery (Harput)	Civil Architecture Example	Civil Architecture Example
ELAZIĞ / İZOLU		
IV. Murat Inn (Kömürhan)	Cultural	Inn
Kömürhan Bridge	Cultural	Bridge
Muşar Castle	Military	Castle
Şeyh Haşin Tomb and Small Mosque	Cultural	Tomb
Urartu Rock Tablets	Cultural	Tablet
ELAZIĞ / KARAKOÇAN		
Bağın Castle	Military	Castle
ELAZIĞ / KEBAN		
Cave (Natural Site Area)	Natural Site	Cave
Yusuf Ziya Pasha Mosque and Complex	Religious	Mosque
Tomb of Yusuf Ziya Pasha's Daugther	Cultural	Tomb

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
ELAZIĞ / PALU		
Alacalı Small Mosque	Religious	Mosque
Cemşit Bey Small Mosque and Tomb	Religious	Mosque
Küçük Mosque (Old Palu)	Religious	Mosque
Merkez Mosque	Religious	Mosque
Ulu Mosque (Old Palu)	Religious	Mosque
Bridge (Old Palu)	Cultural	Bridge
Castle (Old Palu)	Military	Castle
Church (Old Palu)	Religious	Church
Turkish Bath (Old Palu)	Cultural	Turkish Bath
ERZİNCAN / CITY CENTER		
Kalecik Hill Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Elma Ağacı Tumulus (I. Degree Archeologic Site)	Archeologic Site	Tumulus
Waterfall	Natural Site	Waterfall
Saha (II. Degree Archeologic Site Area)	Archeologic Site	Archeologic Site
Altintepe Ruins (I.Degree Archeologic Site Area)	Archeologic Site	Ruins
II. Degree Archeologic Site Area	Archeologic Site	Archeologic Site
Prayer Site (Mihrab)	Religious	Mosque
Hacı Mahinur Mosque	Religious Mosque	
Altıntepe	Military	Castle
Erzincan Castle	Military	Castle
Pekeriç (Bogayaristen) Castle	Military	Castle
Şirinli Castle	Military	Castle
Bey (Pasha) Turkish Bath	Cultural	Turkish Bath
Çadırcı Turkish Bath	Cultural	Turkish Bath
Ermeni Turkish Bath	Cultural	Turkish Bath
İzzet Pasha Turkish Bath	Cultural	Turkish Bath
Nafiz Pasha Turkish Bath	Cultural	Turkish Bath
Second Alaeddin Keykubat Tomb	Cultural	Tomb
Kümbet Baba	Cultural	Tomb
Hacı Nafiz Tomb	Cultural	Tomb
Terzi Baba Tomb	Cultural	Tomb
Acemoğlu I Bridge	Cultural	Bridge
Çarşuluk Bridge	Cultural	Bridge
Gani Zade Fountain	Cultural	Fountain
Municipality Building	Civil Architecture Example	Civil Architecture Example
Government Building	Civil Architecture Example	Civil Architecture Example
Train Station Building	Civil Architecture Example	Civil Architecture Example
3. Army Martyrdom	Martyrdom	Martyrdom
Elma Ağacı Tumulus	Cultural	Tumulus
Kalecik Hill Tumulus	Cultural	Tumulus
ERZİNCAN / AKYAZI		
Sastepe Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Sastepe Tumulus	Cultural	Tumulus
ERZİNCAN / KEMALİYE		
Dörtyol Mosque	Religious	Mosque
Eski Mosque	Religious	Mosque
Kurt Gilin Mosque	Religious	Mosque
Orta Mosque	Religious	Mosque
Tahta Mosque	Religious	Mosque
Taşlıbel Mosque	Religious	Mosque
Ulu Mosque	Religious	Mosque
(Eğin) Harap Pazur Arsanias Ruins	Cultural	Ruins
Akşehir Ruins	Cultural	Ruins
Haskel (Gecegi) Ruins	Cultural	Ruins
Pingan Ruins	Cultural	Ruins
Pingan Ruins	Cultural	Ruins
Samuka Ruins	Cultural	Ruins
Samuka Ruins	Cultural	Ruins
Topkapı Ruins	Cultural	Ruins
Enciti Castle	Military	Castle
Kız Castle	Military	Castle
Topkapı Castle	Military	Castle
Hıdır Abdal Tomb	Cultural	Tomb
Çaybağları Bridge	Cultural	Bridge
Kozlupınar Bridge	Cultural	Bridge
Çakırtaş Church	Religious	Church
Çalurtaş Church	Religious	Church
Gerusla Church	Religious	Church
Kız Castle	Religious	Church
Roma Tomb	Graveyard	Graveyard
Arnavutun Inn	Cultural	Inn
ERZİNCAN KEMAH		
Historic-Urban Site Area	Other Site Areas	Historic+Urban Site
Kömürköy Archeologic Site Area (3.Degree)	Archeologic Site	Archeologic Site
Aşağıgedik Mosque	Religious	Mosque
Gülabi Bey Mosque	Religious	Mosque
Gülabi Bey Turkish Bath	Cultural	Turkish Bath
Observatory Tower	Military	Tower
Kemah Castle	Military	Castle
Ali Baba Tomb	Cultural	Tomb
Behram Şah Tomb	Cultural	Tomb
Anonymous Tomb	Cultural	Tomb
Gözcü Baba Tomb	Cultural	Tomb
İskender Baba Tomb	Cultural	Tomb
Kalem Yakup Tomb	Cultural	Tomb
Midilli Baba Tomb	Cultural	Tomb
Sancaktar Tomb	Cultural	Tomb
Sultan Melik Tomb and Zaviye	Cultural	Tomb
A Kümbet in Ruins (in Killiç Stream)	Cultural	Kümbet
Teşgeban (Taş Keban) Kümbet	Cultural	Kümbet
Tugay-Tuvay Hatun Kümbet	Cultural	Kümbet
İsa Voriç (Vank'i) Church	Religious	Church
Meryem Ana Church	Religious	Church
Taş Dibi Church	Religious	Church
Pazar Yeri Fountain	Cultural	Fountain

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
ERZİNCAN / ÜZÜMLÜ		
Kildirik Hill Tumulus	Archeologic Site	Tumulus
Kildirik Hill Tumulus	Cultural	Tumulus
ERZİNCAN / REFAHİYE		
Çengerli Village Castle and Around (II.Degree Archeologic Site Area)	Archeologic Site	Archeologic Site
Tombul Hill (Archeologic Site)	Archeologic Site	Tumulus
Graveyard (Historic Site)	Historic Site	Graveyard
Hasanlı Tumulus and Hill (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Hasanlı Tumulus	Cultural	Tumulus
ERZİNCAN / TERCAN		
3.Degree Archeologic Site Area	Archeologic Site	Archeologic Site
Historic Urban Site Area	Other Site Areas	Historic+Urban Site
Şirinlikale (I.Degree Archeologic Site Area)	Archeologic Site	Castle
Üçpınar Village Church Related Structures, Erected Stones (I.Degree Archeologic Site Area)	Archeologic Site	Archeologic Site
Castle and Immovables Around (I.Degree Archeologic Site Area)	Archeologic Site	Castle
Hacı Bektaş Balım Sultan Tomb	Cultural	Tomb
Mama Hatun Tomb	Cultural	Tomb
Ulu Mosque	Religious	Mosque
Castle	Military	Castle
Şirinli Castle	Military	Castle
Mama Hatun Turkish Bath	Cultural	Turkish Bath
Üçpınar Village Church	Religious	Church
Kervan Palace	Cultural	Palace
Kötür Bridge	Cultural	Bridge
Kıroğ Ruins	Cultural	Ruins
February 17 Martyrdom	Martyrdom	Martyrdom
ERZİNCAN REFAHİYE		
Seyin Sinan Hirabekir Sanctuary and Kalecik Castle	Military	Castle
Çengerli Village Castle	Military	Castle
Sinoria (Sineryas) Ruins	Cultural	Ruins
Subalis Ruins	Cultural	Ruins
ERZİNCAN / ILIÇ		
Zinegar (Zimera) Ruins	Cultural	Ruins
Karabaş Church	Religious	Church
ERZİNCAN / ÇAYIRLI		
Castle (I.Degree Archeologic Site Area)	Archeologic Site	Castle
Gelengeç Salmalassus Ruins	Cultural	Ruins
Civil Architecture Example From Yayla Kent Village	Civil Architecture Example	Civil Architecture Example
Başköy Graveyard	Graveyard	Graveyard
ERZURUM / CITY CENTER		
Karaz Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Pulur Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Cinis Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Sos Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Urban Site Area	Urban Site	Urban Site
2. Degree Natural Site Area	Natural Site	Lake

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Balıklı Göl (II. Degree Natural Site Area)	Natural Site	Lake
Erzurum Castle	Archeologic Site	Castle
Güzelova Tumulus (I.Degree Archeologic Site)	Archeologic Site	Tumulus
Erzurum Castle and Clock Tower	Military	Castle
İstanbul Gate	Cultural	Gate
İstasyon Gate	Cultural	Gate
Kars Gate	Cultural	Gate
Kavak Gate	Cultural	Gate
Ali Pasha Mosque and Fountain	Religious	Mosque
Aşağı Habib Efendi Mosque	Religious	Mosque
Aşağı Mumcu Mosque	Religious	Mosque
Ayas Pasha Mosque	Religious	Mosque
Bakırcı Mosque	Religious	Mosque
Boyahane Mosque	Religious	Mosque
Caferiye Mosque	Religious	Mosque
Cedit Mosque	Religious	Mosque
Cennetzade Mosque	Religious	Mosque
Çırçır Mosque	Religious	Mosque
Çortan II Small Mosque	Religious	Mosque
Dere Mosque	Religious	Mosque
Derviş Ağa Mosque	Religious	Mosque
Emir Şeyh Mosque	Religious	Mosque
Erzurum (Atabey) Ulu Mosque	Religious	Mosque
Erzurum İç Kale Small Mosque	Religious	Mosque
Esat Pasha Mosque	Religious	Mosque
Gez Neighborhood Mosque	Religious	Mosque
Gümrük (Hacı Derviş) Mosque	Religious	Mosque
Gürcü Gate (Ali Ağa) Mosque	Religious	Mosque
Gürcü Mehmet Pasha Mosque	Religious	Mosque
Hacı Cuma Mosque	Religious	Mosque
İbrahim Pasha Mosque	Religious	Mosque
İhmal (Topçuoğlu) Mosque	Religious	Mosque
Kabe Small Mosque (From A.Uluçam Archive)	Religious	Mosque
Kabe Small Mosque	Religious	Mosque
Kadana Mosque	Religious	Mosque
Karaköse Mosque	Religious	Mosque
Kasım Pasha Mosque	Religious	Mosque
Kavaklar Mosque	Religious	Mosque
Kemhan Mosque	Religious	Mosque
Kırmızı Mosque (not exists)	Religious	Mosque
Köse Ömer Ağa Mosque	Religious	Mosque
Kundakçı Mosque (not exists)	Religious	Mosque
Kurşunlu (Feyziye) Mosque	Religious	Mosque
Lala Mustafa Pasha Mosque and Fountain	Religious	Mosque
Mahmudiye Mosque (not exists)	Religious	Mosque
Mehdi Efendi (Sivircik) Mosque	Religious	Mosque
Merkez Mosque	Religious	Mosque
Molla Kaya Mosque	Religious	Mosque
Murat Pasha Mosque	Religious	Mosque
Narmanlı Mosque	Religious	Mosque
Osman Efendi Mosque (not exists)	Religious	Mosque
Pervizoğlu Mosque	Religious	Mosque
Şafiler Mosque	Religious	Mosque
Salihiye Mosque	Religious	Mosque

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE – DISTRICT AND NAME	GROUP	TYPE
Şabahhane (Şerefiler) Mosque	Religious	Mosque
Şeyhler Mosque	Religious	Mosque
Tahta Mosque	Religious	Mosque
Taş (Karakulfukçu) Mosque	Religious	Mosque
Taş Small Mosque	Religious	Mosque
Tophane Small Mosque	Religious	Mosque
Vani Efendi (Kel Hacı) Mosque	Religious	Mosque
Veysi Efendi Mosque	Religious	Mosque
Yeğenağa Mosque	Religious	Mosque
Yukarı Habib Efendi Mosque	Religious	Mosque
Yukarı Mumcu Mosque	Religious	Mosque
Zeynel Mosque	Religious	Mosque
Altınbulak (Tivnik) Village Prayer Site	Religious	Mosque
1- Ahmediye Madrasah	Cultural	Madrasah
Çifte Minareli (Two Minarets) Madrasah	Cultural	Madrasah
Kurşunlu (Fevziye) Madrasah	Cultural	Madrasah
Lala Mustafa Pasha School	Cultural	Madrasah
Pervizoğlu Madrasah	Cultural	Madrasah
Sultaniye Madrasah	Cultural	Madrasah
Şeyhler Madrasah	Cultural	Madrasah
Yakutiye Madrasah	Cultural	Madrasah
Cimcime Sultan Kümbet	Cultural	Kümbet
Çifte Minareli (Two Minarets) Madrasah Kümbet	Cultural	Kümbet
Gümüşlü Kümbet	Cultural	Kümbet
Karanlık Kümbet (Sadrettin Baba)	Cultural	Kümbet
Mehdi Abbas Kümbet	Cultural	Kümbet
Üç Kümbet (A-Emir Saltuk, B-II. Kümbet, C-III. Kümbet)	Cultural	Kümbet
Abdurrahman Gazi Tomb and Mosque	Cultural	Tomb
Ahi Baba Tomb	Cultural	Tomb
Anne Hatun Tomb	Cultural	Tomb
Derviş Ağa Tomb	Cultural	Tomb
Ebu İshak Kaziruni Tomb	Cultural	Tomb
Emir Şeyh Tomb	Cultural	Tomb
Habib Baba Tomb	Cultural	Tomb
Hasan Basri Tomb	Cultural	Tomb
Mahmut Pasha Tomb	Cultural	Tomb
Rabia Hatun Tomb	Cultural	Tomb
Mehdi Abbas Tomb	Cultural	Tomb
Zahide Hanım Tomb	Cultural	Tomb
Ali Ravi (Yoncalık) Turkish Bath	Cultural	Turkish Bath
Askeriye (Military) Turkish Bath	Cultural	Turkish Bath
Boyahane Turkish Bath	Cultural	Turkish Bath
Çifte Göbek Turkish Bath	Cultural	Turkish Bath
Gümrük Turkish Bath	Cultural	Turkish Bath
Gürcü Turkish Bath	Cultural	Turkish Bath
Hanım (Numune) Turkish Bath	Cultural	Turkish Bath
Kırk Çeşme Turkish Bath and Fountain	Cultural	Turkish Bath
Küçük Turkish Bath	Cultural	Turkish Bath
Lala Pasha (Çöplük) Turkish Bath	Cultural	Turkish Bath
Murat Pasha Turkish Bath	Hültürel	Turkish Bath
Pastırmacı (Fuadiye) Turkish Bath	Cultural	Turkish Bath
Palace Turkish Bath	Cultural	Turkish Bath
Şeyhler Turkish Bath	Cultural	Turkish Bath

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Tahta Turkish Bath	Cultural	Turkish Bath
Akpınar Fountain	Cultural	Fountain
Bican Fountain	Cultural	Fountain
Caferağa Fountain	Cultural	Fountain
Cennet Fountain	Cultural	Fountain
Çeteci Abdullah Fountain	Cultural	Fountain
Dabahane Fountain	Cultural	Fountain
Emir Şeyh Fountain	Cultural	Fountain
Gümüş Göz Fountain	Cultural	Fountain
Gürcü Gate (Ali Ağa) Fountain	Cultural	Fountain
Gürcü Mehmet Pasha Fountain	Cultural	Fountain
Hacı Dede Ağa Fountain	Cultural	Fountain
Hacı Mehmet Fountain	Cultural	Fountain
Hafız Pasha Fountain	Cultural	Fountain
Hüseyin Fountain	Cultural	Fountain
İbrahim Pasha (Dört Güllü) Fountain	Cultural	Fountain
İsmail Ağa Fountain	Cultural	Fountain
Kale Fountain	Cultural	Fountain
Kırmızı Fountain	Cultural	Fountain
Mehmet Kethuda Fountain	Cultural	Fountain
Narmanlı Mosque Fountain	Cultural	Fountain
Palandöken Avenue Fountain	Cultural	Fountain
Seyfullah Efendi Fountain	Cultural	Fountain
Sivircik Fountain	Cultural	Fountain
Şabahhane Fountain	Cultural	Fountain
Şafiler Mosque Fountain	Cultural	Fountain
Yazıcızade Fountain	Cultural	Fountain
Cennetzade Inn	Cultural	Inn
Gümrük Inn	Cultural	Inn
Hacılar Inn	Cultural	Inn
Kanburoğlu Inn	Cultural	Inn
Rüstem Pasha Inn (Taşhan)	Cultural	Inn
Adliye Palace (Courtroom)	Civil Architecture Example	Civil Architecture Example
Atatürk House (Museum)	Civil Architecture Example	Civil Architecture Example
Atatürk Civil Works Vocational High School	Civil Architecture Example	Civil Architecture Example
Erzurum Government Building	Civil Architecture Example	Civil Architecture Example
Erzurum High School	Civil Architecture Example	Civil Architecture Example
İsmet Pasha Elementary School	Civil Architecture Example	Civil Architecture Example
Köşk Building	Civil Architecture Example	Civil Architecture Example

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Levazım Amirliği (Procurement Office) Building (Stone Storage)	Civil Architecture Example	Civil Architecture Example
Marshall Fevzi Çakmak Hospital	Civil Architecture Example	Civil Architecture Example
Ene Hatun Girl's High School	Civil Architecture Example	Civil Architecture Example
Numune Hospital	Civil Architecture Example	Civil Architecture Example
Protected Emplacements (Tabyalar)	Civil Architecture Example	Civil Architecture Example
a-Ağzı Açık	Civil Architecture Example	Civil Architecture Example
b-Ahali	Civil Architecture Example	Civil Architecture Example
c-Aziziye	Civil Architecture Example	Civil Architecture Example
d- Büyük Tumulus	Civil Architecture Example	Civil Architecture Example
e- Büyük Kiremitlik	Civil Architecture Example	Civil Architecture Example
f- Büyük Palandöken	Civil Architecture Example	Civil Architecture Example
g-Çobandere	Civil Architecture Example	Civil Architecture Example
h-Dolangez	Civil Architecture Example	Civil Architecture Example
ı- Gez	Civil Architecture Example	Civil Architecture Example
i- İlave Tabya	Civil Architecture Example	Civil Architecture Example
j- Kara Göbek	Civil Architecture Example	Civil Architecture Example
k-Küçük Tumulus	Civil Architecture Example	Civil Architecture Example
l- Küçük Kiremitlik	Civil Architecture Example	Civil Architecture Example
m-Küçük Palandöken	Civil Architecture Example	Civil Architecture Example

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
n-Mecidiye	Civil Architecture Example	Civil Architecture Example
o-Sivişli	Civil Architecture Example	Civil Architecture Example
p-Şahap Pasha	Civil Architecture Example	Civil Architecture Example
r-Tafta	Civil Architecture Example	Civil Architecture Example
s-Topalak	Civil Architecture Example	Civil Architecture Example
t-Uzun Ahmet	Civil Architecture Example	Civil Architecture Example
Tatbikat Elementary School	Civil Architecture Example	Civil Architecture Example
Civil Architecture House Examples (14 Units)	Civil Architecture Example	Civil Architecture Example
Altınbulak (Tivnik) Village Bridge	Cultural	Bridge
Apaver (Demirgeçit) Village Bridge	Cultural	Bridge
Dervişağa Bridge	Cultural	Bridge
Karaz (Öznü) Bridge	Cultural	Bridge
Kız Bridge	Cultural	Bridge
Kireçli Bridge	Cultural	Bridge
Nebi Inn Bridge	Cultural	Bridge
Tivnik Village Murat Inn Bridge	Cultural	Bridge
Araplar Düzü Ayniyer Martyrdom	Martyrdom	Martyrdom
Dumlu Garisson Martyrdom	Martyrdom	Martyrdom
Hava – Kars Gate Martyrdom	Martyrdom	Martyrdom
Nene Hatun Martyrdom	Martyrdom	Martyrdom
Cinis Tumulus	Cultural	Tumulus
Güzelova Tumulus	Cultural	Tumulus
Karaz Tumulus	Cultural	Tumulus
Pulur Tumulus	Cultural	Tumulus
Sos Tumulus	Cultural	Tumulus
ERZURUM / AŞKALE		
Topal Çavuş Village Mosque	Religious	Mosque
Osmanlı Inn	Cultural	Inn
Aşkale Castle	Military	Castle
Güllüdere (Pirtin) Castle	Military	Castle
Ortabahçe (Cinis) Castle	Military	Castle
Ziravank Ruins	Military	Ruins
Hacıbekir Caravanserai	Cultural	Caravanserai
Karasu Inn	Cultural	Inn
Evreni Kümbet	Cultural	Inn
Merdiven Village Şeyh Mehmet Tekke	Cultural	Inn
Topalçavuş Village Complex	Cultural	Inn
Derviş Ağa Bridge	Cultural	Bridge
Garnizon (Garisson) Martyrdom	Martyrdom	Martyrdom

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE – DISTRICT AND NAME	GROUP	TYPE
Kandilli Garisson Martyrdom	Martyrdom	Martyrdom
ERZURUM / ÇAT		
Bardakçı Village Mosque and Around	Religious	Mosque
Yarmak Village Mosque	Religious	Mosque
Yavi Village Mosque	Religious	Mosque
ERZURUM / HINIS		
Hınıs Ulu Mosque (Alaattin Bey Mosque)	Religious	Mosque
Erence (Hırt) Village Seyit Ömer Halil Tomb	Graveyard	Graveyard
Zirnak Kümbet and Graveyard	Graveyard	Graveyard
Hınıs Castle	Military	Castle
Kazan Castle	Military	Castle
Kalecik Castle	Military	Castle
Toprakkale	Military	Castle
Zirnak Castle	Military	Castle
ERZURUM / HORASAN		
Horasan Baba Tomb	Cultural	Tomb
Hasan Dede Tomb	Cultural	Tomb
ERZURUM / ILICA		
Alaca Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Aşiklar Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Alaca Tumulus	Cultural	Tumulus
Aşıklar Tumulus	Cultural	Tumulus
Çidemli Tumulus	Cultural	Tumulus
Ziya Pasha Turkish Bath	Cultural	Turkish Bath
ERZURUM / İSPİR		
Around Castle (I.Degree Archeologic Site Area)	Archeologic Site	Archeologic Site
Cankurtaran Castle	Military	Castle
Fısrık Castle	Military	Castle
İspir Castle	Military	Castle
Laleli - Korlu Castle	Military	Castle
Mohurgat Castle	Military	Castle
Sanduk Castle	Military	Castle
Senehrek Castle	Military	Castle
İspir Castle Small Mosque	Religious	Mosque
Melik Halil Gazi Small Mosque	Religious	Mosque
Tuğrul Şah (Çarşı) Mosque	Religious	Mosque
Numan Pasha (Hişen=Hemşen) Village Tomb	Cultural	Tomb
Kadıoğlu Madrasah	Cultural	Madrasah
Yazıcı Zade Fountain	Cultural	Fountain
ERZURUM / KARAYAZI		
Cunni Cave Church-Internal and External Sites and Around (Archeologic Historic Site)	Other Site Areas	Archeologic + Historic Site
Söylemez Village Kümbets	Cultural	Kümbet
A- Söylemez Baba Kümbet	Cultural	Kümbet
B- Söylemez Ana Kümbet	Cultural	Kümbet
Cunni (Cinli) Cave	Cave	Cave
ERZURUM / NARMAN		
Başkale	Military	Castle
Iğnavut (Ergazi) Village Castle	Military	Castle
Mehenk Ruins	Military	Castle
Petuvan Castle	Military	Castle
Semikale	Military	Castle

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE – DISTRICT AND NAME	GROUP	TYPE
Yanıktaş (Ekrek) Akkoyunlu Tomb	Graveyard	Graveyard
Narman Ethem Baba Tomb	Cultural	Tomb
Narman Martyrdom	Martyrdom	Martyrdom
Değirmen Suyu Şehitler Village Martyrdom	Martyrdom	Martyrdom
ERZURUM / OLTU		
Aslan Pasha Mosque	Religious	Mosque
Çengelli (Havdos) Village Castle	Military	Castle
İğdeli Castle Military	Military	Castle
İri Ağaç Village (Kız-Oğlan) Military Castles	Military	Castle
Kaleboğaz Village Castle	Military	Castle
Sheep Form Tombstones	Military	Castle
Köroğlu Castle	Military	Castle
Oltu Castle	Military	Castle
Ortaköy Maşatlik Ruins	Military	Castle
Orucuk Village Castle	Military	Castle
Samanes Castle	Military	Castle
Tamrot Ruins	Military	Castle
Ünlükaya Village Castle	Military	Castle
Misri Zinnun Tomb	Cultural	Tomb
Arslan Pasha Turkish Bath (in Complex)	Cultural	Turkish Bath
Arslan Pasha Complex	Cultural	Turkish Bath
Arslan Pasha Madrasah (in Complex)	Cultural	Turkish Bath
Anonymous Turkish Bath	Cultural	Turkish Bath
Aslan Pasha Turkish Bath	Cultural	Turkish Bath
Oltu Kale Turkish Bath	Cultural	Turkish Bath
Rus (Russian) Church	Religious	Church
Oltu Martyrdom	Martyrdom	Martyrdom
ERZURUM / OLUR		
Aşağı Karacasu Castle	Military	Castle
Beğendik (Pitanos) Castle	Military	Castle
Çataksu (Tavusker) Ruins	Military	Castle
Filizli (Keleşat) Castle	Military	Castle
Filizli Village Karacaoğlan Castle	Military	Castle
Observatory Tower	Military	Castle
Kaledibi Castle	Military	Castle
Keçili (Nyrkom) Castle	Military	Castle
Pertus (Eğlek) Archeologic Site and Castle	Military	Castle
Sarıbaşık (Sarıbaba) Castle	Military	Castle
Vank Ruins and Church	Military	Castle
ERZURUM / PASİNLER		
Tepecik Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Bulamaç Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
I. Degree Natural Site Area	Natural Site	Natural Site
Rocky Graveyard and Surrounding Historic Site	Historic Site	Historic Site
Güzelhisar (Avnik) Castle	Military	Castle
Pasinler (Hasankale) Castle	Military	Castle
Sos Tumulus	Askkeri	Castle
Tepecik Tumulus	Military	Castle
Emir Şeyh Mosque	Religious	Mosque
İbrahim Hakkı Mosque	Religious	Mosque
Sivaslı Mosque	Religious	Mosque
Ulu Mosque	Religious	Mosque

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Yeni Mosque	Dinsek	Mosque
Miyadin Village Ferruh Hatun Kümbet	Cultural	Kümbet
Çobandede Bridge	Cultural	Bridge
a- Big Hot Spring, b- Small Hot Spring	Hot Spring	Hot Spring
Altınbaşak Village Graveyard	Graveyard	Graveyard
Alvar Graveyard	Graveyard	Graveyard
Rocky Graveyard	Graveyard	Graveyard
Köprüköy Inn	Cultural	Inn
Köprüköy Martyrdom	Martyrdom	Martyrdom
Bulamaç Tumulus	Cultural	Tumulus
Tepecik Tumulus	Cultural	Tumulus
ERZURUM / ŞENKAYA		
Gaziler (Bardiz) Castle	Military	Castle
Penek Castle (Oğlan Ve Kız Castle)	Military	Castle
Somun Ruins	Military	Castle
Yanıkkaval (Kahmis) Village Castle	Military	Castle
Yedi Odalar (Seven Rooms)	Military	Castle
Bardız Graveyard	Graveyard	Graveyard
Bardız Mosque	Religious	Mosque
Penek Church	Religious	Church
Vank Church	Religious	Church
Yanıkkaval Village Church	Religious	Church
Pernek – Timurkışla Church	Religious	Church
ERZURUM / TORTUM		
Pehlivanlı Village Mosque	Religious	Mosque
Cevizli Village Tower	Military	Castle
Kale Altı (Nikah) Castle	Military	Castle
Parsor Ruins	Military	Castle
Pehlivanlı (Vibik) Village Tower	Military	Castle
Tortum Castle	Military	Castle
Uzunkavak (Kavaklı) Observatory Tower	Military	Castle
Yukarı Katıklı Village Observatory Tower	Military	Castle
Ziyaretli Village Observatory Tower	Military	Castle
Kireçli (Ağasor) Village Kireçli Bridge	Cultural	Bridge
Bağbaşı (Bağlarbaşı-Haho) Church	Religious	Church
Çamlıyamaç (Öşvank) Church	Religious	Church
GÜMÜŞHANE / CITY CENTER		
Structures of Imera Monastry and Around (I.Degree Archeologic Site Area)	Archeologic Site	Archeologic Site
Emirler Mosque	Religious	Mosque
Küçük Mosque	Religious	Mosque
Hagios Theodoros Church	Religious	Church
İmera Monastary	Religious	Church
Panaghia Kaya Church	Religious	Church
Pasha Turkish Bath	Cultural	Turkish Bath
Balkaymak Bridge	Cultural	Bridge
Hasköy Bridge	Cultural	Bridge
Kabane Bridge	Cultural	Bridge
Kalkanlı Bridge	Cultural	Bridge
Kamberlı Bridge	Cultural	Bridge
Kazantaş Bridge	Cultural	Bridge
Kermut Bridge	Cultural	Bridge
Kırıklı Bridge	Cultural	Bridge
Korgan Bridge	Cultural	Bridge

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE – DISTRICT AND NAME	GROUP	TYPE
Uğrak Bridge	Cultural	Bridge
Yeniyol Harşit Bridge	Cultural	Bridge
Abdi Bey House	Civil Architecture Example	Civil Architecture Example
Bağlar Başı Fevzi Pasha Elementary School	Civil Architecture Example	Civil Architecture Example
Hasan Fehmi Bey House	Civil Architecture Example	Civil Architecture Example
Remzi Bey House	Civil Architecture Example	Civil Architecture Example
Şahbendaroğlu House	Civil Architecture Example	Civil Architecture Example
Civil Architecture House Examples (26 Units)	Civil Architecture Example	Civil Architecture Example
Ekmalettin Babertli Martyrdom	Martyrdom	Martyrdom
GÜMÜŞHANE / KELKİT		
Archeologic Site Area	Archeologic Site	Archeologic Site
Castle	Military	Castle
Üççatı Bridge	Cultural	Bridge
Turkish Bath	Cultural	Turkish Bath
Government Building	Civil Architecture Example	Civil Architecture Example
GÜMÜŞHANE / KÜRTÜN		
Archeologic Site Area (3.Degree)	Archeologic Site	Archeologic Site
Meryemana Church	Religious	Church
Orta Mahalle Church	Religious	Church
I.Degree Natural Site	Natural Site	Natural Site
GÜMÜŞHANE / ŞİRAN		
Tamara Waterfall (I.Degree Natural Site Area)	Natural Site	Waterfall
Church	Religious	Church
Tamara Waterfall	Waterfall	Waterfall
GÜMÜŞHANE / TORUL		
Baş Mahalle Church	Religious	Church
Monastry (Manastır) Church	Religious	Church
Torul Bridge	Cultural	Bridge
Damlataş (Karaca) Cave	Cave	Cave
HAKKARİ / CITY CENTER		
Bay Castle	Military	Castle
Çölemerik Castle	Military	Castle
Meydan Madrasah	Cultural	Madrasah
Zeynel Bey Madrasah	Cultural	Madrasah
Historic Graveyard	Graveyard	Graveyard
Kalealtı Graveyard	Graveyard	Graveyard
Kırmızı Kümbet Graveyard	Graveyard	Graveyard
Melik Esed Graveyard	Graveyard	Graveyard
Kırmızı Kümbet Zaviye	Cultural	Zaviye
Derav Church	Religious	Church
Halil Church	Religious	Church
HAKKARİ / ÇUKURCA		
Historic Graveyard	Graveyard	Graveyard
HAKKARİ / ŞEMDİNLİ		
Taş Bridge	Cultural	Bridge
Hayme Palace	Cultural	Palace
Kelat Palace	Cultural	Palace

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
IĞDIR / CITY CENTER		
Rocky Graveyard	Archeologic Site	Rocky Graveyard
Karakale Castle	Cultural	Kümbet
Kul Yusuf Kümbet	Cultural	Kümbet
Caravanserais	Cultural	Caravanserai
Ejder Caravanserai	Cultural	Caravanserai
Historic Tomb Stones Infront of the Municipality	Graveyard	Graveyard
IĞDIR / ARALIK		
Hacı İbrahim Kümbet	Cultural	Kümbet
IĞDIR / KARAKOYUNLU		
Karakoyunlu Urartu Residential Site	Cultural	Residential Site
Karakoyunlu Historic Graveyard	Cultural	Graveyard
IĞDIR / TUZLUCA		
Urartu Rocky Graveyard	Graveyard	Graveyard
KARS / CITY CENTER		
Aliağa Mosque	Religious	Mosque
Beşik (Church) Mosque	Religious	Mosque
Boyalı Abdi Ağa Mosque	Religious	Mosque
Evliya Mosque	Religious	Mosque
Fethiye Mosque (Turned From Church)	Religious	Mosque
Hacı Veli Small Mosque (Mosque)	Religious	Mosque
Kale Small Mosque (Mosque)	Religious	Mosque
Laçin Bey Mosque	Religious	Mosque
Ulu Mosque	Religious	Mosque
Vaizoğlu Mosque	Religious	Mosque
Yusuf Pasha Mosque	Religious	Mosque
Beylerbeyi (Pasha) Palace and Fountain	Cultural	Palace
Kars Castle (Citadel) and Internal structures	Military	Castle
Ebu'l Hasanü'l Harkani Tomb	Cultural	Tomb
Celal Baba Tomb	Cultural	Tomb
Mazlumağa Turkish Bath	Cultural	Turkish Bath
Muradiye (İlbeyoğlu) Turkish Bath	Cultural	Turkish Bath
Topçuoğlu (Cuma) Turkish Bath (Old Turkish Bath)	Cultural	Turkish Bath
Bedirler Bridge	Cultural	Bridge
Behre Hatun Bridge	Cultural	Bridge
Benli (Ahmetçi) Bridge	Cultural	Bridge
Çıldır Bridge	Cultural	Bridge
Divrik Dere Bridge	Cultural	Bridge
Oluk Bridge	Cultural	Bridge
Taş Bridge	Cultural	Bridge
Uzun Zaim Bridge	Cultural	Bridge
Üç Göz Bridge	Cultural	Bridge
Kanlı Protected Emplacement (Tabya)	Cultural	Protected Emplacement
Havariler Church	Religious	Church
Tezekli Church	Religious	Church
Yıkık Church (on Erzurum Highway)	Religious	Church
Güvercin Village Martyrdom	Martyrdom	Martyrdom
Kars Garisson Martyrdom	Martyrdom	Martyrdom
Civil Architecture Examples - Official- (30 Units)	Civil Architecture Example	Civil Architecture Example

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Civil Architecture Examples – Private- (41 Units)	Civil Architecture Example	Civil Architecture Example
KARS / ANİ		
Ani Citadel	Military	Castle
Acemağılı Gate	Cultural	Gate
Beğsekisi Gate	Cultural	Gate
Çiftebeden Gate	Cultural	Gate
Divin Gate	Kültüre	Gate
Eğribucak Gate	Cultural	Gate
Hıdır-Ellez Gate (Satrançlı Gate)	Cultural	Gate
Kars Gate	Cultural	Gate
Mığmığderesi Gate	Cultural	Gate
Orta Gate (Arslanlı Gate)	Cultural	Gate
Ebu'l Ma'meran Mosque Minaret (Bozminare)	Religious	Mosque
Fethiye Mosque (Citadel)	Religious	Mosque
Manüçahr Mosque	Religious	Mosque
Bakireler Monastry	Religious	Church
Gağık Church	Religious	Church
Gürcü Church	Religious	Church
İçkale Kamsarakan Church	Religious	Church
Palace Church in Citadel	Religious	Church
II. Aşot Church	Religious	Church
Keçel Church	Religious	Church
Kız Church	Religious	Church
Poladoğlu Church	Religious	Church
Şirli Church	Religious	Church
Structure on the West of Şirli Church	Religious	Church
I. Turkish Bath	Cultural	Turkish Bath
I. On the South of Turkish Bath	Cultural	Turkish Bath
II. Turkish Bath	Cultural	Turkish Bath
Turkish Bath Near Manüçahr Mosque	Cultural	Turkish Bath
Mikdad Pehlivan Tomb	Cultural	Tomb
Kamsarakan Palace	Cultural	Palace
Sultan Palace	Cultural	Palace
Tek Gözlü Bridge	Cultural	Bridge
Cahapel Nearby Arpa Stream (Below the Bakireler Monastry)	Civil Architecture Example	Civil Architecture Example
Beğ Sekisi	Civil Architecture Example	Civil Architecture Example
Shopping Centre	Civil Architecture Example	Civil Architecture Example
Caravanserai	Civil Architecture Example	Civil Architecture Example
Structure Nearby Miğmiğ Dere Gate	Civil Architecture Example	Civil Architecture Example
Middle City Walls (Nearby Manüçahr Mosque)	Civil Architecture Example	Civil Architecture Example
The Structure on the East of Poladoğlu Church and the South of Mameran Mosque	Civil Architecture Example	Civil Architecture Example

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE – DISTRICT AND NAME	GROUP	TYPE
The Structure on the South of Poladoğlu Church	Civil Architecture Example	Civil Architecture Example
Urartu Structures	Civil Architecture Example	Civil Architecture Example
KARS / ARPAÇAY		
Ani Ruins (I. Degree Archeologic Site Area)	Archeologic Site	Tumulus
Tumulus	Archeologic Site	Tumulus
Şahindere Martyrdom	Martyrdom	Martyrdom
KARS / DİGOR		
Küçük Abdi Ağa Mosque	Religious	Mosque
Beşler Church	Religious	Church
Kozca Church	Religious	Church
Küçük Kozca Church	Religious	Church
Müren Church	Religious	Church
Magazbert Castle		
KARS / KAĞIZMAN		
Church	Religious	Church
Keçivan Castle	Military	Castle
Avcı Mehmet Martyrdom	Martyrdom	Martyrdom
KARS / SARIKAMIŞ		
Eski Church	Religious	Church
Forests (Natural Site Area)	Natural Site	Forestry
Micingirt (İnkaya) Castle	Military	Castle
Zivin (Süngü Taş) Castle	Military	Castle
Micingirt (İnkaya) Kümbet	Cultural	Kümbet
Gurbet Pınar Bridge	Cultural	Bridge
Menteş Stream I. Bridge	Cultural	Bridge
Menteş Stream II. Bridge	Cultural	Bridge
Menteş Stream III. Bridge	Cultural	Bridge
Ağa Baba Martyrdom	Martyrdom	Martyrdom
Village Martyrdom with Turkish Bath	Martyrdom	Martyrdom
Yukarı Sarıkamış Village Martyrdom	Martyrdom	Martyrdom
Civil Architecture Examples - Official- (33 Units)	Civil Architecture Example	Civil Architecture Example
KARS / SELİM		
Liutenant Hulusi Bey Martyrdom	Martyrdom	Martyrdom
KARS / SUSUZ		
Osman Sergent Martyrdom	Martyrdom	Martyrdom
MALATYA / CITY CENTER		
Maltepe Tumulus	Archeologic Site	Tumulus
Samanköy Tumulus	Archeologic Site	Tumulus
Aslantepe Tumulus (I.Degree 2. Degree Archeologic Site)	Archeologic Site	Tumulus
Fırıncılar Tumulus	Archeologic Site	Tumulus
Tumulus	Archeologic Site	Tumulus
Alacakaya Mosque	Religious	Mosque
Çarşı Mosque	Religious	Mosque
Söğütlü Mosque	Religious	Mosque
Yeni Mosque	Religious	Mosque
Ulu Mosque	Religious	Mosque
Yusuf Ziya Pasha Mosque	Religious	Mosque
Tumulus	Archeologic Site	Tumulus
Tumulus	Archeologic Site	Tumulus

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Cafer Tumulus	Cultural	Tumulus
Değirmen Hill Tumulus	Cultural	Tumulus
Gelincik Hill (Fethiye) Tumulus	Cultural	Tumulus
İmamoğlu Tumulus	Cultural	Tumulus
Köşkerbaba Tumulus	Cultural	Tumulus
Pirot Tumulus	Cultural	Tumulus
Aslan Hill	Cultural	Tumulus
Tahtalı Turkish Bath	Cultural	Turkish Bath
Çarşı Church	Religious	Church
Taşhoron Church	Religious	Church
Venk Church	Religious	Church
Bakırcılar Bazaar	Cultural	Bazaar
Bitpazarı (Fleamarket)	Cultural	Bazaar
Şira (Sweeties) Market	Cultural	Bazaar
İnderesi Cave	Cave	Cave
Balanlılar House	Civil Architecture Example	Civil Architecture Example
Derme Elementary School	Civil Architecture Example	Civil Architecture Example
Gazi Elementary School	Civil Architecture Example	Civil Architecture Example
Public Training Centre Building = Atatürk House	Civil Architecture Example	Civil Architecture Example
Karakaş House	Civil Architecture Example	Civil Architecture Example
Sinema Road. 33 Houses	Civil Architecture Example	Civil Architecture Example
Tüccarlar Market	Civil Architecture Example	Civil Architecture Example
Military Martyrdom	Martyrdom	Martyrdom
MALATYA / AKÇADAĞ		
Akçadağ Tumulus (I.Degree Archeologic Site)	Archeologic Site	Tumulus
İkinciler Tumulus	Cultural	Höyül
Ören Tumulus	Cultural	Tumulus
Ören Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Arga Hill	Cultural	Hill
Levent Valley – Bağköy Rocky Tablets	Cultural	Valley
MALATYA / ARAPGİR		
Çobanlı Mosque	Religious	Mosque
Hacı Şerefağa Mosque	Religious	Mosque
Mirliva Ahmet Pasha Mosque	Religious	Mosque
Yeni Mosque	Religious	Mosque
Çarşı Turkish Bath	Cultural	Turkish Bath
Elmasık Turkish Bath	Cultural	Turkish Bath
Hacı Şerefağa Turkish Bath	Cultural	Turkish Bath
Hacı Şerefağa Fountain	Cultural	Fountain
Çarşı Inn	Cultural	Inn
MALATYA / ARAPGİR (OLD)		
Caferpaşa Mosque	Religious	Mosque
Gümrükcü Osman Pasha Mosque	Religious	Mosque
Molla Eyüp Mosque	Religious	Mosque
Ulu Mosque	Religious	Mosque
Büyük Kozluk Bridge	Cultural	Bridge
Meydan Bridge	Cultural	Bridge

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Osman Pasha Fountain	Cultural	Fountain
Osman Pasha Turkish Bath	Cultural	Turkish Bath
Old Arapgir Castle	Military	Castle
Çobanlı Mansion	Cultural	Mansion
Şakir Pasha Mansion	Cultural	Mansion
İspanakçı Mustafa Pasha Library	Cultural	Library
Hanikâh	Civil Architecture Exp.	Civil Architecture Exp
MALATYA / ARGUVAN		
Kara Tumulus Archeological and Natural Site Area	Other Site Areas	Tumulus Archeologic and Historic Site
İsa Tumulus	Cultural	Tumulus
Kara Tumulus	Cultural	Tumulus
Morhamam (Uzunoğlan) Tumulus	Cultural	Tumulus
Tarlacık Tumulus	Cultural	Tumulus
İsa Tumulus (I.Degree Archeologic Site)	Archeologic Site	Tumulus
Morhaman Tumulus (I.Degree Archeologic Site)	Archeologic Site	Tumulus
MALATYA / BATTALGAZİ		
Ahmet Duran Small Mosque and Tomb	Religious	Mosque
Ak Minaret Mosque	Religious	Mosque
Alacakapı Small Mosque	Religious	Mosque
Emir Ömer Small Mosque	Religious	Mosque
Halfetih Minaret	Religious	Mosque
Karahan Mosque	Religious	Mosque
Melik Sunullah Minaret	Religious	Mosque
Prayer Place (Namazgah)	Religious	Mosque
Toptaş Mosque	Religious	Mosque
Ulu Mosque	Religious	Mosque
Şahabiye-i Kübra Madrasah	Cultural	Madrasah
Kanlı Kümbet	Cultural	Kümbet
Siddi Zeynep Kümbet	Cultural	Kümbet
Kara Baba Tomb	Cultural	Tomb
Karababa Graveyard	Graveyard	Graveyard
Kırk Kardeş Martyrdom	Martyrdom	Martyrdom
Silahtar Mustafa Pasha Caravanserai	Cultural	Caravanserai
Castle Walls	Military	Castle
Resident	Civil Defense Example	Civil Defense Example
MALATYA / DARENDE		
Maşattepe Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Dana Bey Minaret	Religious	Mosque
Hacı Müsrif Minaret	Religious	Mosque
Somuncu Baba Mosque Minaret	Religious	Mosque
Ulu Mosque Minaret	Religious	Mosque
Korucutepe Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Maltepe I. Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Kavlak Bridge	Cultural	Bridge
Nadir Bridge	Cultural	Bridge
Stone Bridge	Cultural	Bridge
Maltepe II. Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tümlüs
Tumulus	Archeologic Site	Tumulus
Sadrazam Complex	Cultural	Complex
İki Tepe Tumulus (I.Degree Archeologic Site Area)	Archeologic Site	Tumulus
Günpınar Waterfall	Natural Site	Waterfall
Kız Tomb	Cultural	Tomb
Mehmet Pasha Tomb	Cultural	Tomb

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE – DISTRICT AND NAME	GROUP	TYPE
Şengber Place Site Area	Archeologic Site	Archeologic Site
Tohma Stream Valley Somunca Baba Passage, Natural Aquarium	Natural Site	Natural Site
Şeyh Hamid-i Veli Zaviye (Somuncu Baba)	Cultural	Zaviye
Bazaar (Bedesten) (Hacı Hüseyin Pasha Arastas)	Cultural	Bazaar
Hasan Pasha Turkish Bath (Çarşı Turkish Bath)	Cultural	Turkish Bath
Monumental Tomb	Graveyard	Graveyard
İkitepe Tumulus	Tumulus	Tumulus
Korucu Hill Tumulus	Tumulus	Tumulus
Maltepe I and II Tumulus	Tumulus	Tumulus
Maşad Hill Tumulus	Tumulus	Tumulus
Merkez Tumulus	Tumulus	Tumulus
Ozan Village Roma Monumental Tomb	Tumulus	Tumulus
Roma Tomb	Tumulus	Tumulus
Number 1 and 2 Graveyards	Graveyard	Graveyard
Mehmet Pasha Library	Cultural	Library
Zengibar Castle	Military	Castle
MALATYA / DOĞANŞEHİR		
Sulu Cave	Cave	Cave
City Wall Ruins	Military	Caste Wall Ruins
MALATYA / HEKİMHAN		
Köprülü Mehmet Pasha Mosque	Religious	Mosque
Köprülü Mehmet Pasha Turkish Bath	Cultural	Turkish Bath
Stone Inn	Cultural	Inn
Church	Religious	Church
Güzelyurt Tumulus	Cultural	Tumulus
MALATYA / KULUNCAK		
Çirit Belen Village - Leylek Tomb	Cultural	Tomb
Kabak Abdal Tomb	Cultural	Tomb
Mehmet Halife Tomb (Siyahi Baba)	Cultural	Tomb
Eşref Tumulus	Cultural	Tumulus
MALATYA / PÖTÜRGE		
Gagar Castle Nan-ı Guni	Military	Castle
Battalgazi Monument	Cultural	Monument
MALATYA / YAZIHAN		
Abdülrezzak Mosque	Religious	Mosque
Fethiye Village – Hasan Patrik Mosque	Religious	Mosque
İriağaç Village Mosque	Religious	Mosque
Fethiye Tumulus	Cultural	Tumulus
Kuruçay Tumulus (Hacı Tumulus)	Cultural	Tumulus
İri Ağaç Village - Ünür Small Village Castle	Military	Castle
Buzluk Caves	Cave	Cave
MALATYA / YEŞİLYURT		
Ottoman Style Houses	Civil Architecture Example	Civil Architecture Example
Kaletepe Tumulus	Civil Architecture Example	Civil Architecture Example
MUŞ / CITY CENTER		
Dere Church	Religious	Church
Dere Neighborhood Church	Religious	Church
Surp Varabet Monastry (Çengelli Church)	Religious	Church
Hasbet Castle	Military	Castle
Mercimek Castle	Military	Castle
Muşet Castle	Military	Castle

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE – DISTRICT AND NAME	GROUP	TYPE
Alaattin Mosque	Religious	Mosque
Hacı Şeref Mosque and Fountain	Religious	Mosque
Muş Ulu Mosque	Religious	Mosque
İbrahim Samidi Tomb	Cultural	Tomb
Kesik Baş Tomb	Cultural	Tomb
Şeyh Halil and Mustafa Tomb	Cultural	Tomb
Şeyh Muhammed-i Mağribi Tomb	Cultural	Tomb
Alaaddin Bey Turkish Bath	Cultural	Turkish Bath
Dere Turkish Bath	Cultural	Turkish Bath
Arslanlı Inn	Cultural	Inn
Yıldızlı Inn	Cultural	Inn
Alaattin Mosque Fountain	Cultural	Fountain
Murat Bridge	Cultural	Bridge
Anatolia High School	Civil Architecture Example	Civil Architecture Example
Atatürk Elemantary School	Civil Architecture Example	Civil Architecture Example
Tahsin Saraç House	Civil Architecture Example	Civil Architecture Example
Military Martyrdom	Martyrdom	Martyrdom
Mercimek Castle Tumulus	Cultural	Tumulus
MUŞ / BULANIK		
Esenlik Village Mosque	Religious	Mosque
Mollakent Village Vuduu Pool	Religious	Mosque
Mollakent Village Mosque	Religious	Mosque
Mollakent Village Madrasah	Cultural	Madrasah
Mollakent Village Tekke	Cultural	Madrasah
Mollakent Village Graveyard	Graveyard	Graveyard
Mirza Bey Castle	Military	Castle
Esenlik Village - Şeyh İbrahim Tomb	Cultural	Tomb
Şeyh Ömer Sahubi Tomb	Cultural	Tomb
Şar (Şor) Lake Mineral Water	Hot Spring	Hot Spring
Civil Defense Example	Civil Defense Example	Civil Defense Example
Alparslan Martyrdom	Martyrdom	Martyrdom
Erentepe Martyrdom	Martyrdom	Martyrdom
Kültür Neighborhood Martyrdom	Martyrdom	Martyrdom
Eren Hill Tumulus	Cultural	Tumulus
MUŞ / KORKUT		
Yünören Village Mosque	Religious	Mosque
MUŞ / MALAZGİRT		
Bostan Kaya Castle	Military	Castle
Katerin (Zincirli) Castle	Military	Castle
Tıkızlı Castle	Military	Castle
Malazgirt Castle	Military	Castle
Meydan Graveyard	Graveyard	Graveyard
Urartu Rocky Graveyard	Graveyard	Graveyard
Aradere Village Graveyard	Graveyard	Graveyard
Bostankale Tumulus	Cultural	Tumulus
Dolabaş Tumulus	Cultural	Tumulus
Konak Kuran Tumulus	Cultural	Tumulus
Erken Devirden Bridge	Cultural	Bridge
Malazgirt Kız Bridge	Cultural	Bridge
Malazgirt Bridge (Hanım Bridge)	Cultural	Bridge

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Ancient Cave Houses	Civil Architecture Example	Civil Architecture Example
Historic Documents	Civil Architecture Example	Civil Architecture Example
Tomb Ruins	Civil Architecture Example	Civil Architecture Example
Local Rugs	Civil Architecture Example	Civil Architecture Example
MUŞ / VARTO		
Kayalıdere Ruins	Civil Architecture Example	Civil Architecture Example
Bazıkan Hot Spring	Hot Spring	Hot Spring
Derik Mineral Water	Hot Spring	Hot Spring
Kayalıdere Mineral Water	Hot Spring	Hot Spring
Safyan Mineral Water	Hot Spring	Hot Spring
Yukari Alagöz Hot Spring	Hot Spring	Hot Spring
Varto Martyrdom		
TUNCELİ / ÇEMİŞGEZEK		
Süleymaniye Mosque (Ulu Mosque)	Religious	Mosque
Yelmaniye Mosque	Religious	Mosque
Hamidiye Madrasah	Cultural	Madrasah
Uzun Hasan Tomb	Cultural	Tomb
Atik Turkish Bath	Cultural	Turkish Bath
Yeni Turkish Bath	Cultural	Turkish Bath
Baş Fountain	Cultural	Fountain
Tahar (Yusuf Ziya Pasha) Bridge	Cultural	Bridge
TUNCELİ / MAZGİRT		
Elti Hatun Mosque	Religious	Mosque
Kale Village Castle	Military	Castle
Mazgirt Castle	Military	Castle
Çoban Baba Tomb	Cultural	Tomb
Elti Hatun Tomb	Cultural	Tomb
Til Tumulus	Cultural	Tumulus
TUNCELİ / PERTEK		
Baysungur Mosque	Religious	Mosque
Çelebi Ağa Mosque	Religious	Mosque
Sağman Mosque	Religious	Mosque
Besime Hatun Tomb	Cultural	Tomb
Sağman Mosque Tomb	Cultural	Tomb
Sağman Complex	Cultural	Complex
Derun-i Hisar Castle	Military	Castle
Pertek Castle	Military	Castle
TUNCELİ / PÜLÜMÜR		
Examples from Civil Architecture		
Bride Rooms	Civil Architecture Example	Civil Architecture Example
VAN / CITY CENTER		
Tuşpa Necropolisis (3.Degree Archeologic Site Area)	Archeologic Site	Nekropol
Abbas Ağa Mosque	Religious	Mosque
Horhor Mosque	Religious	Mosque
Hüsrev Pasha Mosque	Religious	Mosque
Kaya Çelebi Mosque	Religious	Mosque

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Kızıl (Red) Minaret Mosque	Religious	Mosque
Sinaniye Mosque	Religious	Mosque
Süleyman Inn Mosque	Religious	Mosque
Ulu Mosque	Religious	Mosque
I. Degree Archeologic Site Area	Archeologic Site	Archeologic Site
II. Degree Archeologic Site Area	Archeologic Site	Archeologic Site
Mosque Kebir Madrasah	Cultural	Madrasah
Hüsrev Pasha Madrasah	Cultural	Madrasah
İskender Pasha Madrasah	Cultural	Madrasah
Topçuoğlu Madrasah	Cultural	Madrasah
II. Degree Archeologic Site Area	Archeologic Site	Archeologic Site
Abdurrahman Gazi Tomb and Mosque	Cultural	Tomb
Galip Pasha Tomb	Cultural	Tomb
Hüsrev Pasha Tomb	Cultural	Tomb
İkiz (Twin) Tombs	Cultural	Tomb
I. Degree Natural Site Area	Natural Site	Natural Site
Karagündüz Tumulus Ancient Iron Age Necropolis	Archeologic Site	Tumulus + Necropolis
Old (Çifte) Turkish Bath	Cultural	Turkish Bath
Hüsrev Pasha Turkish Bath	Cultural	Turkish Bath
Yoncatepe Castle	Archeologic Site	Castle
Adir Island (I.Degree Archeologic and Natural Site Area)	Other Site Areas	Island Archeologic and Natural Site
Amik Christian Graveyard	Graveyard	Graveyard
Old Van City Graveyard	Graveyard	Graveyard
Molla Kasım Graveyard	Graveyard	Graveyard
Otluca Village Graveyard	Graveyard	Graveyard
Zeve Village Graveyard	Graveyard	Graveyard
Aşağı Anzaf Castle (I.Degree Arceologic Site)	Archeologic Site	Castle
Yukarı Anzaf Castle and Graveyard Area	Archeologic Site	Castle and Graveyard
Alaköy (Urartu) Castle	Military	Castle
Amik Castle	Military	Castle
Aşağı Anzaf Castle	Military	Castle
Ayanis Castle	Military	Castle
Beyüzümü (Şahbağı) Castle	Military	Castle
Edremit Castle	Military	Castle
Old Van Castle and City	Military	Castle
Kavuncu Castle	Military	Castle
Keklik Bucağı Castle	Military	Castle
Toprakkale	Military	Castle
Van Castle	Military	Castle
Yukarı Anzaf Castle	Military	Castle
Van Castle Tumulus	Archeologic Site	Tumulus
Van Castle and Old Van City	Archeologic Site	Ancient City and Castle
Hüsrev Pasha Complex	Cultural	Complex
Urartu Graveyard and Islamic Graveyard	Archeologic Site	Graveyard
Part of Van City (3.Degree Archeologic Site)	Archeologic Site	Ancient City
Toprakkale-Meker Gate	Cultural	Gate
Aktamar Island (I. Degree Archeologic and Natural Site Area)	Other Site Areas	Island Archeologic and Natural Site)
Adir Church (Island)	Religious	Church
Çarpanak Church (Kthous Monastry)	Religious	Church

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE – DISTRICT AND NAME	GROUP	TYPE
Surb Paolos Church	Religious	Church
Yedi Church	Religious	Church
Old Van City – Church	Religious	Church
Çarpanak Island (I.Degree Archeologic Natural Site)	Other Site Areas	Island+ Archeologic Site Area
Toprakkale (I.Degree Archeologic Site Area)	Archeologic Site	Excavation Area
Civil Architecture House Examples (2 Units)	Civil Architecture Example	Civil Architecture Example
Civil Architecture (2 Units)	Civil Architecture Example	Civil Architecture Example
Ağartı Castle	Archeologic Site	Castle
2. Degree Natural Site Area	Natural Site	Natural Site
Pers Tablet in Old Van Castle	Civil Architecture Example	Civil Architecture Example
Old Van City - Argişti Tomb	Civil Architecture Example	Civil Architecture Example
Old Van City – Eastern Room Graveyard	Civil Architecture Example	Civil Architecture Example
Old Van City - Inn (Arpa Inn)	Civil Architecture Example	Civil Architecture Example
Old Van City – Cistern (Sarnıç)	Civil Architecture Example	Civil Architecture Example
Van - İnili Kız (Open Tomb Monument)	Civil Architecture Example	Civil Architecture Example
Van Houses	Civil Architecture Example	Civil Architecture Example
Van Museum	Civil Architecture Example	Civil Architecture Example
Hoşap Castle Interiors	Archeologic Site	Castle
Zeve Martyrdom	Martyrdom	Martyrdom
VAN / BAHÇESARAY		
Kırmızı Mosque	Religious	Mosque
Şeyh Şemseddin Mosque	Religious	Mosque
Mir Hasan-i Veli Madrasah	Cultural	Madrasah
Mehmet Çavuş Kümbet	Cultural	Kümbet
Kırmızı (Red) Bridge	Cultural	Bridge
Bahçesaray Castle	Military	Castle
Andzphouts Church	Religious	Church
Arkelok Chapel	Religious	Church
Dire Gele (Saint Georges) Church	Religious	Church
Jamatun	Religious	Church
Kutsal Haç (Holy Cross) Church	Religious	Church
Kutsal Havari (Holy Apostle) Sanctuary	Religious	Church
S. Astuacacin Church	Religious	Church

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Saint Jacques Church	Religious	Church
St. Stefanos Church	Religious	Church
VAN / BAŞKALE		
Başkale Houses	Civil Architecture Example	Civil Architecture Example
Hüsrev Pasha Madrasah (Pizan)	Cultural	Madrasah
Ören Kale Village Tombs (Pizan)	Cultural	Tomb
Barış Village Graveyard	Graveyard	Graveyard
German Village Graveyard	Graveyard	Graveyard
Kaleören Village Graveyard	Graveyard	Graveyard
Molla Hıdıri Fırında Graveyard	Graveyard	Graveyard
Tepebaşı Neighborhood Graveyard	Graveyard	Graveyard
Yavuzlar Village Graveyard	Graveyard	Graveyard
Albayrak Church	Religious	Church
Yanal Church	Religious	Church
Örenkale Village Castle (Pizan)	Military	Castle
VAN / ÇALDIRAN		
Kübik Village Open Field Tomb Monument	Cultural	Kümbet
Kübik Village I. Kümbet and II. Kümbet	Cultural	Kümbet
Kübik Village Graveyard	Graveyard	Graveyard
VAN / ÇATAK		
Natural Site	Natural Site	Natural Site
Çatak Bridge (Center)	Cultural	Bridge
Hurkan Bridge	Cultural	Bridge
Zeril Bridge	Cultural	Bridge
Çatak Graveyard	Graveyard	Graveyard
Görentaş Graveyard	Graveyard	Graveyard
Zeve (Zive) Inn	Cultural	Inn
Çatak Church	Cultural	Church
Elmacık Village Church	Cultural	Church
Çatak Castle	Military	Castle
VAN / ERCİŞ		
Karataş Tablets (I.Degree Archeologic Site Area)	Archeologic Site	Archeologic Site
Kara Yusuf Mosque	Religious	Mosque
Urartu Çayı Kale-Ehir Ruins	Archeologic Site	Archeologic Site
Cuneiform Tablet	Cultural	Tablet
Yahya Bey Madrasah	Cultural	Madrasah
Alaca Inn	Cultural	Inn
Binbaşı Fountain Inn	Cultural	Inn
Hangedik Inn	Cultural	Inn
Karahan	Cultural	Inn
Beyler Graveyard	Graveyard	Graveyard
Çelebibağı Graveyard	Graveyard	Graveyard
Gölağzi Neighborhood Graveyard	Graveyard	Graveyard
Haydar Bey Graveyard	Graveyard	Graveyard
Kara Şeyh Village Graveyard	Graveyard	Graveyard
Madavank Rocky Graveyard	Graveyard	Graveyard
Tekler Village Graveyard	Graveyard	Graveyard
Yoldere (Akrak) Graveyard	Graveyard	Graveyard
Ziyaret Village Graveyard		
Aliyar (Kadem Pasha) Kümbet	Cultural	Kümbet
Haydar Bey Tomb	Cultural	Kümbet

Table 2.7.23: Tourism Certified Cultural Assets in the Eastern Anatolia Region (Cont.)

PROVINCE - DISTRICT AND NAME	GROUP	TYPE
Nişanci Kümbet	Cultural	Kümbet
Zortul (Anonymous) Kümbet	Cultural	Kümbet
Eski Erciş Castle	Military	Castle
Zernaki Hill	Military	Castle
Haydar Bey Bridge	Cultural	Bridge
Hasan Abdal Hot Spring	Hot Spring	Hot Spring
Salman Ağa Church	Religious	Church
VAN / GEVAŞ		
İzzettin Şir Mosque	Religious	Mosque
Halime Hatun Kümbet	Cultural	Kümbet
İzzettin Şir Madrasah	Cultural	Madrasah
Göründü Village Church	Religious	Church
Gevaş Selçuklu Graveyard	Graveyard	Graveyard
Gevaş Zaviye	Cultural	Zaviye
Aktamar Church	Religious	Church
Altınsaç Church	Religious	Church
İnköy Church	Religious	Church
Hişet Castle	Military	Castle
VAN / GÜRPINAR		
Hamurkesen Castle Small Mosque	Religious	Mosque
Hamurkesen Village Mosque	Religious	Mosque
Hoşap Mosque (Outher Castle)	Religious	Mosque
Citadel Small Mosque (Hoşap)	Religious	Mosque
Çavuştepe Castle	Military	Castle
Hamurkesen Castle and Turkish Bath	Military	Castle
Hoşap Citadel	Military	Castle
Hoşap Castle	Military	Castle
Hoşap Castle-Selamlık (Men's Room)	Military	Castle
Evliya Bey Madrasah	Cultural	Madrasah
Hasan Bey Madrasah and Tomb	Cultural	Madrasah
Hasan Bey Tomb	Cultural	Tomb
Süleyman Bey Tomb	Cultural	Tomb
Bey Inn	Cultural	Inn
Hoşap Inn	Cultural	Inn
Hamurkesen Historic Graveyard	Graveyard	Graveyard
Hoşap Graveyard	Graveyard	Graveyard
Evliya Bey (Hoşap) Bridge	Cultural	Bridge
VAN / MURADİYE		
Bendi Mahi Bridge	Cultural	Bridge
Şeytan Bridge	Cultural	Bridge
Körzüt Castle	Military	Castle
Muradiye Castle	Military	Castle
Muradiye Church	Religious	Church
Dergezin Hot Spring	Hot Spring	Hot Spring
Muradiye Waterfall	Waterfall	Waterfall

Source: The Ministry of Culture

Table 2.7.24: Existing Libraries and Museums (1995)

Libraries and Museums	TURKEY	EAST A.	AĞRI	BİNGÖL	BİTLİS	ELAZIĞ
Number of Public Library	1,086	100	6	5	5	6
Number of Book	10,687,293	891,554	45,184	37,605	47,752	67,201
Number of Reader	22,478,681	2,276,644	107,942	128,312	106,015	301,593
Number of Personnel	3,544	348	16	24	20	28
.....Official	2,408	211	9	15	14	18
.....Servant	1,136	137	7	9	6	10
Museums	163	11	1	-	1	2
.....Archeology and History	72	4	1	-	1	-
.....Etnography and antropology	41	2	-	-	-	1
.....General	50	5	-	-	-	1
Present Works at the Museum by the End of the Year	2,553,637	102,641	-	-	4,484	23,338
.....Archeologic	581,389	47,920	-	-	2,465	13,219
.....Etnographic	287,176	11,482	-	-	333	4,382
.....Ancient Money	1,485,400	40,052	-	-	1,676	4,568
.....Tablet	116,310	8	-	-	-	-
.....Seal and Seal Print	21,157	2,502	-	-	10	845
.....Archive Documents	36,371	1	-	-	-	-
.....Hand Written books	24,641	676	-	-	-	324
.....Other	1,193	-	-	-	-	-

Table 2.7.24: Existing Libraries and Museums (1995) (Cont.)

Libraries and Museums	ERZİNCAN	ERZURUM	GÜMÜŞHANE	HAKKARİ	KARS	MALATYA
Number of Public Library	10	24	7	1	5	16
Number of Book	58,887	223,222	46,213	19,850	64,842	110,983
Number of Reader	134,338	372,392	60,475	90,118	137,037	364,417
Number of Personnel	23	85	18	7	22	48
.....Official	14	47	12	4	14	25
.....Servant	9	38	6	3	8	23
Museums	1	3	-	-	1	1
.....Archeology and History	-	2	-	-	-	-
.....Etnography ve antropology	-	1	-	-	-	-
.....General	1	-	-	-	1	1
Present Works at Museums by the end of the year	-	16,455	-	-	6,288	15,337
.....Archeologic	-	5,547	-	-	1,560	7,930
.....Etnographic	-	2,875	-	-	1,201	1,689
.....Old Money	-	7,461	-	-	3,469	4,891
.....Tablet	-	-	-	-	-	4
.....Seal and Seal print	-	417	-	-	28	808
.....Archive Documents	-	-	-	-	-	1
.....Handwritten Books	-	155	-	-	30	14
.....Other	-	-	-	-	-	-

Table 2.7.24: Existing Libraries and Museums (1995) (Cont.)

Libraries and Museums	MUŞ	TUNCELİ	VAN	BAYBURT	ARDAHAN	IĞDIR
Number of Public Library	4	5	6	5	3	4
Number of Book	55,881	45,434	63,493	34,958	29,229	21,991
Number of Reader	155,660	89,264	212,569	143,878	60,067	16,920
Number of Personnel	16	25	19	10	11	4
.....Official	10	18	12	7	8	3
.....Servant	6	7	7	3	3	1
Museums	-	-	1	-	-	-
.....Archeology and History	-	-	-	-	-	-
.....Etnography and athropology	-	-	-	-	-	-
.....General	-	-	1	-	-	-
Present Works at Museums at the end of the Year	-	-	36,739	-	-	-
.....Archeologic	-	-	17,199	-	-	-
.....Etnographic	-	-	1,002	-	-	-
.....Old Money	-	-	17,987	-	-	-
.....Tablet	-	-	4	-	-	-
.....Seal and Seal Print	-	-	394	-	-	-
.....Archive Documents	-	-	-	-	-	-
.....Handwritten Books	-	-	153	-	-	-
.....Other	-	-	-	-	-	-

Source : SIS, Culture Statistics (Library and Museums)

Table 2.7.25: Present Cinema, Theatre, Opera and Ballet Halls (1994-1995)

Cinema,Theatre,OperaandBallet	TURKEY	EAST A..	AĞRI	ELAZIĞ	ERZURUM	MALATYA	VAN
Cinema	301	9	1	3	2	2	1
Chair Number	125,192	6,500	200	2,240	1,290	2,070	700
Films on Show	21,755	892	300	185	130	204	73
Number of Customers	9,399,794	249,000	15,000	82,500	45,000	97,000	9,500
Official Theatres							
Theatre Number	42	-	-	-	-	-	-
Chair Number	13,520	-	-	-	-	-	-
Performed Work Number	340	-	-	-	-	-	-
Show Number	7,230	-	-	-	-	-	-
Audiance Number	2,102,595	-	-	-	-	-	-
State Theatres							
Theatre Number	25	-	-	-	-	-	-
Chair Number	8,119	-	-	-	-	-	-
Performed Work Number	180	-	-	-	-	-	-
Show Number	3,362	-	-	-	-	-	-
Audiance Number	920,196	-	-	-	-	-	-
Official Institution Theatres							
Theatre Number	17	-	-	-	-	-	-
Chair Number	5,401	-	-	-	-	-	-
Performed Work Number	160	-	-	-	-	-	-
Show Number	3,868	-	-	-	-	-	-
Audiance Number	1,182,399	-	-	-	-	-	-
Private Theatres							
Theatre Number	18	1	-	-	-	-	-
Chair Number	6,836	360	-	-	-	-	-
Performed Work Number	49	1	-	-	-	-	-
Show Number	1,659	2	-	-	-	-	-
Audiance Number	322,575	400	-	-	-	-	-
Opera and Ballet							
Opera and Ballet Hall Number	6	-	-	-	-	-	-
Chair Number	3,899	-	-	-	-	-	-
Performed Work Number	52	-	-	-	-	-	-
Show Number	404	-	-	-	-	-	-
Audiance Number	236,077	-	-	-	-	-	-

Source : SIS, Culture Statistics (Cinema, Theatre, Opera and Ballet)

Note : None of them exist in Bingöl, Bitlis, Erzincan, Gümüşhane, Hakkari, Kars, Muş, Tunceli, Bayburt, Ardahan, Iğdır.

Table 2.7.26: Existing Cultural Centers

Bingöl
Genç
- 250 Persons Hall for Activities Like Conference, Theatre,
- Library,
- Two art workshops.
Erzincan
- 550 Persons Hall for Activities Like Opera, Ballet and Theatre,
- Exibition Hall,
- Library,
- Cinema Hall for 150 persons,
- Art workshops,
- Erzincan Museum.
Erzurum
- 138 m^2 Exibition Hall,
- 225 m^2 Picture-sculpture Museum,
- 380 m^2 Library,
- Two Art Workshops,
- Erzurum Museum,
- Erzurum Archeologic Museum**,**
- Erzurum Atatürk Museum,
- Erzurum Yakutiye Medrese Turkish Islamic Works and Etnography Museum
Kars
- 350 Persons Hall for Activities Like Theatre and Conferences
- Kars Museum.
Malatya
- 360 Persons Hall for Activities Like Theatre and Conferences,
- 250 m^2'lik Library,
- Galeri,
- Malatya Museum.
Muş
Malazgirt
- 194 Persons Hall for Activities Like Theatre and Conferences ,
- 160 m^2 Exibition Hall,
- 280 Persons Library,
- 160 m^2 Museum,
- One Art Workshop.
Tunceli
Hozat
- 120 Persons Hall for Activities Like Theatre and Conferences,
- 42 m^2 Exibition Hall,
- 90 Persons Library,
- 80 m^2 Museum,
- Two Art Workshops.
Van
- 480 Persons Hall for Activities Like Opera and Ballet,
- Exibition Hall,
- Library,
- Four Art Workshops,
- Van Museum.

Source: The Ministry of Culture

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MAP

2.8. SPATIAL DEVELOPMENT

2.8.1. URBAN DEVELOPMENT

2.8.1. Urban Development

The region will be urbanized at an important degree through 2020's even if the simplest scenario in the plan is applied. Creating a healthy urban environment in the big cities is very important for both physical and psychological health aspects of people living in these cities. It is also very important to assign qualified administrator and technical staff to the region to meet the industrial and other services that are suggested for these cities.

It is necessary to take some precautions and policies to enable a healthy urban development both generally in the country and especially in the region. The main problem that the cities are suffering in the whole country is the lack of financial support and excessive centralism in many fields. It is necessary to put into force the principle of increasing amount of financial sources for the municipalities and solving problems as soon as possible even by the smallest units by performing required changes in the law.

There are earthquake, avalanche and flood problems in the region. To protect the settlements from these natural disasters, safety areas must be determined with studies and development of the cities must be moved towards these areas, river basin surroundings must be forested and erosion control studies must be done and construction must not be let certainly on these risky areas. Agricultural areas must be protected with great care.

Solutions must be produced for housing problem by drawing lessons from the policies applied in different times in different parts of the country in the past. Land with infrastructure must be given and also project and credits must be provided to those who want to build their own houses. Besides, more residences must be constructed by the public at a convenient price suitable for the budget of the people in the region. To prevent the unauthorized construction, small-scale lands on the areas belonged to the public or at the public's disposal must be assigned to the people of small income who migrated to the cities recently as in the case of Adana. Besides, possibility of constructing focus residence must be provided for this people. It must be made good use of autonomous institutions, which are formed by municipalities, and various models created according to the quality of work. These must be organized to work under the observation and supervision of the public for the construction of urban infrastructure and meeting some urban services.

To make effective construction plans it must be made compulsory for the municipalities by the legal arrangements to assign technical staff like architect, city planner, civil engineer in various numbers according to the scale of municipalities. "Planning Supervision Divisions" consisting of the representatives of the central and local administrations and the chambers of professions must be established. In addition to this, urban construction must be taken under control effectively and also today's routine and out of use construction and structure supervision must be activated. The decree in the power of law, "Resolution of Construction Supervision", which is put into force this year only provides limited solutions for the supervision problem. So, construction supervision must be activated by at least the "Planning Supervision Department" which is established in every city consisting of people sensitive to the urban environment and also have technical knowledge and experience.

To activate urban administration more, local administration corporations must be founded at sub-regional level. Together with them a Vocational Training Center, which is to serve in all region on public finance, tax management, accounting, planning, cadastral survey map and construction practices, an urban computer based data bank and information system must be established at least in the big cities. These institutions are going to have information on the construction license, construction affairs, planning, infrastructure investments, public transportation and the tax affairs.

If the sufficient precautions are not taken, urbanization speed in the region will increase the available problems. For this reason, the plan is aimed to solve the problems before they become more complex and to create healthy urban environments by providing some precautions and prescience mentioned above.

2.8.1.1. Summary of the Current Situation

There have been living 2,379,134 people in the 30 settlements, which are taken in the category of urban settlement and of which population are more than 20 thousands (1997) in the region. This shows also that only 22.5 % of population of the region consists of urban population. However, rate of urbanization is relatively high there due to the migration from the villages to the cities.

If the province and district centers are accepted as urban population according to the State Institute of Statistics (SIS), 28.8 % of the population of the region is living in the cities in 1990. As it is seen in the **Table 2.8.1.1**, urbanization rate of the cities in the EAP Region is low when compared to Turkey' general. The cities where the urban population rate is over the average in the region are Elazığ (49 %), Hakkari (51.9 %), Erzurum (46.2 %), Erzincan (45.5 %) and Bitlis (48.6 %). Although urban population increased less in some of these provinces (Hakkari, Bitlis, Muş, Bingöl, Ağrı, Tunceli) it is accepted that urban population rate increased since population decreased in rural areas due to immigration. However, urban population increased in the city centers of Malatya, Erzurum, Elazığ and Van since these cities are the most developed cities of the region from the socioeconomic and sociocultural aspects and they are in a position as the centers for the immigration. From the above-mentioned centers Malatya, Erzurum and Elazığ undertake the functions of regional centers. Other city centers and Tatvan district center are fulfilling the functions of sub-regional centers.

Table 2.8.1.1: Urban Population and Urbanization Rate In the EAP Region

	Urban Population Percentage					Urban Population	Increase Rate
	1960	1970	1980	1990	1997	1960-1990	1990-1997
Region	9.6	15.5	20.4	28.8	40.5	19.2	12.9
Turkey	21.9	28.8	37.1	51.2	65.0	29.3	13.9

When the average population increase rate of the cities of the EAP Region is examined, it can be observed that the cities in harmony with geographic environment and not threatened by geomorphologic factors are on the way to become developed fast. And it can also be observed that the cities that have high potential of agriculture and suitable

climate are on the way to become developed fast too. It can be said that the division and development of the cities are determined mainly by geomorphologic structure. The important cities of the region are developed generally on the lowlands and depression areas through the east-west direction. However, settlements established in the places faraway from the main highways and having relatively less economic potential, are the settlements where urban functions developed quite less (**Figure 2.8.1** Topography and Settlements).

So Malatya, Elazığ and Van located on the depression area in the south of the region are becoming leading centers. Tatvan and Erciş, on the shores of Lake Van, are the settlements that show continual positive development. It also takes attention that population increase rate accelerated during the period of 1990-1997 in Kovancılar, Adilcevaz, Ahlat, Bulanık, Patnos, Yüksekova and Hakkari that are on the same depression areas and locations connected to it. The population of Doğubeyazıt is increasing regularly due to the advantages of the Gürbulak Customs Border.

Erzurum, which is among the cities located on the depression chain in north and connected to natural road, is a city of which population increase rate is over the average of the region except 1985-1990 period. Although Erzincan is in a suitable condition, the earthquake disaster occurred from time to time affects the development of the city negatively. Population of Iğdır province with the opening of the customs border of Dilucu in 1992 and securing the title as province showed a rapid increase during 1990-1997 period. In the same way, it has been seen an acceleration in the population increase of Üzümlü, Pasinler, Horasan, and Oltu at the same period. The population increase rate is moving under the region's average in Kars and Sarıkamış located on Bayburt and Kars plateau on the road of Erzurum-Trabzon. As it is seen in the **Table 2.1.1.3** in the chapter on population, the provinces of which population decreased during 1995-1997 are put in an order according to their decreasing rate as Tunceli (-15,4), Gümüşhane (-8,1), Bingöl (-5,1), Ardahan (-4,0), Erzincan (-3,3), Bitlis (-2,9) and Bayburt
(-2,4).

Since the natural road routes in the region extend generally towards the east-west direction, the main transportation arteries of the region also extend toward this direction. These are two main lines, one on the north and the other on the south. The one on the north lies between Kars and Sivas where main railway and highway pass. This highway has extensions from Erzurum to Hopa and from Aşkale to Trabzon as well as from the Gürbulak Customs Border to Iran and from the Dilucu Customs Border to Nahcıvan. The main transportation route of the region in the south lies between Van-Elazığ-Malatya-Kayseri and has connections of Bitlis-Siirt, Bingöl-Diyarbakır, Elazığ-Diyarbakır and Malatya-Kahramanmaraş. Although the main routes on the north and south of the region connected to each other by north-south directed roads in some parts, they are not active enough since the standards of these roads are relatively low (**Figure 2.5.1.**).

2.8.1.2. Bottlenecks and Suggestions

The Factors Limiting the Urban Development

The cities in the EAP Region can't perform their functions enough due to many current socioeconomic and physical planning problems. Some of the main problems are:

- Since a large part of the Region is located on the earthquake zone, the cities are on the areas subjected to high earthquake risk,
- Limited number of fertile agricultural lands were occupied by the settlements around the cities due to the topographic structure of the Region
- Rapid population increase in many cities of the Region,
- Lack of employment possibilities in the cities,
- Lack of capacity of the local administrations,
- Housing, housing deficit, squatter housing,
- Lack of urban equipment and infrastructure services.

Some of the problems of the cities in the EAP Region are the same problems met in the other cities of the country and arise from urbanization policy, planning order and regulations.

The solutions of the problems like loss of agricultural lands and squatter housing, which are caused by the impotence of the local administrations in providing staff, financial resources and orderly construction, depend on the reforms in the countrywide. However, these problems met frequently in the EAP region more than the other parts of the country since the progress is so less in the region. Besides, the problems like the stagnation in private entrepreneurs and inadequacy of education in the region arise from the ecological and geologic structure and social character, which also deteriorate physical structure of the cities and limit the leadership of the cities from economic and social aspects.

A detailed plan must be prepared in the first period (in 2001-2005) to use settlement arrangement in the region as a mean of easy economic and social development. Then this plan must be put into force in the second and in the third period to get rid of the lack of all equipments first. However, the proposals and efforts to remove dilemma in the cities of the EAP region must have those features:

a) Priority must be given not only to the public investments but also to the projects that make cooperation between public and private sectors possible.

b) The models and methods to be offered for the EAP Region must not only be the measures especially for the region but also be repeatable in the other regions to increase the efficiency (if it is necessary to arrange) of the present administrative organization and applicable in an easy way and in shortest time too. But it must not be given up to try new administrative models and methods when needed. The applicability of the offers in every region is very important in Turkey from the establishment of the regional planning practice aspect.

c) It should be paid attention to the new established units and the adopted models for not being radically against the present administrative system.

When the inefficiency of the society of the region about public benefit and participation, limited number of educated human resources, the continual inefficiency of the private sector in organization and in reaching a powerful capital are taken into consideration there must be a common character in the offers for the development of the

EAP Region. This is the necessity of the cooperation of the public and private sectors and also the intervention of public sector to accelerate the works at the beginning even it is limited. These interventions must be facilitating, guiding and canalizing though not to be financial. For this reason, legal and administrative measures are vital for the EAP region.

Natural Disaster Problem of the Region

The region is on the 1st and 2nd degree earthquake zones. Besides, there have been located many fault lines in the east-west direction.

Avalanche Problem

The region where the avalanche occurs mostly is the EAP region except the province of Malatya and Elazığ. Avalanches usually occur on the altitudes over 1,500m. The provinces where avalanche threat would be the most effective are Hakkari, Tunceli, Bingöl, Bitlis and Siirt.

Flood Problem

Flood comes into being as a result of thawing of the snow due to sudden increase of heat during the spring as well as intense and continual rainfall on the river basins as well.

The following floods can be given as an example in the region (Present Situation and Analysis Study)

* **Floods in Bitlis District**; Bitlis Creek, Çaykan River,
* **Floods in Erzincan District**; Kağırdıgün Kabusu, Çamlı, Çanağın rivers,
* **Floods in Erzurum District**; İspir, Aksu, Rizekent, Gelinkaya, Hasankale, Pasinler settlements,
* **Floods in Gümüşhane District**; Harşit Creek,
* **Floods in Malatya District**; Kırmızı Bayır River in Darende, Tohma Water, Beydere, Kılayık Creeks,
* **Floods in Muş District**; Murat Nehri, Karasu and Çar Creeks
* **Floods in Van District**; Kurubaş and Akköprü rivers, Engil Dere (Gürpınar), Zilan (Çelecibağ) and Keşo rivers.

The measures that must be taken as soon as possible to rescue from the possible natural disasters are as in the following;

The data obtained from the researches on the volcanic mountains and geologic structure and tectonic character of the land must be used in determining new areas for settlements. So a detailed land survey must be done in the region. Besides, research project must be started for necessary technical measures, performances, method and plan typology that should be followed in the construction in the region.

- Projects of decreasing threat at the beginning by constructing flood traps above the areas near to the origin of the streams to be saved from flood, and taking measures to stop the velocity of the flood pressure,
- Forest of land in river basin and constructing barriers,

- Studies to prevent erosion in the river basin according to their geologic characters,
- Determining strong bases available for the settlement to decrease the earthquake risk,
- To be saved from the risk in the settlements public construction in stock must be reexamined and especially measures for hospitals and school buildings must be taken, prohibitive measures must be taken certainly for the construction in the risky areas or special measures must be put into force.

Occupation of the Limited Agricultural Lands, Problem of Inadequate Urban Development Areas

This problem has been encountered in all cities in the country wide due to the reasons like lack of supervision for reconstruction and lack of expert staff and financial resources of the local administration.

Besides, the general solutions, it is necessary to increase the cooperation between local administrations in the region, to provide technical information and staff in the first step to the local administration from the central administration to prepare land plans and realize revision in the region.

Population Increase in the Cities of the Region

The migration from rural to urban area that has been encountered in the region, deteriorates rural and urban hierarchy in the region, and causes disorganization and disorganized social and economic urbanization and problems are increasing day by day.

The cities of the region can be taken up in three groups according to their functions by using the various hierarchy researches that has been made and to be made:

- Centers of Region
- Sub-regional centers
- Local centers.

The cities of Malatya, Erzurum, Elazığ and Van in the EAP region must be planned as regional centers from the aspects of both population size and functional characteristics and their central position. It must be thought to develop average urban centers as sub-regional centers. All city centers of the region still function as sub-regional centers except above-mentioned four cities. Some of the district centers in the region are in a position to function as sub-regional center. Yüksekova, Erciş, Doğubeyazıt and Oltu are among these towns. Other district centers in the EAP region are functioning as local centers and it would be useful to plan them as local centers in future.

To direct urban equipment and social infrastructure investments toward regional centers essentially will necessitate an active leadership, and this will also bring the development of the region by activating partially existing potential of these centers.

The Problem of Insufficiency of Employment Opportunities in the Cities

Agglomeration of population in the city centers of the EAP Region is not in harmony with the increase of employment possibilities. The services that are provided in the marginal sector could not decrease also the rate of unemployment in cities of the region.

The positive atmosphere created by the infrastructure investments to be applied both in central villages and regional privileged centers due to the rational urban hierarchy and high life quality will bring economic revival in every sector and will provide new job opportunities.

Housing, Housing Deficiency and Squatter Housing Problem

Although there is no contemporary statistical data about the number of housing, housing deficiency and squatter housing areas, it is known that costs of housing is high since the building season is short due to the winter conditions, which is rugged and long in the region. Moreover, every good that is as input in production provided from outside of the region. The lack of qualified workers and migration to outside decrease the quality of the construction in the region. Squatter's houses could not be prevented in the EAP Region since the local administrations are not in a position to provide enough lands with infrastructure to settle emigrants from the rural to the cities. Besides, they do not own adequate financial sources to provide cheap housing for people of short income, and organization capacity and technical information to prevent their construction.

When the statistical data related to the houses constructed yearly is examined, while the number of house construction per 1,000 people was 1.6 in 1990 it rose to 1.7 in 1996 in Turkey's general. This indicates the dynamism in the construction sector. However, when the EAP region is examined this rate is relatively low as compared with the Turkey and also it has not been increased and left as 0.4 per 1,000 people between 1990 and 1996 (SIS, 1997).

This data implies that there has been stagnation in house construction sector in the EAP Region due to the less income level. The local people or local administrations can't utilize the existing possibilities. The information taken from the Social Housing Administration show that it built totally 1,010 residences in the region and provided technical staff and housing credit to the municipalities for 3,404 residences and credits for totally 42,904 units for the cooperatives in the region between the period of 1985-1999.

There will be housing problem in many centers since the population of the cities will increase due to the immigration. We can undertake this problem in three aspects;

- The current housing stocks must be repaired, improved and make more comfortable,
- Old houses must be broken and reconstructed,
- Houses must be constructed for the new emigrants, new married couples or for the persons who found a job and left family home,

The matters like up-keep, reparation of the present housing in stocks to strengthen them against the earthquake and make them more comfortable have been left out of the housing requirement.

In the collapse and construction of the old houses, the construction of 10 % of the housing in stocks within the twenty years has been assumed as a measure. And also it has been assumed that 16,044 house will be renovated in every period in the EAP Region as regards in periods of five years (**Table 2.8.1.2.**).

The requirement of the increasing population and of the people migrated to cities for housing is determined according to the provinces by assuming the number of household as 5 (**Table 2.8.1.2**).

While counting the house requirement of the new married people, it is supposed that 10 % of the people living in the houses in stocks would get married within the periods of twenty years and will set up new house.

Finally, it must be necessary in the cities to built a number of
1. 67,714 houses between the periods of 2001-2005
2. 70,143 houses between the periods of 2006-2010
3. 186,484 houses between the periods of 2011-2020

Table 2.8.1.2: Approximate Demand for Urban Housing by Period

		The new housing need of the increasing population and number of houses		
Provinces	**Housing to be Renovated in 20 Years (%10)**	**2001-2005**	**2006-2010**	**2011-2020**
Ağrı	4,451	1,590	2,711	8,767
Ardahan	630	105	315	2,749
Bayburt	905	377	472	2,072
Bingöl	2,541	1,086	651	5,944
Bitlis	3,994	234	234	2,158
Elazığ	6,897	5,673	3,997	10,811
Erzincan	3,188	267	1,702	5,837
Erzurum	10,387	4,689	5,979	10,827
Gümüşhane	1,263	164	574	3,853
Hakkari	2,713	1,174	1,057	940
Iğdır	1,382	379	568	3,456
Kars	2,946	646	1,293	7,622
Malatya	10,680	11,380	11,255	26,539
Muş	3,160	2,682	1,957	12,663
Tunceli	1,117	1,285	1,413	4,980
Van	7,923	3,897	3,877	13,090
New House Requirement		35,629	38,055	122,308
Renovated House	64,177/4=16,044	16,044	16,044	32,088
House requirements of the new married couples		16,044	16,044	32,088
Total Number of House Requirement		**67,714**	**70,143**	**186,484**

Housing requirement of the region is presented at the **Table 2.8.1.2**. The construction of planned housing must be accelerated in the cities, which have development potential and attracting migrations from the surrounding cities and towns. The unauthorized construction has been continued widely in these cities where there have been no enough ready lands with infrastructure. For this reason, the production of ready lands with infrastructure must be accelerated. On the other hand, Social Housing Administration and local administrations must be active and give precedence to the region for housing credits and increase the production of land with infrastructure will prevent unauthorized construction and contribute to the employment as well.

While forming new housing areas special to the region considering the seismic character of the region, it must be given importance to:

- Selection of place,
- Planning, architectural project preparation,
- Selection of construction technique and material,
- Research consisting of construction implementation and the stages of supervision of being ready of the region for settling in and a method consisting of design-application and financial dimensions must be determined. Projects should be prepared for making the squatter housing areas healthy and renewal,
- Research,
- Designing,
- Construction,
- And financial dimensions which must be included in a package of projects to be prepared.

Squatter Houses and unauthorized construction is inevitable in the cities where there is migration from the rural increase rapidly if the necessary measures are not taken. There has been developed many models and methods in the world to provide housing for people of small income and people who newly migrated to the cities. The publications about the various practices of different countries are found in the planning literature and it has been discussing in the international meetings. These programs are summarized as:

- Helping programs for the person who built his own house,
- Production of social housing by the Public,
- Systems of housing for rent,
- Programs providing house credit to the persons and cooperatives.

These systems are also implemented in different times in Turkey in the past. Land with infrastructure, project and providing credit in the framework of help programs for people constructing their houses themselves, have been a solution to meet the problems of the people of small income. However, this system that could not catch the speed of the squatter housing construction and applied in limited areas because of political preferences lost its success.

Social housing and house to let (Public housing) for public official system addressed only to the families of small income who have also social security and work at

organized works rather than the people who newly migrated to city. Crediting systems and group of dwellings constructed by the Social Housing Administration meet the needs of the people of middle and high incomes.

For this reason, it is necessary to provide credits to the cooperatives together with conditions and programs special to the region by the Social Housing Administration. Besides, local administrations must apply special projects in the cities where there are migrations and also for the people of small income. There must be provided areas for people of small income who newly migrated to the cities in outside of the city even in small dimension and with infrastructure. In addition to this nucleus houses also must be provided within the borders of areas belonged to the Public due to the trends of urban life and also housing projects must be provided. A kind of housing project realized by Adana Municipality by shortening and simplifying mapping cadastral plan and construction period can be issued as an example for this.

The related administrations must establish companies and cooperate with the private sectors, and search for national and international credit possibilities to develop regions. In these cities, an organization model practiced in the new cities of Great Britain can be used. According to this model, newly developed urban administration, which cooperates private sector, permit the latter to use some rights given to the public. In return the administration takes the responsibility of constructing prestige houses to market them and also constructing houses addressed in away to the people of small income, and preparing all settling areas with social and technical infrastructure. A similar study has been implemented in the Dikmen Valley and the Gecak projects by the municipalities of Ankara.

Urban Equipment and Problem of Deficiency of Infrastructure Services

There has been master plan in most of the settlements where there are municipal organizations to constitute the base that is necessary for urban development and urban equipment in the EAP Region.

There is no plan in 54 of 307 settlements that means only 18 % of settlements within the borders of 16 cities in the region (January 1999 Information of the Bank of Provinces). However, it is determined that plans have been made many times in 164 of these municipalities. The renovation of the plan frequently is the result of the claim of municipalities to use urban areas more intensely after releasing from the supervision of ministry, following the turn over of the authority to local administration in 1985.

Moreover planning is accepted as the first requirement for the municipalities to get aid from the Bank of Provinces for the infrastructure projects.

There is drinking water network in 16 province centers and 117 town centers of the region. There has been constructed sewerage network of 13 of the provincial centers. There is sewerage only in 21 of the total number (133) of provincial and district centers and only 4 of them have refinement plants.

In the deficiency of urban infrastructure, environmental pollution causes the faultiness of life quality and prevents economic development. These kinds of deficiencies are becoming important restrictions especially in this age when sustainable development and globalization process are taking place.

Regional activity programs must be prepared to remove urban equipment deficiencies starting by from the privileged centers. Cooperation among the municipalities must be increased especially to meet the water demands and solid recycling services.

There are various models adopted by the local and central administrations in providing infrastructure. When the examples from the western countries are examined; there have been met various models in a wide variety from the central administration dominated models to the private sector dominated models. These can be summarized as:

1) Urban services can be managed by central, regional or local administrations in other words by the public.

2) Urban services can be provided by autonomous institutions that are founded especially to serve and by the institutions legally tied to the public. These institutions are flexible in taking decisions and superior in technical activities. However, due to their autonomy there might be problems in the coordination with other municipal activities.

3) Some of the services submitted to the society like management and up-keep works might be turned over to the private company by making a contract of service. For example, a private company might be rented to read meter, to prepare invoice, to collect fee or for the special reparation and up-keep for public transportation private enterprises might be used.

4) All municipal management and up-keep of municipal services might be transferred to an expert and private and semi-private company by making a contract of administration assuming whether there is profit partnership or not. Although there is not any difference between the contract of service and the administration, legal administration contract that includes every steps of service is more comprehensive than the service contract.

5) Using the method of leasing for a long period of time of all tools and materials belong to the public concerns might be turned over to a private company for a certain time and rent. But, contrary to the methods of alternative given above, financial risk of management and up-keep belongs to the tenant.

6) There might be defined an exceptional right to carry out definite service by giving privilege to a private company. This right might also be limited for definite area. But, besides the management and up-keep, it includes construction and /or the improvement of the system as well.

7) The administration that is liable for supplying urban service might give license or permission to the private entrepreneurs to carry out an activity in a definite area. The permission might be used in place of privilege to show the base that there are more entrepreneurs competing with each other for the same service.

There are special conditions (time and price) in the permission certificate about the service that is to be done.

8) In the free participation system there might be given permission to every body who complies with some minimum legal conditions (e.g. security) to secure the place, time and to fix the price as he claimed.

All of these eight alternatives are applied in different administrations and cities. However, it is necessary to convey that a model, which is fit to a city, might be invalid for the other or a method, which increases service activity, might not be applied for the other service.

When a discussion is made to apply one of these alternatives in the EAP Region, the solutions that became reasonable, are municipal corporations and the Bank of Provinces. The financial and technical help given to the municipalities by the Bank of Provinces are very profitable. It is still possible for municipalities to benefit more from the fund in the center by unifying their efforts and to decrease the costs. Private sector also might cooperate with the municipalities in this field as an ideal partner by its competitive character that providing high labor force efficiency.

The Problem of the Capacity Insufficiency of the Local Administrations

Lack of financial resource, expert staff or administrative knowledge and ability seen in the local administrations in the nation wide is more clear in the region because of the underdeveloped social structure in the region.

It s expected that local administrations in the region will have better possibilities in the framework of the Local Administration Reform. Moreover, protocols and programs must be prepared and applied to meet the technical and administrative problems of municipalities with the help and cooperation between provincial administrations and chamber of professions, regional establishments, universities of the region.

2.8.1.3. Laws and Regulations to Overcome Urban Bottlenecks

There have been legal and administrative arrangements in the source of precautions to be taken for the development of the EAP Region and actively involvement of the EAP Region's cities in this development. The province and village administrations, which are defined as local administrations in Turkey, still have administrative deficiencies. The provincial administrations could not show more efficiency in the development of cities since they turned over many of their functions to the provincial offices of central administration due to the lack of finance and technical staff. The main problems of municipalities as the principal representatives of local society since they were elected, can be summarized as:

- Scarcity of technical staff
- Dependence to the center from the aspect of financial resources
- Not having population size, which will make investments, requiring specialized experience and expertise, profitable.

1) Technical Staff

Declaration of the settlements, population of which are more than 2,000 and are still characteristically rural from the aspects of social and economic structure, as municipalities without making any distinction and entitling the same authority of the municipalities, which are urban centers in real meaning, is the main legal problem in Turkey.

By the new legal arrangement, municipalities must be grouped from the aspects of population groups and technical staff that should be employed and must be made liable to employ technical staff which own qualifications in the below within the two years;

1st Group: Municipalities, which own population between 20.000 and 50.000, must employ at least 1 Civil Engineer, 1 Architect, 1 City Planner, 1 Map Engineer,

2nd Group: Municipalities, which own population between 50.001 and 100.000, must employ at least 2 Civil Engineer, 2 Architect, 1 City Planner, 1 Map Engineer,

3rd Group: Municipalities, which own population between 100.001 and 250.000, must employ at least 3 Civil Engineer, 3 Architect, 2 City Planner, 2 Map Engineer, 1 Electronics Engineer, 1 Mechanical Engineer, 1 Geological Engineer or geomorphologist,

4th Group: Municipalities, which own population between 250.001 and 500.000, must employ at least 4 Civil Engineer, 4 Architect, 3 City Planner, 3 Map Engineer, 2 Electronics Engineer, 2 Mechanical Engineer, 2 Geological Engineer, 1 Landscape Architect, 1 Environmental Engineer, 1 Urban designer,

5th Group: Municipalities, which own population more than 500.001 and metropolitan municipalities, must employ at least 5 Civil Engineer, 5 Architect, 4 City Planner, 4 Map Engineer. They must also employ 3 Electronics Engineer, 3 Mechanical Engineer, 3 Geological Engineer or geomorphologists, 2 Landscape Architect, 1 Urban Designer, 1

Regional Planner, 1 Psychologist, 1 Economist, 1 Industrial Designer.

It must be made obligatory for the municipalities that have population under 20,000 and the municipalities that have population over 20,000 and do not employ the technical staff given above to establish the Technical Consultation Group. For this group, there must be assigned technical consultation group consisting of 1 civil engineer, 1 architect, 1 city planner and 1 map engineer supplied from the Governorship, the Municipality Unions, the Chamber of Turkish Engineers and Architects, or the Private Technical Consultancy firms.

These general legal arrangements will be helpful in solving the problems of the cities of the EAP Region.

2) Assistant Divisions

a) Improvement of the technically orientated construction commission from the aspects of promoting the quality of planning studies of the local administrations must be inevitable condition in the period of localization. The aim of these

commissions is to help councils of municipalities and to provide more effective participation of the related establishments and people.
These divisions might be located in the structure of Governorship and local administration. The important thing is the obligatory nature of commission decisions and persons who will participate in the commission.

The members of the commission who are from different parts of the society and the representatives of local administration and the chambers of professions must be the persons who have enough technical knowledge and experience to evaluate prepared plans. A "Planning Supervision Division" which will inspect the plans from the aspects of regulations, technical proficiency, planning hierarchy coherence, city and construction principle and the essentials with suitability for the public interest, will also help local administrations with its canalizing and obliging decisions.

b) Informing the people and diversifying the means of participation into the planning process (obligation to arrange information dissemination meetings, methods to consult with the voluntary organizations, training about being urban by the local administrations, and establishing urban information centers) should be reflected in the urban planning.

c) Aid and supervision conditions of chamber of professions must be constituted both at planning and application. The contribution of relating chambers is inevitable to promote the quality of the plans or to provide technical help to the municipalities which do not have required personnel.

The conscious participation of the people to the urban planning and management has not been seen as adequate in Turkey especially in the EAP region. For this reason, the construction commissions and the planing supervision commissions that consist of chamber of professions, university representatives and technical staff of central administration are offered as assistant divisions for municipal assemblies in this stage.

3) Supervision

The supervision of construction applications in accordance with the construction law still has been realized in three stages. These are:

- Individual supervision of technical staff which are monitoring the application of the project by taking the responsibility of the construction and responsible both for the public and for the construction holder,

- Supervision of the local administrators for the construction position, regulations, projects and health conditions at the beginning and end of the construction,

- Sub-supervision procedures to be applied to the local administrations by the Ministry of Internal Affairs from the aspects of regulations and planning conformity.

Moreover, the Ministry of Civil Works and Resettlement is providing views about the construction rules to the central and local administrations or citizens upon request, and is evaluating the qualifications of the planners and public contractors. The professional chambers are also giving project license in their relevant fields.

However, all these arrangements have been losing their efficiencies day by day. The supervision procedures have been carried out without taking great care and the supervision of the Ministry of Internal Affairs has been inefficient due to the technical skill and experience deficiencies. So supervision deficiency has been going on, as a big problem in Turkey's civilization.

The tragic results of earthquake disaster lived recently in Turkey, stressed this deficiency once again. One of the partial solutions provided in this frame, is the Decree in the Power of Law on the Construction Supervision.

According to this arrangement construction supervision establishments that consisted of expert engineers and architects as being corporate body, are bound to control construction activities, the conformity of the construction materials to the standards and geotechnical reports and implementation of the projects. The Construction Supervision Establishments are taking the technical responsibility that is suggested towards the related administration in accordance with construction regulations. There have been founded Central Construction Supervision Supra Commission, City and Town Commissions relating to the stages like to give permission to the establishments, to supervise and register and monitor their activities. So, technical responsibility concept is becoming more organized. The Decree in the Power of Law is engaging supervision procedure to the insurance system. The Construction Supervision Establishment has to prepare financial responsibility insurance against to the damages that can be happened in the conveyor system of the construction within 10 years.

With the new arrangements to be made in the law, there might be given other duties to the city and town Construction Supervision Commissions. The task of directing application and interviewing currently carried by the Ministry of Civil Works and Resettlement in the center, should be localized by authorizing these commissions to solve all problems regarding the application in accordance with the regulations.

Duty of Supra-monitoring of construction procedures of local administrations must be given to the Ministry of Civil Works and Resettlement, which is expert unit on this subject.

4) Financial Resources

The big amount of the current budget resources of the municipalities consists of shares given from the general budget incomes of the central administration. However, their limited amount and being subject to political preferences during the payment create problem.

For the municipalities to be successful in the construction service and to attempt centralizing urban development to a better direction is possible only by authorizing them to create own resources. The most important condition in the localization is to provide necessary financial resources, various application tools and flexibility to the local administrations that will enable them to undertake their new duties with success. The local administrations need new models, organizational partnerships, cooperation especially with private sector and new management methods to draw up and apply their plans and projects. Providing legal flexibility, credits possibilities and information supports on this point are the most important conditions to enable a firm urban administration.

As a summary, the first step in solving the urban problems of the EAP Region will be the administrative and legal arrangements to be made in nationwide. These must include:

- Local administration structure,
- Technical staff employment,
- Increasing financial self resources,
- Construction and plan supervision commissions,
- Construction supervision system.

2.8.1.4. Special Suggestions for the EAP Region

2.8.1.4.1. Administrative Structure

It is necessary to develop the divisions at the below to develop administrative structure of the EAP Region;

a) Establishment of the Union of Local Administration,
b) Establishment of the Vocational Training Center,
c) Establishment of the Information Sharing System.

a) Establishment of Local Administration Union

The Chamber of Professions must be made to contribute to this union, which is going to be founded by provincial and district municipalities and provincial administrations of the region. This union is aimed at providing consultation about especially planning, infrastructure, environment protection, building matters and founding park for tools and vehicles for mutual use whenever it is necessary.

b) Establishment of Vocational Training Center

Courses must be organized in the EAP Region to develop human resources of local administrations. The training center that is suggested to found in the region will conduct with the cooperation of local administrations, central administration, universities and Governorship. The subjects of the profession will be;

- Public Finance,
- Tax Management,

- School, Hospital Management,
- Accountancy,
- Computer,
- Planning,
- Map, Cadestral,
- Construction Practice.

c) Establishment of Information Sharing System

Using computer in the public service is very limited in the EAP Region. Local administrations establish their own computer system individually to collect only local taxes. This individual effort increases both the cost of the system foundation and makes difficult to share information. It would be helpful for local administrations of the EAP Region to form an efficient working information system.

Computer using is wide and common in the Western Countries' cities in urban planing, urban project coordination and persecution of the tax accountancy. The city administrations in the EAP Region must form city information center and develop it by connecting with the other systems. The urban data that will be placed in these centers will be consisted of;

- Construction license,
- Construction works, planning,
- Water and sewerage investments,
- Public transportation,
- Information about tax matters.

2.8.1.4.2. Spatial Structure

Development Scheme, Connections with SAP (GAP) and EBSAP (DOKAP)

Development in the urban hierarchy organization in the region and use of this to accelerate economic development is one of the principal subjects for the development of the region.

The city of Malatya, Elazığ, Erzurum, Erzincan and Van are planned as regional centers because of their population size and functional qualifications and central position (**Figure 2.8.3**).

The centers where there are universities are going to function as "Research and Development Centers"

Provinces of Erzincan, Kars and Ağrı are being developed as subregional centers. Other cities that have population over 20,000 will perform functions as local centers (Census Estimates).

Some cities will be important from the aspects of international relations due to their developing economic relations with the neighboring countries. These are centers of Ardahan- Kars- Iğdır and Van-Yüksekova.

It is offered that Malatya-Elazığ axis be focus corridor and direct development. The corridors extended to Samsun, Kayseri, Adana, Diyarbakır, are the corridors where railways, highways, communication, natural gas connections are in the first degree. These two cities, of which total population will be over one and a half million, are going to be developed from the aspects of industrial services, health, new technology use and at the same time sport, entertainment and cultural activities aspects with priority.

Erzurum is planned as a center between the Eastern Black Sea Region and the South Anatolian Project Regions and at the same time as a center to enforce East-West-Trans Asia connections. The city is located on the route to Iran, Baku-Ceyhan Petroleum and Natural Gas pipelines.

Van while undertaking a role of being a tourism center of the region, Yüksekova together with Van charged with being an important gate in the connection to Iran, and Asia.

The functions of the cities are put forth into two stages in the scheme where the dynamic functions directing the development are given (**Figure 2.8.4**).

a) Cities

* Cities having potential at international, national and regional level,
* Cities having potential at subregional or city level,
* Cities having potential at local level,

b) From Dominant Functions Aspect

- Goods and service offerings (Agriculture, Industry, Services),
- Research and Development Functions,
- Services in regional level,
- Tourism and Cultural Centers, Ski Centers,
- Sport centers,
- Resting centers on the road.

2.8.1.4.3. Urban Restructuring

The population of many cities of the region will be increased two fold in 20 years. It is necessary to produce development preferences and to direct these developments for these rapidly developing cities.

Elazığ and Malatya have separate Environmental Arrangement Plans. However, it is necessary to plan the entertainment, resting, tourism, sport, cultural and health areas of these two provinces together whose population will approach totally 1.5 millions in 2020. For this reason, a mutual Environmental Arrangement Plan must be prepared for 2020.

Similarly settlements around of Van Lake are offered being planned as a whole from the aspects of tourism and settlement. The total number of rural and urban population of Van, Tatvan Ahlat, Adilcevaz and Erciş at Van Lake surroundings will approach 800.000 in 2020. While taking measures to protect the Lake, it is necessary to prevent the negative effects of development of tourism rapidly from environmental pollution.

The third group of settlements that take attentions is constituted by the settlements of Ağrı, Patnos, Malazgirt, Bulanık and Muş. While researching the relations with Van Lake Environmental Plan of this entirety, total number of rural and urban population of which will exceed 800,000 in 2020, there must be prepared a diagram of development and determined the roles of settlements (**Figure 2.8.5**).

It is necessary to examine the answers of the questions in the below in the planning of these cities, population of which increase rapidly;

- Are the development areas of present cities suitable?
- Will the rapid construction in city affect historical urban site areas of the city negatively?
- Will infrastructure of city (water, sewerage, refinement etc.) be enough? What will be the additional capacities?
- Will reasonable use of equipment of city be provided?
- Will enough labor force be provided?

The cities that will be examined according to the questions above are shown as the cities "to be developed" in **Figure 2.8.5**.

2.8.1.5. Issues and Projects That Have Priority

The settlement issue is more comprehensive and concerning many sectors, for this reason, must be handled as a whole. The project areas according to sectors are shown in **Figure 2.8.7**.

The topics like population, health, education, industry, energy, communication, trade, construction and environment are discussed in the related chapters according to sectoral priority.

Some higher priority project proposals about urban development and environment are given below.

I. Project Title: Preparation of Malatya-Elazığ Environmental Plan

Justification: It is necessary to provide equipment for Malatya and Elazığ total urban population of which will exceed 1.5 million in 2020 and to determine new development areas, to make new city planing if it necessitates.

Start and End Date **:** 2001-2003

Implementation Committee **:** Ministry of Civil Works and Resettlement
Ministry of Tourism
Ministry of Youth and Sport

Implementation Area **:** The province of Malatya and Elazığ.

II. Project Title: Preparation of Environmental Plan of the Lake Van Surroundings and Development Scheme Between Ağrı-Muş

Justifiaction: The Lake Van surrounding considered as developing region in tourism will have a population about 800,000 in 2020. It is necessary to protect the lake, its historical and cultural values. It is also necessary to keep this region away from the negative effects of rapidly developing tourism. In the settlements between Ağrı-Patnos, there will be 800,000 people. The relations of population must be evaluated with the Lake Van Environmental Arrangement Plan.

Start-End Date **:** 2001-2003

Implementation Committee **:** Ministry of Civil Works and Resettlement
Ministry of Tourism
Ministry of Sport and Youth

Implementation Area **:** The provinces around of Lake Van.

III. Project Title: **The Regional Centers of the EAP Region, Sub-regional Centers and Revision of the Construction Plan of the Higher Priority Settlements.**

Justification: The construction plans of the centers, of which present population between 10-100 thousands and increased rapidly between 1990-1997 period and the population of the 2010 projection exceeded beyond the estimated population of 2010 in the contemporary construction plans, must be revised or be prepared over again. The plans of seven centers in the urban hierarchy, 2020 population of which expected to exceed 100,000 must be revised primarily. 91 settlements, of which estimated population of 2020 left under 20.000 and construction plans are going to be examined, will be left in the third stage.

Start-End Date **:** 2001-2010

Implementation Committee **:** Bank of Provinces
Municipalities

1.Stage:
Implementation Areas **:** 7 Municipalities (Erzurum, Erzincan, Elazığ, Kars, Malatya, Muş, Van).

2.Stage:
Implementation Areas **:** 35 Municipalities (Having population between 20,000-100,000).

3.Stage:
Implementation Areas **:** 91 Municipalities (Having population less than 20,000).

IV. Project Title: The EAP Region Urban Infrastructure Project

Justification : There are drinking water system in 16 province and 114 district centers in the region. The construction of the drinking water system still continues in 3 district centers. Sewerage system has been completed in 13 province centers and their construction is continuing in 3 provinces. There is sewerage system in 21 of the 117 district centers. The construction of sewerage system is in the stage of project in 18 district centers and construction continues in 6 of them. There is no sewerage system in the other 72 district centers. There is no refinement in all of these province centers except for 4 provinces. It must be provided sewerage and drinking water network plan in urban centers starting from regional centers compatible with 2020 projection population.

Start-End Date **:** 2001-2010

Implementation Committee **:** The Bank of Provinces
General Directorate of Water Affairs Municipalities

1.Stage
Implementation Area **:** Ağrı, D.Beyazıt, Bingöl, Bitlis, Elazığ, Baskil, Erzincan, Erzurum, Horasan, Gümüşhane, Hakkari, Kars, Malatya, Muş, Tunceli, Van, Erciş, Bayburt, Ardahan, Iğdır.

2. Stage
Implementation Area **:** Ağrı (Tutak), Bingöl (Karlıova), Bitlis (Adilcevaz, Ahlat, Güroymak), Elazığ (Kovancılar, Karakoçan, Palu, Sivrice), Erzurum (Oltu, Ilıca, Pasinler), Hakkari (Yüksekova), Kars (Kağızman, Sarıkamış, Susuz), Malatya (Arapkir, Battalgazi, Doğanşehir), Muş (Bulanık, Hasköy), Van (Başkale).

V. Project Title: The EAP Housing Assistant Project

a) Land and Housing Project for People of Less Income

Justification : Providing cheap land and providing housing for the families of small income and for the people whom migrated newly to the city, is the first step in preventing the construction of the squatter housing. Families of small income do not have possibilities to found cooperative or to use bank credits on this matter. The administrations have to become active to supply land in small scale by preparing infrastructure on the lands that are under the authority and disposal of the state and on the lands belonging to the Treasury. Besides, the administrations have to be active in providing projects or focus housing and suitable credits.

Start-End Date **:** 2001-2005

Implementation Committee **:** Municipalities
Ministry of Finance
Ministry of Internal Affairs
Ministry of Civil Works and Resettlement

Implementation Area **:** The cities that are subjected to the construction of squatter housing, like Malatya, Elazığ, Van and the other cities of which population is increasing.

b) Housing Project for People of Average Income

Justification :It is necessary to prepare special projects by the Social Housing Administration to meet the needs of housing in the region. So, the increase of construction activities in the region will enable people not only own houses but also revive economy by creating employment. It is necessary to construct 67,714 houses in the 1st Period, 70,143 in the 2nd Period and 186,484 houses in the 3rd Period. The application might be done with credit possibilities or social housing projects.

Start-End Date **:** 2001-2005, 2006-2010, 2011-2020

Implementation Committee **:** Banks
The Social Housing Administration Municipalities

Implementation Area **:**Primarily Regional centers, cities of which population is increasing.

VI. Project Title: Structures, Construction Material and Structure Typology Research Project That is Suitable for the EAP Climatic Conditions

Justification :Most of the construction materials used in the region have been brought from outside of the region and classic plan projects and construction system have been applied. The materials could be provided from the region and there must be determined and developed residence types and construction systems that are resistant to climatic conditions of the region and to earthquake must be developed and searched. The results must be used in the application of social housing and village city projects.

Start-End Date **:** Research 2001-2005
Application 2005-2020

Implementation Committee **:** The Social Housing Administration
The Scientific and Technical Research Council of Turkey
Regional Universities
Chambers of Profession

Implementation Area **:** Centers where social housing projects will be applied, and village-city projects.

VII. Project Title: The EAP Local Administration Unions Project

Justification :There is a need for initiative and solidarity to activate the potential of the region. The main aim is to make an organization to bring the municipalities into action together which have less population and limited financial resources. Unions; must be founded at the subregional level and must become active in the fields like using common technical counselor, forming common vehicle park or applying cooperative tourism programs.

Start-End Date **:** 2001-2005

Implementation Committee **:** Ministry of Internal Affairs
Municipalities
Governorships.

Implementation Area **:** 3 sub-regions

VIII. Project Title: The EAP Municipalities In-Service Training Center Project

Justification :This project which is needed in the region aims to develop the skills and knowledge of municipality's staff from administrative aspect and to increase the technical knowledge. Projects that are prepared especially for the region must be applied to inform staff in every rank about current developments and methods. A common center will be established.

Start-End Date **:** 2001-2005

Implementation Committee **:** Institute of Turkey and the Middle East Public Administration (TODAİE)
Governorships
Municipalities
Ministry of Reconsruction and Settlement
Public Administration and Management
Departments of the Universities

Implementation Area **:** The municipalities of 16 province and 117 county centers

IX. Project Title: Information Sharing System Establishment Project

Justification :A common and various computer centers will be established to make information flow between the municipalities easier and to encourage municipalities to use computer and decrease cost.

Start-End Date **:** 2001-2005(1.stage)
2005-2010 (2.Stage)

Implementation Committee **:** The EAP municipalities and Municipality Unions
Ministry of Internal Affairs
Ministry of Finance

Implementation Area **:** 16 province municipalities (1.Stage)
117 county municipalities (2.Stage)

Table 2.8.1.3: Strategies to be Implemented in Settlements Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2010-2020)	
Limited number of areas to be settled due to the geographic and morphologic limitations	To prepare the inventory of the areas to be settled since most of the parts of the region are located on the earthquake zone and subjected to avalanche, Determination of the construction method, material and construction typology suitable for the region	Preparation of the construction planning projects and implementation programs including legal, financial and economic dimensions to be implemented in the region.	Follow up of the implementation and to adaptation of the implementation to the factors that can be estimated beforehand	All sub-regions
Development of the central network in the region	Determination of the corridors of Malatya-Elazığ-Bingöl-Muş-Van as the development corridor by supporting the development of the region as east-west directed corridor, To change the closed structure of the region by enabling the region to participate in the transfer of information and developing the infrastructure of transportation and communication, To determine and complete the deficiencies of the infrastructure of the regional centers, To start cooperation project among the local administrations.	To develop the other city centers and Erciş, Yüksekova, Oltu ve Doğu Beyazıt as the second center To complete the infrastructure deficiencies of sub-regions and local centers Application of common projects among the local administrations	Assurance of social development and social infrastructure in the centers of the region and supporting them with encouragement of the civil initiative and organization Follow up of the implementation	All sub-regions

Table 2.8.1.3: Strategies to be Implemented in Settlements Sector (Continued)

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2010-2020)	
Orientation of the Population to the cities outside of the region	To orient migrations from rural area to outside of the region to the center of the regional cities by providing employment possibilities.	To take cautions for balanced division of rural migration among the city centers of the region and central villages	To establish rural/urban balance by implementing rural development projects and preventing the concentration in the cities	All sub-regions
Dispersed character and rare population of the villages	Searching the possibilities of unifying and collecting the dispersed villages. To determine the central villages again by researching new collectivization policy	Supporting central villages by implementing the projects suitable to their functions Preparation of the projects to improve the quality and health conditions of the village houses	Implementation of the projects	All sub-regions
Planning problems of the unauthorized urbanization	Review and renewal of the construction plan to prevent the loss of agricultural areas and to supply the needs To form the models of area and social housing production special to region and preparing special packet of projects	Improvement of the present institutional structure of the city administration, the supervision of the construction, and cooperation of the local administrations, making legal arrangements to work active	Follow-up of the implementation and remove the problems	Primarily the cities of Erzurum, Malatya, Elazığ and Van
Capacity deficiencies of the local administrations	To develop the administrative skills of the municipalities of the region by supporting with expert personnel and financial possibilities, Supporting civil society organizations, Organization of the special projects and campaigns to render consciousness of public	Determination of the cooperation models and preparation of the programs among the universities /local institutions of the central administration /chamber of professions	Follow up of the implementation, and improvement of the matters	All sub-regions

Table 2.8.1.3: Strategies to be Implemented in Settlements Sector (Continued)

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	1st PERIOD (2001-2005)	2nd PERIOD (2006-2010)	3rd PERIOD (2010-2020)	
Housing and squatter housing problems	To eliminate or improve the areas of squatter housing and to remove the deficiencies of the social infrastructure, to prepare projects to unify squatter housing areas with city, Transformation of the squatter housing areas, preparation of the social housing areas.	Supporting civil initiative and generalizing cooperatives, providing convenient credits for housing and application of social housing, Preparation of encouraging programs to produce land with infrastructure and cheap housing production special to the region by the local administrations	Follow up of the implementation, and improvement of the matters .	Primarily the cities of Erzurum, Malatya, Elazığ and Van

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Figure 2.8.1: Topography and Settlements

Figure 2.8.2: Natural and Cultural Values

Figure 2.8.3: Development Scheme

Figure 2.8.4: Dynamic Functions Directing the Development

Figure 2.8.5: Urban Development

2.8.2. RURAL DEVELOPMENT

2.8.2. Rural Development

While the region is urbanizing greatly as a result of economic development, rural area will continue to host important number of population. Rural population will increase even at a marginal scale.

Although orderly a structured settlement order is dominant in the rural space in the region, a dispersed and rare settlement structure is dominant in the city of Tunceli, Bingöl, Hakkari, Bitlis and Gümüşhane. One of the further aim of the plan is that to bring dispersed settlements and settlements of which population decreasing rapidly together to save from the infrastructure investments and to meet the needs from the social aspect on condition that the villagers are volunteer. Besides, to enable this credits and technical help will be provided to inspire the villagers as well.

The other further aim of the plan is that the revision of the "central villages" policy that has been applied approximately for 20 years. It is necessary to decrease the number of the central village both to make the services given in the central village efficient and to prevent the extravagances of the limited public resources in the settlement divisions which must not be central village due to both its relative position to the its legally tied villages and to the super-hierarchy centers and transportation channels. Plan includes a Proposal list as a fact that settlement will keep its central village status in the framework of a determined criterion. Central villages might be used as a tool of economic development in the rural area in the generalization of the producing cooperatives and unions and in the formation of the collection pen for animals and in the organization of agricultural information services and in the organization of skill courses there by undertaking the task of center.

Though it has been advanced in the project, still there are rural settlements which is still without or has no sufficient water in the region. It can't be possible to bring water even in long-run to the some rural settlements that are hamlets without water since there are technical problems. On the other hand, if it could be possible technically, it can't be possible economically since the amount of needs is high and the resources are scarce in the region and in the country. Providing sufficient and clean water is the principal subject of measures to be taken in the rural area from the aspects of the public health and cleanliness. Making all villages have drinking water in five years on condition that the central villages first and bringing electricity to all settlements are among the further aims of the plan.

The rural housing situation in the region is not satisfactory. The plan suggests providing the persons, who construct their own houses themselves, with technical help. As technical help, it is offered to the people to use pumice stone, basalt stone that is resistant to earthquake and could be provided from the region, while constructing their houses instead of using adobe. It is also offered that heat isolation and using high perlit in the construction must be generalized since they will be more profitable and helpful. To enable this project and offers, relating institutions must be active on this matter and cooperate with the universities of the region.

Although urban-rural population division changed in favor of urban, it is necessary to develop non-agricultural economic activities in the rural area since the area is not going

to be decreased absolutely throughout the plan period. For this reason, it is necessary to look for alternatives on the sub-region, province and district base with the participation of region universities and to activate them.

2.8.2.1 Summary of the Current Situation

There are totally 13,281 rural settlements of which have 6,556 village settlements and 6,635 settlements legally tied to the village in the EAP Region. There have been living 2,729,993 people in rural area in the region according to 1997 Population Census. There have been important decreases in the total rural population of all provinces between 1990-1997 except Van. The provinces of which population decreased mostly are Tunceli (89.3 %), Bingöl (49.6 %), Ardahan (43.0 %), Kars (35.1 %) and Erzincan (31.2 %). The provinces whose population decreased the least are Muş (3.2 %) and Malatya (7.7 %). The rural population of City of Van increased 1.2 % during the period given above.

There are municipal organizations only in 15.6 % of the rural settlements in the region. While there has not been big change in general in the population of these rural settlements of which population is above 2,000 between the periods of 1990-1997, population of the other rural settlements decreased at an important rate.

There have been hamlet settlements almost in all provinces of the region. The provinces where these settlements can be seen mostly are primarily Tunceli, Bingöl, Hakkari and then Elazığ, Bitlis, Erzincan, Muş, and Ağrı. These cities own 96 % of these total number of hamlet settlements. The provinces, where the number of dispersed village and quarters are high, are the cities of Malatya, Hakkari, Gümüşhane, Erzurum and Elazığ.

On the other hand, collective structured settlement is dominant in the rural parts of the Eastern Anatolia. While approximately 81 % of the villages are organized in a collective order, dispersed and rare settlement structure still exists in some of the provinces. The regional provinces, where the rate of collective structured villages is less, are Tunceli (38.9 %) and Hakkari (49.3 %).

The average number of village population which is 487 as regards 1990 decrease to 420 in 1997 due to the decrease in the rural population in the region. Turkey average is 624 people in the same year. The villages, which own population under 500, constitute 67 % of the number of the rural settlements in the region.

The provinces, where the average village population is the highest, are Muş (972), Hakkari (724), Van (625), Malatya (576). However, the average village population number is 82 in Tunceli, 215 in Erzincan, 269 in Gümüşhane, 301 in Bayburt and 325 in Elazığ.

According to the information taken from the governorships, 639 rural settlements were evacuated as regards 1999 due to the reasons like dam construction, natural disasters, security, and economic problems in the region. The number of these settlements is; 184 in Tunceli, 171 in Van, 116 in Bitlis, 85 in Bingöl, 42 in Malatya, 21 in Erzurum, 13 in Iğdır, 5 in Kars, 2 in Erzincan. Still there are people living in some of these evacuated villages, although they are less in number. The rural settlements that are evacuated due to the

security are mostly in Tunceli (184), Bitlis (113), Bingöl(44) and Iğdır(13). It is probable that there will be returns to most of these settlements.

2.8.2.1.1 Central Villages

It is the first time that central villages were determined in country wide in Turkey in 1983 by benefiting from the study of "the Hierarchy of Settlement Centers in Turkey" of the State Planning Organization. Taking the difficulty of bringing service to all dispersed rural settlements at same time, the central villages are defined as rural settlements, which will be the focus points for the investments to be made and focus points of development to serve for the other villages. 787 central villages out of 4319 that were determined in 1983 all over the country are located in the provinces of the EAP region.

Again in another study conducted by the State Planning Organization (SPO Central Villages, 1993), central villages are subjected to evaluation between 1983-1990 for their performances. This evaluation was made according to two types of services that will develop in the central villages. The first of these is the services like water, electricity, health, education, transportation, communication services. The second of these is the services like security, technical help based on agriculture, small industry, workshops, cold air tanks, wide spread education facilities towards adult people, business firms, sport and entertainment facilities. In the aforementioned study, it has been found that the services in the second degree, become widespread in the central villages of developed regions, and the services of the first degree become widespread in the regions, which are in the less developed level. From other side, the hypothesis that public investments and services concentrated in the central villages, are not corrected completely. Though it is not concluded certainly because of limited data, it is the fact that public investments may not be given enough priority in the central villages. The facilities and services found in the central villages of the EAP region as of 1983 and 1990 are given in the **Table 2.8.2.1**.

Table 2.8.2.1: Facilities and Services in the Central Villages of the EAP Region

Facilities and Services	**1983**	**1990**
Informal and Formal Education	**813**	**893**
Primary School	646	676
Regional School with dormitory	11	12
Secondary School	139	179
High School	16	25
Practical Girls Art School	1	1
Health Services	**1,100**	**1,317**
Health Unit	214	249
Health Center	229	262
Doctor	139	180
Midwife	335	382
Health Officer	117	155
Vehicle	66	89
Village Group Technician	**38**	**58**
Sport Facilities	**71**	**98**
Soccer Field	50	72

Table 2.8.2.1: Facilities and Services in the Central Villages of the EAP Region (Continued)

Facilities and Services	1983	1990
Basketball Field	16	21
Closed Sport Facility	5	5
Resting Areas	**36**	**47**
Park	12	17
Garden	16	19
Entertainment Places	8	11
Social Facilities	**612**	**696**
Mosque	543	603
Laundry Room	8	10
Bath	10	12
Village Guesthouse	51	71
Industrial Plants	**385**	**414**
Fodder Plant	0	1
Fodder Workshop	3	6
Flour Factory	4	8
Mill	245	237
Timber Factory	10	11
Pit Saw	64	74
Milk Factory	3	4
Dairy Farm	24	32
Repair Shop	32	41
Cooperative Organizations	**97**	**114**
Production Cooperation	23	26
Irrigation Cooperation	8	10
Agriculture Credit Cooperation	61	72
Village Development Cooperation	5	6
Commercial Enterprises	**649**	**757**
Butcher	56	62
Grocery	428	468
Drapery Shop	68	88
Bakery	50	61
Barber	47	66
Provision and Marketing Services	**31**	**39**
Agricultural Equipment and Marketing	9	12
State Procurement Office Purchasing Center	7	9
Milk Collection Center	4	6
Beet Purchasing Center	11	12
Touristic Facilities	**15**	**16**
Weekly Bazaar	**14**	**15**
Transportation	**760**	**918**
Train	25	25
Bus	118	149
Minibus	417	474
Taxi	200	270

Table 2.8.2.1: Facilities and services in the central villages of the EAP region (Continued)

Facilities and Services	1983	1990
Status of Roads		
Connection to County	**679**	**677**
Asphalt	186	225
Stabilize	409	394
Block	12	10
Earth	72	48
Roads inside the villages	**650**	**650**
Asphalt	9	14
Stabilize	258	256
Block	2	3
Earth	381	377
Drinking Water Network	**597**	**634**
Water provided houses with network	62	94
Fountain	535	540
Electric	**466**	**477**
Telephone	**419**	**661**
Telephone Exchange	**175**	**267**
Other Telecommunication Services	**134**	**175**
Sewerage	**23**	**38**
Land Plan	**36**	**49**

Source: Filiz DOĞANAY "Merkez Köyler" SPO Pub., 1993.

As it is seen from the table above, there has been secured a certain development in the physical infrastructure of the central villages of the EAP Region. For example, telephone and the other PTT services have been generalized in an important degree; the quality of the road that connects central villages to towns has been improved; there has been increase in the number of village which own water network system. Besides, the number of transportation vehicle has been increased in an important degree.

There has been also observed a certain development in the social infrastructure like education and health facilities, the number of primary and secondary schools, health unit and health center. But, although there has been opened 68 new health unit and health center in the region during the period of 1983-1990, the increase in the number of doctor and mid wife has been left at less level. The development in the number of sport, resting and social facilities is not enough.

On the other hand, there has not been observed any important development in the indicators relating to rural economy. The increase in the number of Agricultural Equipment Office, Purchasing Center of the Agricultural Products Office, Milk Collection Center, Beet Collection Center, left at very low level (1-2 departments). There has not been development any more in the number of cooperatives out of agricultural credit cooperatives. Though there has been increase like 86 units in the total number of commercial enterprises, the number of grocery, which own also the most share in the business establishment in 1990, is less than 60 % of the number of central villages. Similarly, the increase in the number of industrial plants is also low.

As a result of the studies made by the governorships in 1995, the central villages have been determined again in countrywide and were declared in the Official Gazette as the Decision of Council of Ministers in 1997. In the framework of this decision, 698 rural settlements have been determined as the central villages in the EAP region.

2.8.2.2. Proposed Rural Settlement Order

While 54 % of the regional population has been living in the urban and remaining 46 % has been living in the rural area as regards 1997, these rates have been estimated to be 58 % and 42 % respectively in 2020. According to this, rural population in the region will be 3,095,644 people in near future. The division of the future rural population according to the cities is given at **Table 2.8.2.2**.

Table 2.8.2.2: Estimates of Rural Population by Province

Cities	2000 Population	2020 Population	20 Annual Increase (%)
Ağrı	253.432	283.088	11,7
Ardahan	88.500	94.655	7,0
Bayburt	50.700	56.100	10,6
Erzincan	121.598	127.172	4,6
Erzurum	366.648	413.172	12,7
Gümüşhane	90.827	95.869	5,6
Muş	277.997	317.489	14,2
Iğdır	76.872	81.858	6,5
Kars	147.312	172.345	17,0
Bingöl	106.911	111.500	4,3
Elazığ	190.118	222.713	17,1
Malatya	319.986	396.109	23,8
Tunceli	31.125	38.735	24,4
Bitlis	142.277	143.151	0,6
Hakkari	95.352	103.294	8,3
Van	396.811	438.389	10,5

The provinces of which rural population is estimated to increase more in 2020 are Tunceli, Malatya, Elazığ, Kars, Muş and Erzurum.

2.8.2.2.1 Re-determination of the Central Villages

It is necessary to determine the central villages again since the central villages that are determined according to the studies made in 1995 bound to the Resolution of Council of Ministers in 1997 have not been subject to continual migration in the region. The Central villages that are determined in 1997 are taken as a base in this study and they have been evaluated from the aspects of location (natural resources, their location from the aspects of their distance to the current or planned agricultural investments), central characters, transportation connections, current population and population growth rate. The study could not be dependent on the questionnaires or field studies due to the lack of time; it has been carried out depending on the 1/250,000 scaled maps and on the different services maps of the General Directorate of Rural Services in different scales showing the transportation connections in the rural area.

Some pre-criteria have been developed to determine the central villages in the study;

a) The number of central villages must not be too many; and limited number of powerful settlements that have a centrality character for their surroundings must be chosen as the central villages. In this framework, central villages must have a higher population than the rural settlements around their sphere of influence, and their population should have been increased over the years or they should, at least, not have been subject to a significant population loss.

b) None of the villages having population less than 500 people should be determined as central village. The rural settlements, which have a definitive sphere of effect and have municipal organization, might be chosen as central village.

c) Rural settlements, which are in a position near to district center, must be chosen as central village only if they have a definite sphere of effect and the transportation from the settlements in this sphere is difficult to town center.

d) In the districts of which present and projected population is low and rural part is so small as regards to land area no villages must be determined as central village. In addition to this, it is not necessary to determine a central village in the districts which own a settlement formation as linear around of a state road. It must be essential to empower the center of the district in these kind of districts.

e) The central villages located near to each other must be examined for the possibility of reaching to the villages that are in the sphere of others, the capacity of serving and the population tendencies. If the examination result enables, the number of central villages must be decreased.

f) The central village status of the settlements of which population decreased according to the 1997 Census but reached to an important population size in former years must be maintained if any better alternatives are not found.

g) It must be given priority to the villages, which are near to the borders and customs houses, if their other qualifications are convenient.

At the end of the study, 403 rural settlements that have been seen on the list presented in the **Table 2.8.2.6** have been determined as having potential of central village function. However, 34 of them having population under 500 people, 20 of which are located in Erzincan, Tunceli and Gümüşhane, do not fit to the criteria mentioned at article (b) above. These villages are chosen since there is no alternative settlement with a more population in some of the districts of principally Tunceli and Erzincan. They must be accepted as the middle stage of hierarchy and made serve their surroundings with a minimum level investment. Some of these villages must be evaluated in the framework of "Back to Village Projects". On the other hand, there could not be determined central village in the district of Pülümür of Tunceli since the village populations are at very low levels.

The 36 of determined central villages are new proposals that are not placed in the attached list of Resolution of the Council of Minister passed in 1997. The 66 % of the total number of central village is the settlements, which have population over 700 people. It has not been required to determine the central village in 10 districts (**Figure 2.8.6**).

Central villages in the EAP Region must be used as means of rural development other than for being effective in the public services and investments. Central villages might undertake important functions;

a) In the generalization of the producer /trainer cooperatives and unions,

b) In enabling integrated animal husbandry (producing fodder plants, dairy farms, cold air tank etc. and integrated fatten cattle breeding, milk cattle breeding and sheep breeding) that is offered in the EAP Region Main Plan to develop agricultural sector there.

c) In the forming of collective network for animal productions like milk, wool, leather,

d) In the organization of individual producer in the field of handicrafts.

In the development of these functions devoted to the central villages, it will increase the possibility of the success if priority is given to the central villages that are around the big cities and have high population.

The organization of the courses on sociocultural and skill developing matters, concentration of the agricultural publication services and of the demonstration projects on various subjects in the central villages, and giving precedence to these areas in providing education, health and other infrastructure services towards rural area, will be helpful for these centers to gain attraction center characteristic.

The Study Groups formed by the governorships must evaluate the suggested central villages by taking into account the results of the Census conducted in 2000. These study groups should determine the available establishments and equipment and should also program the investments and activities that will be conveyed to each central village.

2.8.2.3. Rural Infrastructure

There have been two projects in the year 2000 Investment Program of the General Directorate of Rural Affairs about bringing drinking water, in the EAP Region, to the villages that need water and have no enough water. The first project is to provide drinking water in the period between 1998-2001 to the 196 villages and legally tied settlements without water. The second project is to rehabilitate the drinking water systems between 1991-2001 of the 646 village and their dependents of which drinking water is not enough (**Table 2.8.2.3. and Table 2.8.2.4**).

Table 2.8.2.3: Drinking Water Projects

(by 2000 prices; Million TL)

Provinces	Project Title	Characteristics	Start-End Date	Cost of the Project	The expenditures until the end of 1999	Investment of year 2000
Ağrı	Construction of the Drinking Water for Village	82(35) 12 Unit	1991-2001	2,152,000	743,000	75,000
	Construction of the Water Plant for Waterless Village	43(3) 2 Unit	1998-2001	1,605,00	45,000	40,000
Bingöl	Construction of the Drinking Water for Village	20(19)-Unit	1991-2001	406,000	366,000	10,000
	Construction of the Water Plant for Waterless Village	10(5) 2 Unit	1998-2001	239,000	59,000	60,000
Bitlis	Construction of the Drinking Water for Village	26(15) 6 Unit	1991-2001	648,000	454,00	122,00
Elazığ	Construction of the Drinking Water for Village	72(45) 11 Unit	1991-2001	2,289,000	1,359,000	290,000
Erzincan	Construction of the Drinking Water for Village	9(8) 1 Unit	1991-2001	174,000	151,000	23,000
	Construction of the Water Plant for Waterless Village	31(5) 4 Unit	1998-2001	1,089,000	94,000	115,000
Erzurum	Construction of the Drinking Water for Village	80(58) 2 Unit	1991-2001	2,136,000	1,292,000	44,000
	Construction of the Water Plant for Waterless Village	33(3) 1 Unit	1998-2001	1,239,000	89,000	20,000
Gümüşhane	Construction of the Drinking Water for Village	62(29)-Unit	1991-2001	1,924,000	594,000	10,000
	Construction of the Water Plant for Waterless Village	21(1) 1 Unit	1998-2001	827,000	27,000	40,000
Hakkari	Construction of the Drinking Water for Village	5(3) 2 Unit	1991-2000	152,000	118,000	34,000
Kars	Construction of the Drinking Water for Village	63(22) 16 Unit	1991-2001	1,877,000	424,000	322,000
Malatya	Construction of the Drinking Water for Village	54(16) 7 Unit	1991-2001	1,723,000	378,000	105,000
	Construction of the Water Plant for Waterless Village	9(1) 1 Unit	1998-2001	436,000	26,000	130,000
Muş	Construction of the Drinking Water for Village	11(8) –Unit	1991-2001	291,000	146,000	10,000
	Construction of the Water Plant for Waterless Village	23(1) 1 Unit	1998-2001	933,000	38,000	55,000
Tunceli	Construction of the Drinking Water for Village	36(4) 12 Unit	1991-2001	1,095,000	152,000	151,000
Van	Construction of the Drinking Water for Village	21(5) 1 Unit	1991-2001	688,000	99,000	19,000
	Construction of the Water Plant for Waterless Village	26(3) 1 Unit	1998-2001	963,000	53,000	30,000
Bayburt	Construction of the Drinking Water for Village	6(5) –Unit	1991-2001	112,000	72,000	10,000
Ardahan	Construction of the Drinking Water for Village	56(1) 2 Unit	1991-2001	2,222,000	69,000	33,000
Iğdır	Construction of the Drinking Water for Village	43(40) 1 Unit	1991-2001	850,000	682,000	44,000

Note: In the Characteristics Column:

- The number on the left of the parenthesis show the number of village where drinking water is to be supplied
- The number in the parenthesis show the number of village where drinking water was supplied until 2000 in the framework of program
- The number on right side of the parenthesis shows the number of village where drinking water is to be supplied in 2000.

Source: "2000 Yılı Yatırım Programı", SPO, Ankara.

Table 2.8.2.4: Number of Villages and Other Dependent Settlement Units Without Water or With Insufficient Water (As of 1.1.2000)

Provinces	Without Water		Waterless	
	Village	Legally Tied	Village	Legally Tied
Ağrı		151	200	65
Bingöl	6	169	56	47
Bitlis	4	37	58	69
Elazığ	---	---	101	114
Erzincan	22	76	41	20
Erzurum	14	137	78	33
Gümüşhane	7	143	18	19
Hakkari	2	15	6	14
Kars	16	45	65	7
Malatya	1	10	105	294
Muş	22	73	26	5
Tunceli	8	139	62	38
Van	14	164	117	73
Bayburt	---	4	5	1
Ardahan	15	27	18	6
Iğdır	5	18	57	24
TOPLAM	**136**	**1,208**	**1,013**	**829**

Source: GDRA (KHGM). General Inventory of Delivered Services, Ankara 2000.

On the other hand, there have been very serious decreases in the population of the villages due to the migration encountered in the Eastern Anatolia Region. Every kind of service activity exists out of efficiency criterion when the effects of migration in the districts where there are dispersedly structured villages are more, is also considered. For this reason, there must be made collective village studies in the areas where there are volunteer villagers. The studies about this matter must be handled within first two years of Main Plan by the commissions formed under the coordination of governorships, and the implementations must be completed until 2010.

The road connections among the villages are very weak in the Eastern Anatolia Region as well as in Turkey generally. In the framework of the Village Roads Master Plan that is going to be prepared by the General Directorate of Rural Affairs, there has been implemented the principal of only one road from each village to central village, district center and province center. The General Directorate is giving precedence to the improvement of the quality of the village roads instead of constructing new road and is planning to transfer the management and upkeep matters of 122,000 km village roads out of 323,000 km. village roads in Turkey to villages by supporting necessary vehicles. It is necessary for villages to form village unions to develop horizontal connections between themselves and to turn over the upkeep of the village roads in the framework of the Village Master Plan. The General Directorate of Rural Affairs and Provincial Administrations must provide these unions with the financial and technical supports in the context of protocols that will be done. It is suggested that these unions must be started primarily between 2001-2005 in the villages of Erzurum, Erzincan, Malatya, Kars, Van and Muş provinces where integrated agriculture projects is going to be implemented and must be extended to the other provinces in the following years.

2.8.2.4. Rural Houses

Most of the village houses in the EAP Region are buildings with flat roof, thick wall and made of adobe. Durability of the structures to earthquake is very important. For this reason, it must be generalized to use materials like building stone, basalt, perlit and pumice stone which own wide reserve in the region and also resistant to earthquake and have heat isolation. In this regard, there must be provided technical help in constructing new house to the villagers in the framework of the "Built Your House Yourself" programs. The studies must be started about the needs for the renewal or support of present housings with the cooperation of the Governorships, the Ministry of Civil Works and Resettlement and the Regional Universities.

2.8.2.5. Creation of New Employment Opportunities

Projects must be developed to increase the job possibilities in the villages by taking into consideration the underemployment problem in the rural area. It will be helpful to develop projects that is supported by credits or micro-credit mechanism provided by the Economic Development Agency (or an alternative establishment) or local administrations, in the framework of "Law on the Supporting the Development of Forest Villagers" numbered as 2924 and the related regulation, giving priority to Tunceli and Bingöl. There must be made studies on the activities like handicrafts and marketing possibilities to provide income to the villagers, especially during the winter months when it is not possible to work on land. It must be given the priority to the employment of the villagers in the studies of developing agriculture like improvement of pasture, preventing erosion, cleaning stones.

On the other hand, studies must be made according to sub-regions and provinces of the region to determine activities to diversify the rural economy.

2.8.2.6. Project Proposals

I. Project Title: Central Villages

Justification :At the end of the studies carried out by the governorships in 1995, central villages have been determined and the list of Central Villages by the Resolution of the Council of Ministers is published at the Official Gazette.The Rural part of the EAP Region suffered from great number of population loses in last years. Because of many reasons principally security problems, a great number of villages have been evacuated. For this reason, it necessitated to examine the central villages of the region in the content of the EAP Main Plan. The study has been carried out by taking central villages by the Resolution of Council of Ministers in 1997 as a base, and these villages have been evaluated from the aspects of their nearby position to natural resources, present or planned investments together with the aspects of their central characters, transportation connections, present and future population growth rate. At the end of the study it has been determined that 403 of the villages have potential to function as central village. The project aims the evaluation of these proposed central villages

by governorships with consideration to their present facilities and equipment and the results of the year 2000 Census and eventually programming the investments and activities to be delivered to these central villages. In this context, transportation studies must be handled on the empowerment of connections of the villages to urban centers. It will be helpful to give priority of implementation of the project in Erzurum, Erzincan, Malatya, Elazığ, Kars, Van and Muş where integrated agriculture projects are going to be started in the framework of the EAP Main Plan.

Start-End Date **:** 2001-2020

Implementation Committee **:** The Governorships
The Related Public Investment Institutions

Implementation Area **:** Erzurum, Erzincan, Malatya, Elazığ, Kars, Van, Muş (2001-2005)
Other provinces (2006-2020)

II. Project Title: Forming Collective Village Studies

Justification :There has been seen a decrease in the rural population of the region during the period of 1990-1997. The one third to near half of the rural population of many provinces decreased, and this decrease has been %89.3 in Tunceli. Besides the population scarcity, some of the rural settlements are dispersed. This situation increases the cost of bringing service to these areas. In the population projections that are made in the framework of the EAP Main Plan, it has been assumed that the share of the rural population is going to be decreased in the total population of the region. The project suggests forming collective village studies on condition that the villagers are voluntary. To encourage collective village studies, it will be helpful to provide credit and technical help (project, material) to the villagers while construction new house.

Start-End Date **:** 2001-2010

Implementation Committee **:** The General Directorate of Rural Affairs

Implementation Area **:** Tunceli, Bingöl, Hakkari, Bitlis, Gümüşhane

III. Project Title: **Establishment of Village Union for Construction, Up-keep and Repair of Village Roads**

Justification :"Central Villages Policy" aims to form mostly one direction relation density between the central villages and the settlements that are in the spheres of effect of these villages to decrease the costs of the submission of service to the rural areas. In return, this policy in wide meaning is a tool of economic and social development that is dependent on the relatively developed organization and division of labor between a central village and

settlements in the sphere of effect of it. And it also necessitates many directed relations. In this kind of model strengthening the connection of the transportation of every village with the central village has not been sufficient and it is also necessary to develop horizontal connections among the villages.

The project has aimed to form village unions, and make them to undertake the construction, up-keep and reparation of the roads, which connect villages to each other. The Provincial Administration and the General Directorate of the Rural Affairs must provide unions with financial and technical support.

Start-End Date **:** 2001-2020

Implementation Committee **:** The Governorships
The General Directorate of Rural Affairs
The Village Unions

Implementation Area **:** Erzurum, Erzincan, Malatya, Elazığ, Kars, Van and Muş (2001-2005)
Other cities (2006-2020)

IV. Project Title: Research on the Diversification of Rural Economy

Justification :It is necessary to increase the variety of rural economy starting primarily from the areas where there are forest villages and migration from rural is dense and creating new activities that produce income.

Project aims to undertake studies at the sub-region and province level to determine and develop the types of non-agricultural, giving priority to handicrafts and tourism sectors. The sub-regions where the study is going to be carried out, could be defined different than the three sub-regions determined in the scope of the EAP Master Plan.

Start-End Date **:** 2001-2003 (Tunceli, Bingöl, Bitlis, Ardahan)
2004-2005 (Other provinces or sub-regions)

Implementation Committee **:** Region Universities

Implementation Area **:** All provinces

V. Project Title: Obtaining Drinking Water

Justification :There is no drinking water in 1373 rural settlements (village and dependent) in the EAP Region. Intestine infection and infestations are widespread in the region. Typhoid, summer diarrhea and similar infections cause epidemics in the environment conditions where there is no hygiene and in the living places where there are no clean drinking water and water for use. Project aims to bring drinking water to all rural settlement of the

region until 2003 and construct water network the villages where water is not sufficient until 2015.

a) The Waterless Villages

Start-End Date **:** 2001-2005

Implementation Committee **:** The General Directorate of Rural Affairs

b) The Villages with Insufficient Water

Start-End Date **:** 2006-2015

Implementation Committee **:** The General Directorate of Rural Affairs

Implementation Area **:** All sub-regions

VI. Project Title: Rural Housing Project

Justification :Most of the rural houses in the EAP Region are structures with flat roof, and made of adobe. Seismic resistance of adobe walls is so low. Besides when the adobe wet it becomes soft and this decrease the resistance of it. Whereas, there are local materials like building stone, basalt, perlit and pumice stone which own wide reserves in the region and resistant to earthquake and have high heat isolation quality.

Project suggests determining the needs towards to provide technical help (project and material) and credit to the villagers in the context of "Help for the One Who Builds His House Himself" program in constructing new house. The project also suggests the encouragement of the construction of the houses suitable for the conditions of the region and the renewal of the present houses and the strengthening them.

a) The Construction of New Houses

Start-End Date **:** 2001-2020

Implementation Committee **:** The Governorships
Villager's participation

Implementation Area **:** All cities

b) Strengthening of Present Housings

Start-End Date :2001-2010

Implementation Committee :The Governorships
The Ministry of Civil Works and Resettlement
The Region Universities

Implementation Area :All provinces

Table 2.8.2.5: Summary of the Rural Development Projects

Project Title	Area	Period	Implementation Committee
Central Villages	Erzurum, Erzincan, Malatya, Elazığ, Kars, Van Other cities	2001-2002 (Researches) 2003-2005 (Implementation) 2006-2020	Governorships, Public Investment Institutions.
Collective Village Studies	Tunceli, Bingöl, Hakkari, Bitlis, Gümüşhane	2001-2010	General Directorate of Rural Affairs
Establishments of Village Unions for the Construction, Reparation, Upkeep of the Village Roads	Erzurum, Erzincan, Malatya, Elazığ, Kars, Van, Muş, Other cities	2001-2005 2006-2020	Governorships, Head Offices of the District,
Research on the Diversification of the Rural Economy	Tunceli, Bingöl, Bitlis, Ardahan Other cities	2001-2003 2004-2005	Regional Universities
Providing Drinking Water for the Villages	Villages Without Water Villages with Insufficient Water	2001-2005 2006-2015	General Directorate of Rural Affairs
Rural Housing ***Construction of New Housing** ***Strengthening of the present Housing**	All cities	2001-2020 2001-2010	Villagers Participation, Governorships, Regional Universities, Ministry of Civil Works and Resettlement

Table 2.8.2.6: List of Proposed Central Villages

PROVINCES	SUB-PROVINCES	CENTRAL VILLAGES	1997 POPULATION
AĞRI	Center	Cumaçay	586
		Eskiharman	810
		Taştekne	569
		Tezeren	928
		Murat	740
		Yazılı	701
	Diyadin	Ulukent	1,167
		Davut	900
		Günbuldu	927
		Satıcılar	746
		Dedebulak	1,497
	Doğu Beyazıt	Suluçam	987
		Çetenli	1,206
		Karabulak	1,986
		Gürbulak	1,819
		Telçeker	1,672
	Eleşkirt	Tahir	3,032
		Yücekapı	1,923
		Toprakkale	1,767
		Yayladüzü	2,031
	Hamur	Kaçmaz	1,024
		Y.Gözlüce	500
		Karakazan	597
		Seyithanbey	729
	Patnos	Özdemir	1,302
		Y.Göçmez	1,602
		Doğansu	2,564
		Dedeli (B)	2,496
		Ürküt	1,241
		Koçaklar	803
	Taşlıçay	Y.Düzmeydan	804
		Kumluca	1,231
		Y.Esen	519
	Tutak	Oğlaksuyu	1,090
		Dorukdibi	1,330
		Karacan	698
		Atabindi	508
		Akyele	628
ARDAHAN	Center	Hasköy	1,153
		Tunaçolak	1,586
		Sulakyurt	1,151
	Çıldır	Kurtkale	529

Table 2.8.2.6: List of Proposed Central Villages (Continued)

PROVINCES	SUB-PROVINCES	CENTRAL VILLAGES	1997 POPULATION
ARDAHAN	Göle	Kayaaltı	941
		Köprülü	2,012
		Ağılyolu	750
		Koyunlu	661
	Hanak	Ortakent	2,006
	Posof	Sungülü	849
		Türkgözü	603
BAYBURT	Center	Konursu	3,365
		Arpalı	2,982
		Örence	817
		Bayraktar	380
		Adabaşı	564
		Çayıryolu	2,059
		Sancaktepe	327
		Akşar (B)	2,281
	Aydıntepe	Çatıksu	690
	Demirözü	Yelpınar (B)	2,024
		Gökçedere (B)	2,599
BİNGÖL	Center	Gözeler	1,039
		Ilıcalar	1,261
		Sancak	2,969
		Yamaç	443
		Çeltiksuyu	1,206
		Çavuşlar	1,446
	Adaklı	Hasbağlar	794
		Sütlüce	394
	Genç	Servi (B)	2,410
		Yağızca	524
		Yayla	816
		Koçsırtı	650
	Karlıova	Bağlıisa	930
		Kargapazarı	1,285
		Yiğitler	1,864
		Hacılar	1,338
	Kığı	Nacaklı	534
		Açıkgüney	100
	Solhan	Elmasırtı	491
		Yenibaşak	1,504
		Hazarşah	1,932
		Yenidal	2,042
BİTLİS	Center	Yolcular	792
		Çeltikli	448
		Narlıdere	732

Table 2.8.2.6: List of Proposed Central Villages (Continued)

PROVINCES	SUB-PROVINCES	CENTRAL VILLAGES	1997 POPULATION
BİTLİS	Center	Yolalan (B)	2,478
		Arıdağ	1,251
	Adilcevaz	Aydınlar (B)	5,968
		Bahçedere	1,144
		Çanakyayla	518
		Kömürlü	849
		Göldüzü	1,134
		Akçıra	1,114
	Ahlat	Ovakışla (B)	4,106
		Otluyazı	754
		Güzelsu	1,075
		Taşharman	1,168
	Güroymak	A.Kolbaşı	940
		Gölbaşı (B)	4,325
	Mutki	Kavakbaşı (B)	1,965
		Meydan	430
		Geyikpınarı	2,066
		Uran	1,499
	Hizan	Akşar	849
		Sırmaçek	1,226
		Ürünveren	654
		Kepirli	641
		Karbastı	1,424
		Sürücüler	821
		Süttaşı	726
	Tatvan	Küçüksu	802
		Yelkenli	638
		Kıyıdüzü	1,173
		Sarıkum	1,505
		Güllü	772
		Alacabük	629
ELAZIĞ	Center	Yurtbaşı (B)	8,185
		Tadım	615
		Hıdırbaba	402
		İçme (B)	2,447
		Hankendi (B)	2,018
		Mollakendi (B)	3,731
	Alacakaya	Halkalı	614
	Arıcak	Erimli	3,157
		Bukardi	1,519
	Baskil	Karcali	586
		Gemici	472

Table 2.8.2.6: List of Proposed Central Villages (Continued)

PROVINCES	SUB-PROVINCES	CENTRAL VILLAGES	1997 POPULATION
ELAZIĞ	Karakoçan	Başyurt	599
		Sarıcan (B)	2,883
		Bazlama	731
	Keban	Gökbelen	236
	Kovancılar	Okçular	722
		Çakırkaşı (B)	3,645
		Yarımca (B)	2,332
		Ekinözü	957
	Maden	Gezin (B)	3,260
		Kavak	521
	Palu	Baltaşı (B)	2,010
		Beyhanı (B)	7,145
		Gökdere	599
		Uçdeğirmen	780
	Sivrice	Gözeli	297
		Baykaynak	470
ERZİNCAN	Center	Mollaköy (B)	2,536
		Çatalarmut	737
		Çukurkuyu (B)	2,585
		Uluköy (B)	2,238
	Çayırlı	Yazıkaya	750
		Çaykent	423
		Harmantepe	627
	İliç	Kuruçay	151
	Kemah	Kerer	373
	Kemaliye	Dutluca	310
		Başpınar	228
	Refahiye	Gümüşakar	131
		Çatalçam	164
		Yurtbaşı	455
	Tercan	Beşgöze	494
		Mercan (B)	5,707
		Altunkent (B)	2,815
		Çadırkaya (B)	2,877
ERZURUM	Center	Dumlu (B)	3,757
		Dereboğazı	1,071
	Aşkale	Kandilli (B)	2,517
		Çiftlik	643
		Topalçavuş	520
	Çat	Başköy	709
		Kaplıca	664
		Yavi	3,080
	Hınıs	Halilçavuş (B)	1,363

Table 2.8.2.6: List of Proposed Central Villages (Continued)

PROVINCES	SUB-PROVINCES	CENTRAL VILLAGES	1997 POPULATION
ERZURUM	**Hınıs**	Yeniköy	489
	Horasan	Kırkgözeler	2,033
		Aras	459
		Alagöz	784
	Ilıca	Yoncalık	328
		Toprakkale	367
		Y.Canören	551
	İspir	Çamlıkaya (B)	2,190
		Madenköprübaşı (B)	2,652
	Karaçoban	Kopal	4,035
		Karaköprü	924
	Karayazı	A.Söylemez	949
		Göksu	1,150
	Narman	Şekerli (B)	5,831
		Başkale	662
		Koçkaya	1,014
	Oltu	Derebaşı	558
		İnci	769
	Olur	Taşlıköy	964
	Pasinler	Alvar (B)	3,195
		Büyükdere	519
	Şenkaya	Akşar	2,037
		Paşalı	2,037
	Tekman	Koçyayla	1,315
		Taşkesen	1,012
		Toptepe	1,591
	Tortum	Serdarlı (B)	3,710
		Şenyurt (B)	3,877
	Uzundere	Ulubağ	1,111
	Köprüköy	Yağan (B)	3,085
		Güzelhisar	933
GÜMÜŞHANE	**Center**	Arzular (B)	2,539
		Kale	485
		Yağmurdere	187
		Tekke (B)	2,406
	Kelkit	Öbektaş (B)	2,447
		Deredolu	1,643
		Kaş	2,338
		Çamur	757
		Sadak	643
		Söğütlü(B)	2,424
		Gümüşgöze	2,363
	Köse	Salyazı (B)	3,034

Table 2.8.2.6: List of Proposed Central Villages (Continued)

PROVINCES	SUB-PROVINCES	CENTRAL VILLAGES	1997 POPULATION
GÜMÜŞHANE	Kürtün	Sarıbaba	137
		Taşlıca	852
		Özkürtün (B)	2,736
	Torul	Altınpınar	2,032
		Demirkapı	525
		Gülaçar	525
	Şiran	Kozağaç	309
		Yeşilbük (B)	2,170
		Seydibaba	441
		Kavakpınarı	381
		Akbulak	589
HAKKARİ	Center	Kırıkdağ	1,569
		Geçimli	651
		Geçitli	1,729
		Durankaya (B)	3,093
		Bağışlı	1,200
	Çukurca	Uzundere (B)	3,333
		Gündeş	4,108
		Üzümlü	373
		Çığlı	1,800
	Şemdinli	Gelişen	2,402
		Kayalar	1,327
		Korgan	3,079
		Derecik Umurlu (B)	5,473
		Konur	860
	Yüksekova	Ortaç	748
		Bağdaş	1,127
		Esendere (B)	3,153
		Demirkona	1,288
		Dağlıca	1,227
		Gürkavak	663
IĞDIR	Center	Karaçomak	829
		Suveren	1,560
		Yüzbaşılar	2,002
	Aralık	Hasanhan	1,852
	Karakoyunlu	Kocardoğanşah	771
	Tuzluca	Gaziler	1,335
		Güllüce	1,057
KARS	Center	Akbaba	808
		Boğazköy	537
		Söğütlü	537
	Arpaçay	Koçköy (B)	1,588

Table 2.8.2.6: List of Proposed Central Villages (Continued)

PROVINCES	SUB-PROVINCES	CENTRAL VILLAGES	1997 POPULATION
KARS	Digor	Bacalı	854
		Başköy	853
		Dağpınarı (B)	2,540
	Kağızman	Çayırarası	1,522
		Kötek	742
		Çengilli	1,766
		Aydınkavak	923
	Sarıkamış	Başköy	1,363
		Karakurt	800
		Yayıklı	1,117
		Yeniköy	725
	Selim	Akçakale	817
		Bozkuş	857
		Gelinalan	
	Susuz	Büyükçatak	979
MALATYA	Center	Dilek (B)	8,303
		Erenli(B)	2,579
		Şahnahan (B)	2,734
		Yaygın (B)	5,303
	Akçadağ	Çatyol (B)	1,967
		Doğanlar	1,138
		Esenbey	744
		Ören (B)	3,864
		Y. Kozluca (B)	2,001
	Arapkir	Bostancık	693
	Arguvan	Yazıbaşı	523
	Battalgazi	Hasırcılar (B)	2,035
		Hatunsuyu (B)	3,570
	Darende	Ağılbaşı (B)	2,432
		Ayvalı	5,330
		Ilıca	1,544
		Yenice (B)	1,862
	Doğanşehir	Erkenek (B)	8,261
		Gövdeli (B)	2,379
		Kurucaova (B)	3,175
		Polat (B)	3,946
		Sürgün (B)	5,873
	Hekimhan	Başak	1,123
		Hasançelebi (B)	2,114
		Kocaözü (B)	3,062
		Kirmanlı (B)	
		Gelengeç	1,006

Table 2.8.2.6: List of Proposed Central Villages (Continued)

PROVINCES	SUB-PROVINCES	CENTRAL VILLAGES	1997 POPULATION
MALATYA	Kale	Erdemli	651
	Kuluncak	Sofular (B)	1,636
		Kızılhisar (B)	2,486
	Pötürge	Bakımlı	639
		Nohutlu (B)	1,309
		Pazarcık	998
		Tepehan (B)	2,105
		Aslankent	345
	Yazıhan	Buzluk	741
		Durucasu	1,754
	Yeşilyurt	Gündüzbey (B)	7,003
		Cumhuriyet	1,476
MUŞ	Center	Kızılağaç (B)	2,307
		Sungu (B)	2,489
		Kırköy (B)	5,529
		Dereyurt	729
		Serinova (B)	2,030
		Mercimekkale	827
		Konukbekler (B)	4,970
		Yaygın (B)	7,321
		Kepenek	1,214
		Üçevler	664
	Bulanık	Elmakaya (B)	3,351
		Mollakent (B)	3,551
		Rüstemgedik (B)	5,092
		Sarıpınar (B)	3,281
		Gölyanı	946
		Karaağıl (B)	2,297
		Dokuzpınar	1,880
	Korkut	Altınova (B)	7,130
		Balkır	1,015
		Karakale (B)	2,096
	Malazgirt	Gölkoru (B)	4,016
		Adaksu	1,282
		Dolabaş	975
		İyikomşu	1,407
		Konukuran	2,215
		Çiçekveren	774
	Varto	Çaylar	870
		Karameşe	636
		Yurttutan	745
		Kaynarca	970

Table 2.8.2.6: List of Proposed Central Villages (Continued)

PROVINCES	SUB-PROVINCES	CENTRAL VILLAGES	1997 POPULATION
TUNCELİ	Center	Aktuluk	404
		Geyiksuyu	542
		Kocakoç	230
		Burmageçit	830
	Çemişgezek	Gedikler	220
		Payamdüzü	505
	Mazgirt	Akpazar (B)	1,453
		Darıkent (B)	605
	Nazimiye	Dereova	126
	Ovacık	Yeşilyazı	158
	Pertek	Pınarlar	481
		Tozkoparan	167
VAN	Center	Karpuzalan	1,176
		Kasımoğlu	567
		Ortanca	1,801
		Alaköy	805
		Yeşilsu	662
		Erçek	2,570
		Ermişler	1,222
	Edremit	Gölbaşı	1,296
	Gürpınar	Güzelsu	1,867
		Tutmaç	944
		Arındı	533
		Bozyiğit	748
		Topcudeğirmeni	555
		Oğuldam	362
	Özalp	Aşağı Sağmalı (B)	
		Dorutay	1,622
		Şemsettin	775
		Çamurlu	857
		Tulgalı	1,331
		Bağrıaçık	1,162
	Gevaş	Kuşluk	960
		Yemişlik	909
		Dereağzı	1,027
	Muradiye	Karahan	1,260
		Uluşar	1,748
		Babacan	835
		Otlakbaşı (B)	7,190
	Erciş	Ulupamir	1,624
		Payköy	1,153
		Hasanaptal	623
		Uncular	1,240

Table 2.8.2.6: List of Proposed Central Villages (Continued)

PROVINCES	SUB-PROVINCES	CENTRAL VILLAGES	1997 POPULATION
VAN	Erciş	Kocapınar (B)	3,774
		Tekler	832
		Topraklı	1,035
	Çatak	Narlı	858
		Konalga	1,321
		Bilgi	1,301
		Korulu	1,114
		Sırmalı	436
	Başkale	Güvendik	752
		Köprüağzı	838
		Çaldıran	1,196
		Albayrak	1,438
	Çaldıran	Umuttepe	919
		Güngören	1,030
		Salahane	949
		Tekindere	811
		Y.Yanıktaş	1,130
	Saray	Özenburç (B)	2,305

Note: Places indicated with (B) in the table above are the district municipalities.

Figure 2.8.6: Rural Development

Figure 2.8.7: Eastern Anatolia Region

2.9. ENVIRONMENT

2.9. ENVIRONMENT

One of the conditions of a sustainable development is a healthy environment. However, some environmental pollution problems exist in the Region:

- All of the big cities encounter intensive air pollution;
- Solid waste is not stored properly and becomes a danger for ground water sources;
- In most of the places, household and industrial waste are discharged directly into rivers and lakes, which pollutes them;
- Erosion in water basins threatens rivers and lakes;
- The flora, fauna and endemic species of the Region are in danger;
- Unless the required precautions are taken (immediately in some topics), it will be probable that the environmental problems gradually increase by the increasing urbanization and industrialization.

For environmental protection and a long term sustainable development, the plan envisages the reinforcement of Provincial Organizations of Ministry of Environment in terms of personnel and equipment, removal of authority disorder between organizations, providing Ministry of Environment and municipalities with an effective sanction power in environmental control; utilization of high quality fuel in domestic heating, implementation of heating by natural gas in big cities when natural gas is brought to the Region; establishment of treatment plants in enterprises which emit high amounts of flue gases, prevention of vehicles emitting exhaust gases over the standards from traffic; providing heating insulation in buildings in long term; storage of solid waste according to standards, consideration of maximum possible loads, permeability and angles of slip in material selection and storage; building of sewerage in big cities, discharge of household and industrial liquid wastes into rivers and lakes after being treated according to their properties; grazing of grasses and pasturage considering their capacities; preparation of Environmental Impact Assessment (EIA) Reports primary to dam constructions and using the findings and suggestions of those reports; giving special importance to keep flora, fauna and especially endemic species of the Region, inclusion of National Parks, Natural Parks, Natural Monuments and Natural Conservation Areas into protection area status by Ministry of Environment, development of projects increasing income levels of villagers benefiting from pasturages and living inside the forests in order to protect biological variety; encouragement of villagers to actively participate in the works of protection and increasing of consciousness level of public in environmental management.

2.9.1. Summary of Current Situation

According to SIS data, there exists no air pollution problem in the provinces of Bitlis and Tunceli. Since no air pollution measurement data is available in provinces Ardahan, Gümüşhane, Kars and Iğdır, it is not possible to make any comment for those provinces. Since the sulfur-dioxide (SO_2) values in provinces Muş, Erzurum, Ağrı, Bayburt, Elazığ, Erzincan, Malatya and Van exceed the long term limits given in the regulations, precautions should be taken. The most important reason for air pollution is usage of poor quality coal. The primary industries contributing to air pollution in the region are sugar factories in Erzurum, Erzincan and Elazığ; cement factories in Kars, Elazığ and Van and Maden copper works in Elazığ.

In EAP Region, there exist serious problems in solid waste since no regular storage exist and the selected areas for irregular disposal are not proper. The most serious problems in this subject are encountered in Erzurum.

Noise measurements are performed in only provinces Erzincan, Erzurum and Van, which have Provincial Directorate of Environment. As the noise level in land transportation should be in the range 55-65 dB, these limit values are exceeded in all those three provinces. When the number of labor in industry groups having made noise measurement is analyzed, it is seen that number of workers, which are exposed to noise in Malatya, are more than those in other provinces.

Due to the destruction of forests in time, decrease in grass and pasture areas and excessive grazing in those areas, the Region encounters a general erosion problem. Erosion, which lowers the efficiency of pastures more, also decreases the economic lifetimes of dam lakes on rivers of both inside and outside of the region and also lifetimes of natural lakes. As a result, it threatens the biological life and fishing on those lakes.

A high percentage of surface waters (rivers, lakes, dam lakes, etc.), which have measurements of their pollution parameters in EAP area, are exposed to pollution by bacteriologic, organic and precipitated solid wastes (Van Lake, Keban Dam Lake, Karakaya Dam, Hazar Lake). At none of the surface waters, all of the parameters indicated in Water Pollution Controlling Regulations (1988) could be measured.

The waste waters of the mass industries of the Region such as slaughterhouse and meat integrated plants; milk, sugar and leather industries have pollution loads far beyond the discharge standards (EAP Present Situation and Analysis Report). There exists no treatment plant in those industries.

Of all the provinces and districts in the extent of East Anatolia Project, only Elazığ and Van have 1st part waste water treatment plants and Erzincan has waste water treatment plant. Although building of 2nd part treatment plants should have been initiated in Elazığ and Van, planning of those plants have not been achieved yet. Waste water treatment plant projects of Erzurum and Malatya were prepared, but the construction of them has not been started.

In all of the provinces and the districts in the Region, ground water is generally used as drinking and potable water. However, in some of those ground water (as in Bingöl, Elazığ, Erzurum, Tunceli and Van), total coliform bacteria, ammonia, nitride and nitrate was found at both pit top and water main. Those water sources should be chlorinated.

In EAP Region, all kinds of soil problems such as water erosion (together with a little wind erosion), misuse of fields, stony and wet places, aridity, salinity and alkalinization, unconsciousness and insufficiencies in fertilization and pesticide usage exists with changing ratios by provinces. Although in most of the Region's grounds there is not sufficient amount of nitrogen and phosphorus to supply plant's needs, the natural fertilizers are burned as cow pit due to economic problems and being non-trained. While the highest amount of pesticide is used in Malatya, Elazığ follows it. Similar to the other Regions of Turkey, no sufficient researches have been conducted on the negative environmental effects of those, in this Region.

2.9.2. Environmental Master Plan

2.9.2.1. Environmental Management

2.9.2.1.1. Limitations

Environmental Organization

In Turkey, there are a lot number of public institutions and organizations (e.g. Ministry of Health, Directorate General of State Hydraulic Works (SHW), Bank of Provinces, Ministry of Energy and Natural Resources, Ministry of Industry and Commerce, Ministry of Public Works and Settlement, Ministry of Forestry, Municipalities, S.I.S., etc) and voluntary organizations working on protection and development of environment. But, there is an authority disorder between them. Ministry of Environment, which should be in the focus of the subject, cannot fulfill its duties and responsibilities enough; since it's provincial organizations have not been completed (In EAP Region, only Directorate Provincial Environment exists in Erzincan, Erzurum and Van). Furthermore, there are insufficiencies in the number of staff and equipment in the founded local organizations.

In only three provinces of EAP Region Directorate Provincial of Environment exists. In the rest of the provinces, there is no expert in the subject of environment in the Local Environmental Committees.

Municipal Administrations

According to Bank of Provinces's data, sewerage networks of 110 municipalities in the EAP Region are either at the project stage or even do not exist. Before completing sewerage networks, it is not possible to built treatment plants in order to control water pollution.

In the subject of planning and application of urban infrastructure services, both government organizations and municipal administrations have some responsibilities. Personnel and financial capacities of municipalities are insufficient and in order to develop various urban infrastructure plants, they are dependent on Bank of Provinces in both technical and financial points. Some of the low-populated municipalities in the EAP Region can even not pay the wages of it's labor. The revenue transferred from the government is the most important source of income for the municipalities in this Region.

One of the important duties of the municipalities is to prepare urban plans. In EAP Region, not enough staff exist to work on urban planning even in the province centers. Although most of the works of the municipalities (e.g. water pollution, water supply, discharge and treatment of waste water, collection, transportation and disposal of solid waste, air pollution, noise pollution, misuse of fields, etc) are related to environmental engineers, municipalities in the EAP Region do not employ environmental engineers similar to the others in Turkey. There exist neither a legal sanction power, nor a competent authority.

2.9.2.1.2. Environment Management Plan

In order to overcome environment management limitations mentioned above, the following precautions should be taken:

- In the management of environment, all of the society should have consciousness. Training and education panels should be organized and an extensive participation of public should be provided. Environmental engineers should be given priority in environmental organizations.

- By the sustainable development model, the natural resources should be used more economically and the wastes after production and consumption processes should be disposed in the possible shortest time (by recycling, if possible).

- Environment factor should be taken into consideration in the agricultural activities.

- Implementation of present laws and regulations about environment should be achieved. A database should be formed at Ministry of Environment by gathering all the analysis results about environment, even performed by different public organizations.

- In Turkey and in EAP Region, municipalities should be forced to employ environmental engineers and urban planners depending on their population in all provinces. Directorate Provincial of Environments should be founded by Ministry of Environment.

Environment Sector Strategies are given in **Table 2.9.14**.

2.9.2.2. Preventing Air Pollution

2.9.2.2.1. Limitations

In EAP Region, where continental climate is dominant, the weather is cold in about half of the year. Due to weak economy of the people, poor quality coal and fuel are used for heating. While a decrease is observed in both sulfur-dioxide and particulate matter in time, Erzurum is still the most polluted province of the Region. Air pollution becomes a serious environmental problem by the exhaust gases from motor vehicles and by the contributions of industries in the environment. Other than domestic heating, primary industries contributing to the pollution are sugar industry in Erzurum, Erzincan and Elazığ, cement factories in Kars, Elazığ and Van, and Maden copper works in Elazığ.

Similar to other parts of Turkey, in the measurements performed in the constitution of Ministry of Health in the Region, only two parameters (SO_2 and particulate matter) are measured. The measurement of other important parameters, as lead sulphide, (NO_x), carbon monoxide, ozone (which provides observation of photochemical fume, etc) cannot be performed yet. Especially nitrogen oxide compounds are mostly sourced from exhaust gases and become secondary pollutant by photochemical reactions with sunlight in the atmosphere.

In provinces Ardahan, Gümüşhane, Kars and Iğdır, no air pollution measurement is conducted. In other provinces, using very few (1-2 items) semi-automatic devices, continuous air quality measurements are performed in a very few stations.

The studies performed at the universities about air pollution in Erzurum and Elazığ showed that air pollution affects historical structures also.

The bowl-shaped topographic structure of most of the provinces in the Region increases air pollution meteorologically. The wind velocities in the winter are not sufficient enough to decrease air pollution in the Region.

The duty of controlling air pollution is given to different organizations such as Ministry of Health, Ministry of Environment, Civil Administrations and Municipalities. Due to the reasons that the authorized municipalities don't have required backgrounds, Ministry of Environment did not completed it's provincial organizations and civil administrations mostly took the role of coordination; only the Ministry of Health continues this monitoring duty.

2.9.2.2.2. Air Pollution Prevention Plan

In Short Term:

- In all provinces of the region, air quality control measurements must be conducted.

- New air quality measurement devices to be bought should be automatic and the semi-automatic devices at hand should be calibrated with standard automatic ones.

- In order to prevent air pollution due to domestic heating in especially Erzurum, Muş, Elazığ, Erzincan, Malatya, Ağrı and Bayburt, where high-dense air pollution exists, the quality of fuels in use should be increased. Usage of coking coal, lignite, imported coals and fuel oil (in central heating) should be encouraged. Subsidy may be an opposite approach to current policy of the government. On the other hand, considering the importance of public health in the prevention of air pollution due to domestic heating, it seems that application of subsidy mechanism is the most proper method to stop the usage of smuggled coal in provinces of high air pollution. People and especially central heating staff should also be trained in order to operate heaters and stoves with a proper technique, which will cause the least pollution.

- In order to control air pollution in the provinces of high-dense air pollution, daily and hourly measurements should be conducted by increasing number of stations.

- All private and public sector organizations contributing to air pollution such as cement industry, sugar industry, non-metallic mineral industry, textile industry, rubber industry, mining industry, etc. should be continuously controlled for their flue gas emissions in all provinces. All industrial organizations should have made their own surveys. The industries and enterprises whose flue gas emissions are not compatible with Air Pollution Control Regulations should construct their treatment plants immediately and operate them. The heights of chimneys in the present enterprises should also be checked and the ones being shorter than the required heights should increase their heights.

- Exhaust gas measurements by Environmental Foundations should be conducted very seriously. Vehicles emitting exhaust gases over the standards should be prevented from traffic and they should be encouraged to use unleaded gasoline. The revenue obtained from those measurements should again be used in environmental protection.

- According to topography and population density, the numbers of measurement stations and flue gas analysis apparatus should be determined in all provinces. The cost of air pollution measurement equipment for provincial environment organizations to be founded in the future is given in **Table 2.9.1**. Total estimated cost is 2,348,869 million TL.

In Long Term:

- Heating insulation in buildings should be provided and air pollution problem should be taken into account during urban plan stages.

- Public transportation should be supported to prevent air pollution sourced from motor vehicles.

- Natural gas should primarily be given to the provinces with high level of air pollution. Projects of infrastructure investments should be prepared and constructions should be started. Natural gas should not be considered as a profitable project by municipal administrations. The price of it should be kept under a low level as much as possible to encourage its usage.

- The usage of clean energy sources such as solar energy, biogas, wind and geothermal energy should be encouraged.

Table 2.9.1: Cost of Air Pollution Measurement Equipment

(Million TL)*

PROVINCES	Name of Apparatus	Unit	Quantity	Unit Price Million TL.	Cost Million TL.
Ağrı	Flue Gas Analysis Apparatus	Units	4	5,202	20,808
	Measurement Station	Units	5	28,247	141,235
Ardahan	Flue Gas Analysis Apparatus	Units	2	5,202	10404
	Measurement Station	Units	2	28,247	56,494
Bayburt	Flue Gas Analysis Apparatus	Units	3	5,202	15,606
	Measurement Station	Units	2	28,247	56.494
Bingöl	Flue Gas Analysis Apparatus	Units	5	5,202	26,010
	Measurement Station	Units	5	28,247	141,235
Bitlis	Flue Gas Analysis Apparatus	Units	4	5,202	20,808
	Measurement Station	Units	3	28,247	84741
Elazığ	Flue Gas Analysis Apparatus	Units	5	5,202	26,010
	Measurement Station	Units	7	28,247	197,729
Erzincan	Flue Gas Analysis Apparatus	Units	5	5,202	26,010
	Measurement Station	Units	5	28,247	141,235
Erzurum	Flue Gas Analysis Apparatus	Units	7	5,202	36,414
	Measurement Station	Units	10	28,247	282,470
Gümüşhane	Flue Gas Analysis Apparatus	Units	3	5,202	15,606
	Measurement Station	Units	2	28,247	56,494
Hakkari	Flue Gas Analysis Apparatus	Units	4	5,202	20,808
	Measurement Station	Units	3	28,247	84,741
Iğdır	Flue Gas Analysis Apparatus	Units	3	5,202	15,606
	Measurement Station	Units	3	28,247	84,741
Kars	Flue Gas Analysis Apparatus	Units	4	5,202	20,808
	Measurement Station	Units	3	28,247	84,741
Malatya	Flue Gas Analysis Apparatus	Units	5	5,202	26,010
	Measurement Station	Units	7	28,247	197,729
Muş	Flue Gas Analysis Apparatus	Units	5	5,202	26,010
	Measurement Station	Units	5	28,247	141,235
Tunceli	Flue Gas Analysis Apparatus	Units	2	5,202	10,404
	Measurement Station	Units	2	28,247	56,494
Van	Flue Gas Analysis Apparatus	Units	5	5,202	26,010
	Measurement Station	Units	7	28,247	197,729
TOTAL	**Flue Gas Analysis Apparatus**	**Units**	**66**	**5,202**	**343,332**
	Measurement Station	**Units**	**71**	**28,247**	**2,005,537**
					2,348,869

* Calculated in TL by taking 1 US Dollar = 589,500 TL.

2.9.2.3. Solid Waste Plan

Due to migration and population drop, rural residential areas were usually omitted. Considering limited financial and labor capacities of municipalities, a cooperation should be built between municipal administrations in order to provide a cost-effective service for solid waste and medical waste. It would be possible to have administrations in provinces of EAP Region obey to the rules of "Solid Waste Control Regulations" only in long term. In short term, some primary precautions such as collecting waste at it's sources continuously with a standardized manner; necessitating quota and deposit applications; increasing efforts spent on solid waste disposal by units attached to Ministry of Environment in cooperation with urban centers; storing domestic and medical wastes on special storage areas without mixing them; etc., should be taken and those precautions should be integrated with administration plan to be developed in long term.

In provinces Malatya and Erzurum of the Region, solid waste collection and transportation services are performed by both municipalities and firms, which took authorizations and responsibilities from municipalities. None of the residential areas in the Region has a regular storage area. However in Erzurum and Van, a regular storage place selection studies are conducted, while in Erzincan project studies are continued.

Household solid waste should not be dumped together with medical waste in the Region.

Solid waste dumping centers and their distances to residential areas are given in **Table 2.9.2**, while distances between solid waste collection places and residential areas in provinces and solid waste disposal methods are given in **Table 2.9.3**.

Table 2.9.2: Distances of Residential Areas to Solid Waste Dumping Centers and Solid Waste Dumping Places

Residential Area	Distance of Residential Area to Solid Waste Collection Center, (km)	Solid Waste Collection Places			
		Riverbed	Piedmount	Pit	Roadside
AĞRI	-				
Doğubeyazıt	15				
Tutak	2				
Diyadin	3				
ARDAHAN	-				
Çıldır	3		+		
Göle	5		+		
Hanak	3			+	
Posof	2	+			
BAYBURT	6		+		
Aydıntepe	1.2		+		
BİNGÖL	5	+			
Solhan	10	+			
ELAZIĞ	15				
Ağın	2	+	+		
Keban	5		+		
Kovancılar	10		+		
Maden	4		+		
Palu	4		+		
ERZİNCAN	8		+		
Tercan	3	+			
Kemaliye	3	+			
ERZURUM	9	+			
Aşkale	3		+		
Pasinler	7	+			
Şenkaya	3		+		
Tekmen	5	+			
Tortum	7		+		
Çat	1	+			
GÜMÜŞHANE	-				
Torul	2.5		+		
HAKKARİ	-				
Yüksekova	18	+			
Çukurca	5	+			
Şemdinli	2	+			
IĞDIR	-				
Tuzluca	5		+		
KARS	-				
Digor	-	+			
Sarıkamış	10		+		
MALATYA	-				
Arapkir	6-7		+		
Battalgazi	20		+		
Darende	3		+		
MUŞ	-				
Bulanık	4		+		
Mazgirt	1		+		+
Varto	1.5	+			

Table 2.9.2: Distances of Residential Areas to Solid Waste Dumping Centers and Solid Waste Dumping Places (Continued)

Residential Area	Distance of Residential Area to Solid Waste Collection Center, (km)	Solid Waste Dumping Places			
		Riverbed	Piedmount	Pit	Roadside
TUNCELİ	3				
Hozat	5		+		
Çemişgezek	6	+			
Pülümür	2	+			
Pertek	6	+			
VAN	-				
Gürpınar	3		+		
Saray	5	+			
Çatak	10		+		

Source: City Municipalities

Collection and disposal of solid waste are big problems especially in urban regions. The studies performed showed that the most economic way for disposal of solid waste is regular storage in both EAP region and Turkey. Besides its low cost, regular storage provides decomposition of solid waste until it changes into inert and stabilized matters under controlled conditions.

One of the most important problems in regular solid waste storages is the highly polluted water percolated from solid waste and reached to the base. Keeping solid waste percolating water inside hydro geologically safe, leak proof storages would not completely prevent its harm to the environment. As a result of discharge of percolating water, both surface water and partially ground water may be polluted. So, the percolating water should be controlled in especially rainy regions in most of the year.

Table 2.9.3: Distance of Places for Dumping the Waste From the Settlement Unit In Urban Centers and Methods of Waste Disposal

Provinces	Collecting Organization	Distance of Collection Place to Residential area (km)	Solid Waste Disposal Methods			
			Outfall	Open Burning	Pouring to Stream	Stowing
Ağrı	Municipality	-	+			
Ardahan	Municipality	-	+			
Bayburt	Municipality	6	+			
Bingöl	Municipality	5	+			
Bitlis	Municipality	-	+			
Elazığ	Municipality	15	+	+		
Erzincan	Municipality	8		+		
Erzurum	Municipality+Firms	9			+	
Gümüşhane	Municipality	-	+			
Hakkari	Municipality	-	+			
Iğdır	Municipality	-			+	
Kars	Municipality	-	+			
Malatya	Municipality+Firms	-				+
Muş	Municipality	-	+			
Tunceli	Municipality	3	+			
Van	Municipality	-	+			

Source: City Municipalities

The percolating water in solid waste areas is a waste water containing bacteriologic organic-inorganic (BOI), solid organic-inorganic (SOI) and heavy metal concentrations. This waste water should be collected before mixing with ground water by covering solid waste base with a natural or synthetic material primary to the storage and should be transported to the treatment plants where it must be discharged here by treating it according to receiving medium standards.

Since big environmental problems occur in areas where solid waste is collected irregularly, those areas should be abandoned immediately and proper closing and reclamation programs should be developed for those storage areas in use.

In provinces where population density and industrial activities are high, the amount of waste per capita is also high. In **Table 2.9.4**, the populations of residential areas in 2000 and estimated minimum and maximum amounts of solid waste (in kg/person. day) for the same year are given. In the table, populations of year 2000 are calculated by using the population increase rates given by SIS. The expected solid waste amounts for 2000 are calculated by taking solid waste quantity as 0.5-1.0 kg/person.day for residential areas having less than 100,000 population and 0.5-1.5 kg/person. day for the ones having a population between 100,000 and 1,000,000, as indicated in General Technical Specifications on Construction of Solid Waste Establishment Projects of Directorate General of Bank of Provinces. The regular solid waste storage areas are prepared by municipalities or by Directorate General of Bank of Provinces in the name of municipalities.

One should be very careful in the selection of material to be used in regular storage areas. In selecting those materials, maximum possible loads, their permeabilities and angles of slip should be taken into account. In critical waste storage areas, a control layer should be constructed and by opening observation cavities on some certain points, it should be checked whether percolation exists in this layer or not.

Project criteria of regular storage areas for domestic and medical solid wastes in those mentioned residential areas are given in **Table 2.9.5**.

In especially disposal of medical wastes, municipal administrations will be supported to make cooperation. Municipalities and organizations, which separate solid waste at its source and initiates recovering activities, should be encouraged. In especially residential areas of high population, the priority in investments should be given to construction of regular solid waste dumping areas in order to prevent soil and water pollution. In especially big cities, collection, transportation, separation and disposal of solid waste should be executed by private sector on condition that municipalities strictly check them. The universities in the Region should be encouraged to conduct researches on recovering, physical and chemical processing of solid waste.

Making Public Conscious of Environmental Protection

In the 4th item of Solid Waste Control Regulations, the statement "People and organizations producing solid waste have responsibilities such as selecting minimum solid waste producing technology, decreasing solid waste quantity in their present production, eliminating harmful materials in solid waste, participating in works for recycling solid waste and material recovery" appears. According to this statement, following activities should be performed to make the Region's public conscious of environmental protection:

1. In education organizations, conferences should be given to students and public on the subjects of recovery of solid waste and regular storage,

2. Entertainment programs should be prepared on this subject by local, national and audiovisual media and messages should be given to the public by conspicuous catchwords,

3. Public should be encouraged to use recyclable materials,

4. Municipalities should encourage public to sort their solid waste by putting separate dust bins on roads. Families sorting their solid waste should be exempt of street cleaning tax,

5. To decrease solid waste quantity at it's source, required separations should be done primarily at public organizations as hospitals, schools and military training centers,

6. Non-governmental organizations should be mobilized to make public conscious of environmental protection and the subject should be mentioned in military education and religious admonitions,

7. In the Region, where animal husbandry is done extensively, biogas must be introduced and biogas plants should be encouraged. In this way, while fertilizer will be used in both heating and producing energy, a higher quality fertilizer will also be obtained.

Table 2.9.4: Estimated Population for Settlement Units In Project Areas for 2000-2020 and Estimated Minimum Amount of Waste

Residential Areas	2000 Population (Thousands)	2020 Population (Thousands)	Estimated Solid Waste Quantities (tones/day)	
			2000 Minimum	2020 Minimum
AĞRI	**71**	**89**	**35.5**	**44.5**
Diyadin	11	17	5.5	8.5
Doğubeyazıt	50	67	25	33.5
Eleşkirt	10	12	5	6
Hamur	4	9	2	4.5
Patnos	66	84	33	42
Taşlıçay	4	7	2	3.5
Tutak	5	5	2.5	2.5
ARDAHAN	**15**	**21**	**7.5**	**10.5**
Çıldır	2	3	1	1.5
Damal	2	3	1	1.5
Göle	7	11	3.5	5.5
Hanak	4	6	2	3
Posof	2	4	1	2
BAYBURT	**38**	**49**	**19**	**24.5**
Aydıntepe	5	7	2.5	3.5
Demirözü	2	4	1	2
BİNGÖL	**72**	**91**	**36**	**45.5**
Adaklı	3	5	1.5	2.5
Genç	17	23	8.5	11.5
Karlıova	9	14	4.5	7
Kiğı	4	5	2	2.5
Solhan	18	24	9	12
Yayladere	3	3	1.5	1.5
Yedisu	1	2	0.5	1

Table 2.9.4: Estimated Population for Settlement Units In Project Areas for 2000-2020 and Estimated Minimum Amount of Waste (Continued)

Residential Areas	2000 Population (Thousands)	2020 Population (Thousands)	Estimated Solid Waste Quantities (tones/day)	
			2000 Minimum	2020 Minimum
BİTLİS	**52**	**54**	**26**	**27**
Adilcevaz	30	32	15	16
Ahlat	22	23	11	11.5
Güroymak	14	15	7	7.5
Hizan	11	12	5.5	6
Mutki	7	8	3.5	4
Tatvan	65	68	32.5	34
ELAZIĞ	**272**	**346**	**272**	**346**
Ağın	2	2	1	1
Alacakaya	3	4	1.5	2
Arıcak	5	7	2.5	3.5
Baskil	5	7	2.5	3.5
Karakoçan	10	14	5	7
Keban	6	8	3	4
Kovancılar	23	30	11.5	15
Maden	7	10	3.5	5
Palu	12	16	6	8
Sivrice	7	9	3.5	4.5
ERZİNCAN	**108**	**133**	**108**	**133**
Çayırlı	3	4	1.5	2
İliç	2	3	1	1.5
Kemah	2	2	1	1
Kemaliye	3	4	1.5	2
Otlukbeli	2	3	1	1.5
Refahiye	5	7	2.5	3.5
Tercan	10	14	5	7
Üzümlü	28	35	14	17.5
ERZURUM	**322**	**379**	**322**	**379**
Aşkale	13	17	6.5	8.5
Çat	6	8	3	4
Hınıs	23	28	11.5	14
Horosan	23	29	11.5	14.5
Ilıca	12	15	6	7.5
İspir	9	12	4.5	6
Karaçoban	10	12	5	6
Karayazı	3	5	1.5	2.5
Köprüköy	6	8	3	4
Narman	16	20	8	10
Oltu	30	36	15	18
Olur	2	3	1	1.5
Pasinler	30	36	15	18
Pazaryolu	4	5	2	2.5
Şenkaya	4	6	2	3
Tekman	5	7	2.5	3.5
Tortum	9	12	4.5	6
Uzundere	4	5	2	2.5
GÜMÜŞHANE	**22**	**34**	**11**	**17**
Kelkit	13	15	11.5	12.5
Köse	5	7	2.5	3.5
Kürtün	4	6	2	3
Şiran	14	17	7	8.5
Torul	6	8	3	4

Table 2.9.4: Estimated Population for Settlement Units In Project Areas for 2000-2020 and Estimated Minimum Amount of Waste (Continued)

Residential Areas	2000 Population (Thousands)	2020 Population (Thousands)	Estimated Solid Waste Quantities (tones/day)	
			2000 Minimum	2020 Minimum
HAKKARİ	**62**	**73**	**31**	**36.5**
Çukurca	4	5	2	2.5
Şemdinli	13	16	6.5	8
Yüksekova	59	70	28.5	35
IĞDIR	**47**	**71**	**33.5**	**36.5**
Aralık	7	12	3.5	6
Karakoyunlu	5	5	2.5	2.5
Tuzluca	10	4	5	2
KARS	**96**	**113**	**48**	**56.5**
Akyaka	2	4	1	2
Arpaçay	3	6	1.5	3
Digor	3	6	1.5	3
Kağızman	15	20	7.5	10
Sarıkamış	24	32	12	16
Sehim	4	7	2	3.5
Susuz	3	5	1.5	2.5
MALATYA	**450**	**630**	**450**	**630**
Akçadağ	9	16	4.5	8
Arapkir	10	14	5	7
Arguvan	2	3	1	1.5
Battalgazi	14	21	7	10.5
Darende	9	17	4.5	8.5
Doğanşehir	17	28	8.5	14
Doğanyol	4	6	2	3
Kale	3	5	1.5	2..5
Kuluncak	5	9	2.5	4.5
Pötürge	2	6	1	3
Yazıhan	4	7	2	3.5
Hekimhan	12	19	6	9.5
Yeşilyurt	12	21	6	10.5
MUŞ	**70**	**105**	**35**	**50.5**
Bulanık	32	51	16	25.5
Hasköy	20	29	10	14.5
Korkut	6	12	3	6
Malazgirt	17	28	8.5	14
Varto	14	21	7	10.5
TUNCELİ	**26**	**42**	**13**	**21**
Çemişkezek	4	8	2	4
Hozat	8	13	4	6.5
Mazgirt	3	7	1.5	3.5
Nazmiye	3	5	1.5	2.5
Ovacık	4	7	2	3.5
Pertek	7	12	3.5	6
Pülümür	2	3	1	1.5

Table 2.9.4: Estimated Population for Settlement Units In Project Areas for 2000-2020 and Estimated Minimum Amount of Waste (Continued)

Residential Areas	2000 Population (Thousands)	2020 Population (Thousands)	Estimated Solid Waste Quantities (tones/day)	
			2000 Minimum	2020 Minimum
VAN	**250**	**302**	**250**	**302**
Bahçesaray	4	6	2	3
Başkale	14	19	7	9.5
Çaldıran	9	14	4.5	7
Çatak	4	6	2	3
Edremit	4	6	2	3
Erciş	86	107	43	53.5
Gevas	9	12	4.5	6
Gürpınar	5	8	2.5	4
Muradiye	12	17	6	8.5
Özalp	7	11	3.5	5.5
Saray	4	6	2	3

Table 2.9.5: Projecting Criteria of the Regular Storage Areas for Household Solid Waste and Medical Waste

PROJECT CRITERIA		HOUSEHOLD SOLID WASTE	MEDICAL SOLID WASTE
Project Period	**For Populations < 100,000**	**10 years**	**10 years**
	For Populations > 100,000	**500,000 m^3**	
Distance to Closest Residential Area		> 1,000 m	> 3,000 m to residen.area > 5,000 m to airport
Thickness of Clay Layer to be Laid on Storage Base		> 60 cm	> 150 cm
Permeability Coefficient of Ground		> 1.10^{-8} m/s	> 1.10^{-9} m/s
Minimum Diameter of Drain Pipe		100 mm	100 mm
Minimum Slope of Drain Pipes		% 1	% 1
Height of Drainage Layer		> 30 cm	> 30 cm
Density of Folia to be Laid		941-965 kg/m^3	941-965 kg/m^3
Kind of Folia to be Laid		HDPE*	HDPE*
Thickness of Folia to be Laid		2 mm	2.5 mm
Slope of the Topmost Soil Layer		% 3	< % 5
Maximum Distance to Ground Water Level		> 1 m	> 2 m
Thickness of Agricultural Soil Laid on Sealed Layer		> 1 m	> 1 m
Measurement Time After Storage is Closed		10 years	10 years
Altitude From Ground Water Level		> 1 m	> 2 m
Thickness of Covering Layer to be Laid on Waste		> 0.3 m	> 0.5 m

- High Density Polyethylene Folia

2.9.2.4. Flora-Fauna and Sensitive Areas

2.9.2.4.1. Limitations

The flora and fauna are under a big danger in the Region since forests have been destroyed and grasses and pastures can no longer perform their functions such as providing roughage to animals, keeping soil and water, being a source for spring water and a shelter for natural fauna and hunting animals, cleaning air polluted by cities and industrial centers, being a green space and beautify environment; due to destruction of water erosion, irregular urbanization and industry, remaining under water by dam constructions. In addition, land clearing, stubble burning and usage of fertilizers and agricultural insecticides are also important reasons for this danger.

Although the total area of grasses and pastures in EAP Region are one third of Turkey's total, these areas are open to excessive grazing over their capacity due to the reason that winter feed production can not meet current needs of animals in the Region. There are critical periods in autumn and spring when no grazing must be done. On the other hand, this fact is absolutely ignored in the Region.

In EAP Region, endemic animals and endemic plants are under the danger of extinction in recent years since living environments of those on large terrain pieces which will remain under water are destroyed due to excessive number of both present dam lakes and dams in project and construction stages.

2.9.2.4.2. Flora-Fauna and Sensitive Areas Protection Plan

EAP Region is a high-density endemic region. Especially pastures are rich in terms of wild plant species. This Region is an important gathering region for some cultivated plants such as wheat (Triticum), beet (Beta), lentil (Lens), clover (Medicago), trefoil (Trifolium), cow vetch (Vicia), sainfoin (Onobrychis), grass pea (Lathyrus), lettuce (Lactuca) and onion (Allium). There are also some kinds of fruits (Prunus, Cerasus and Amygdalus), hard stone fruit kinds, Pyrus-pear, forest trees as oak (Quercus), birch (Betula), pinus vestris (Scotch pine), elm (Ulmus), scotch pine (P. Slyvestris) and also plants like thyme (Thymus), liquorice (Glycyrrhiza), soapwort (Gypsophila) and other bulbous, nodular and root stalk (with rhizome) plants.

Due to the limitations mentioned above, protection of flora, fauna and sensitive areas in the EAP Region will only be possible in long term.

The negative effect of dams on flora and fauna can be minimized by preparing Environmental Impact Assessment (EIA) Reports in order to determine possible effects of changes in dam lakes and in it's neighborhood on the flora and fauna of the Region and to identify endemic or living organisms under the danger of extinction and by taking all necessary precautions about environment during every stage of processing (e.g. afforestation of lake neighborhood beginning from building stage, etc). Especially, villagers living around natural and dam lakes should be provided with selected kinds of tree seedlings and they should be encouraged to grow those seedlings on enterprise basis.

In places that will be remain under water, collecting rare plants especially specific to this region and regrowing them have importance in future researches in different ways, besides keeping genetic variety.

In order to reach to this aim, A Central Biologic Diversity Research Institute should be founded in Turkey. Under the coordination of this institute, periodic researches should be performed on variety of species in regional universities and in other research institutes. The data obtained should be collected into a single center by a computer network under the coordination of Ministry of Environment.

In spring season, plants in pastures should not be grazed until they reach to a certain ripeness level. In autumn season, they should also be left at rest without grazing to give them opportunity to store their spare foodstuff to spend during winter season and initiate and continue early growing in spring. For this reason, grazing should be finished 3-4 weeks before

strong colds, which stops photosynthesis in autumn. Due to cold climate, grazing period is limited to 150 days.

For Turkey and EAP Region, by selecting "Gene Conservation and Control Areas" and protecting them, protection of genetic variety would be provided. In those protected areas, the most suitable ones are "Natural Conservation Areas" for the control of plant gene sources.

In EAP Region, since the basic means of subsistence is animal husbandry, forests and pastures are used excessively. In order to reserve the variety of flora and fauna in their own places, the following precautions should be taken:

1. Firstly, the National Parks, Natural Parks, Natural Monuments and Nature Conservation Areas should be taken to "protection area" status by Ministry of Environment. None of the watery area has protection status (**Table 2.9.6**). Munzur Valley National Park, which could be, used for sports activities, fishing and as picnic area in Tunceli cannot be benefited sufficiently. In the directions of the targets of Private Environment Protection Organization Department, the studies in the Region should be accelerated.

2. In the protected areas, factors creating negative environmental changes should be determined, necessary precautions should be taken to eliminate them and development project should be prepared.

3. In order to keep biological variety in the Region, projects providing working area for villagers of forests and pastures, which increase their revenue should be developed and they should be, forced to take part in the environmental protection works actively. Villagers whose terrains will remain under water should be given priority in this subject.

4. Laws of pastures should be evaluated again such that it can secure the pasture protection and achieve desired improvements in protecting biological variety.

5. A very well communication and cooperation should be developed between Ministry of Forestry, Ministry of Agriculture and Rural Affairs and Ministry of Environment to protect flora and fauna in the Region.

6. Prior to urbanization, industrialization, touristic buildings and dam constructions, EIA Reports should be prepared.

7. Similar to the other regions of Turkey, forests and farming areas are very close to each other in the EAP Region. Since the cadastre studies are not completed in a large portion of the country, forests and pastures are still being destroyed for land clearing. The feudal structure (as "Agha"s on some places) of the Region in some provinces helps this destruction. So, the cadastre of the region should be completed quickly by giving priority to the areas of rare ecosystems.

Table 2.9.6: "B" Class Watery Areas and Other Bird Areas of EAP Region According to International Criteria

Row no	Name of Watery Area	Province	It's Coordinates	Altitude m	Area, ha	Status
1	Ağrı Plain	Ağrı	39°45`N,43°00'E	1,632	125,000	No Protection Status
2	Balık Lake	Ağrı	39°47`N,43°33'E	2,241	3,400	No Protection Status
3	Bendimahi Delta	Van	38°56`N,43°39'E	1,646	230	No Protection Status
4	Çaldıran Rushy Area	Van	39°09`N,43°56'E	2,000	2,000	No Protection Status
5	Erciş Delta	Van	38°58`N,43°20'E	1,740	350	No Protection Status
6	Edremit Rushy Area	Van	38°24`N,43°18'E	1,740	5	No Protection Status
7	Erçek Lake	Van	38°39`N,43°33'E	1,890	9,800	No Protection Status
8	Horkum Lake	Van	38°20`N,42°56'E	1,740	8	No Protection Status
9	Upper Murat Valley	Muş	39°10`N,42°19'E	1,510	2,000	No Protection Status
10	Doğubeyazıt Rushy Area	Ağrı	39°45`N,44°03'E	2,000	1,000	No Protection Status
11	Sodalı (Arın) Lake	Bitlis	38°49`N,42°59'E	1,740	1,100	No Protection Status
12	Van Rushy Area	Van	38°29`N,43°19'E	1,740	80	No Protection Status
13	Yüksekova Rushy Areas	Hakkari	37°33`N,44°15'E	1,925	28,000	No Protection Status
14	Çıldır Lake	Ardahan	-	-	-	No Protection Status
15	Hazar Lake	Elazığ	-	-	-	No Protection Status
17	Ahtamar Island	Van	38°21`N,43°02'E	1,740	2	No Protection Status
18	Nemrut Mountain	Bitlis	38°37`N,42°13'E	2,935	25,000	No Protection Status

Source: Turkey Environmental Atlas-96

Reclamation and Protection of Grasses and Pastures

The necessary precautions to reclamate and protect grass and pasture areas can be listed as follows:

- Terrains should be used according to its properties.
- In field agriculture, growing feed crop should be given special importance,
- Grazing periods should be arranged so as to provide a desired level in certain grass species. The fundamental rules, which will provide naturally growing plants in pastures with proper conditions of growing and grazing, should be determined.
- Pastures becoming infertile, bare and covered by undesired types of grasses can be controlled, improved and used correctly by cultivational reclamation methods such as grazing alternately after rest, fertilizing, resowing; besides some physical reclamation methods as contour furrows, water distribution systems, cells, etc.
- Application of Pasture Development Rules together with Cultivation and Technical Precautions would provide continuity in pasture reclamation.
- Actual distribution of grass and pasture areas should be determined. A unit should be formed which will be concentrated on soil surveys. Required usage changes should be done according to area property classifications.
- Pasture reclamation activities should be initiated effectively, consciously and economically. Instead of employing lots of organizations, a Directorate General of Pastures, Grasslands, Summer Pasture and Winter Quarters may be founded.

The most effective way in keeping environmental values is the public consciousness and pressure. Mechanisms illustrating public, having them own their problems and keeping their owned values should become extensive by using all possible means.

In order to get financial support for protection expenses, international science and finance organizations should be informed and foreign support sources should be activated. An active public opinion should be formed in the coordination of Ministry of Environment.

Financial Requirement

In long term, approximately 400 million US Dollars is required for education, technical stuff employment, technical equipment, research, infrastructure, terrain classification, mapping, title deeds and cadastre expenditures.

2.9.2.5. Water Pollution

In EAP Region, five important hydrological basins of Turkey exist. Of those, Fırat Basin and Lake Van Basin are entirely in the boundaries of the Region. The part of Aras Basin in Turkey territories and parts of Çoruh and Dicle Basins are also located in this Region. (E.I.E, 1993). So, basin management and water pollution control are very important in this Region. Distribution of water surface areas by provinces is given in **Table 2.9.7**.

In EAP Region, surface waters as lakes and rivers are used in drinking and potable, industrial irrigation, recreative (swimming, water sports), fishing and transportation. Due to this multi-purpose usage of water, the usage requiring the highest water quality should be considered first.

Table 2.9.7: Distribution of Water Surface Area by Provinces

Provinces	Natural Lakes (ha)	Dam Reservoirs (ha)	Pool Reservoirs (ha)	River Areas, (ha)
Ağrı	4,299	63	-	6,034
Ardahan	13,570	-	-	1,524
Bayburt	-	-	222	375
Bingöl	43	422	-	1,800
Bitlis	191,080	2,251	82	368
Elazığ	8,256	53,135	16	1,528
Erzincan	275	925	60	8,890
Erzurum	3,032	1,230	426	11,750
Gümüşhane	25	-	64	642
Hakkari	677	4,069	-	550
Iğdır	-	-	-	1,416
Malatya	17.5	16,282	7.5	1,552
Muş	3,073	19,502	6	667
Tunceli	49	25,133	-	2,506
Van	201,018	6,171	254	1,327
TOTAL	**419,564.5**	**129,645**	**711.5**	**18,200**

Source: (SWH, 1998)

2.9.2.5.1. Limitations

The actual parameters causing water pollution in the Region are mixing of untreated domestic waste water to water supplies, soil erosion, untreated industrial liquid wastes, and percolating water sourced from irregular solid waste storages and mining enterprises.

Sensitive water collection media showing watery area ecosystem properties cannot be protected since they are not included in Private Environment Protection Regions.

In Turkey, water basins are tried to be protected by area utilization prohibitions of applicable laws. But, it is impossible to say that this prohibition is applied in this Region. No protection exists around pits and sources where ground waters of 1st and 2nd classes used as drinking water are pumped.

2.9.2.5.2. Water Quality Management

Water quality in Turkey is determined by considering "Quality Criteria of Continental Water Sources According to Their Classes" which is given in Water Pollution Control Regulations (WPCR). In any of the lakes, dams, rivers and streams in the content of EAP, all the parameters mentioned in quality criteria could not be measured. The weakest point of water management is the present monitoring and control mechanism in the Region. Water pollution control is being performed by Ministry of Health (drinking water), SHW Regional Directorates, Directorate of Provincial Agriculture and universities in an unplanned and unorganized manner. Ministry of Environment, which should be in the focus of this work, has no activity due to insufficiencies in equipment, organization and technical stuff. In especially preparation of EIA reports for dams, transportation and industry, water quality parameters should continuously be checked. Necessary database for preparation of EIA reports is not available in the region.

The lack of integrated water source utilization programs is a problem in the Region. A water source planned for irrigation becomes insufficient or has inconvenient quality for any other purpose.

Surface Water Quality

Lake Van, which is one of the largest lakes with soda; is exposed to organic and bacteriological pollution since domestic and industrial waste waters are not treated and the present Van City Waste Water Treatment Plant (1st Part) can not be operated at the desired efficiency and conditions. When compared to the limit values of eutrophication control given in regulations (WPCR), it is seen that there exist excessive amounts of total phosphorus and nitrogen far beyond the limit values in Lake Van. Water level risings occur in this lake and this causes floods. While the Lake shows oligotrophic features and mesotrophic features in spring season currently, it will be unavoidable to be eutrophic in the future unless precautions on the water basin basis are taken.

In spite of its short background, Karakaya Dam Lake is exposed to pollution today. Domestic waste water of Malatya City (about 2000 lt/s), waste waters of industrial organizations, primarily Malatya Sugar Factory, Malatya Meat Integrated Plant and Sümerbank Factories and others are discharged into Karakaya Dam Lake directly or indirectly by streams or by pouring into the ground. Darende, Gürün, Hekimhan. Gündüzbey, Yeşilyurt, Yakınca, Kale, Dilek, Baskil, etc. Municipalities also discharge their waste water into this lake. No periodic analysis is available to show Dam Lake's water quality exactly. According to present data, it is in little polluted water class (2nd Class) yet, but it is more polluted in terms of especially phosphorus, nitrogen and Heavy Chemical Materials (HCM).

Since Keban Dam is the first dam established on Fırat River, it acts like a pollution buffer for dams located downstream. A very high erosion (91 %), which is caused by precipitation in Dam basin, destruction of forests and wrong agricultural applications, affects the Lake. Only 7.9 % of dam drainage basin is covered with unproductive oak coppice and juniper forest, and 92.7 % of pasture area are in "very poor-poor" pasture group. Murat River, Munzur Water, Peri Water and Karasu River are important streams spilling into Keban Dam Lake and causing pollution. Most of the residential areas discharge their waste water into those rivers without any treatment. Elazığ Sugar Factory and Etibank Ferrochrome Plants also discharge their waste water into those dam lakes. Metal pollution in Dam Lake might be sourced from ferrochrome plants. This should be investigated. Since Elazığ City Waste Water Treatment Plant does not contain nitrogen and phosphorus removal and disinfection units, Dam Lake is exposed to nitrogen-phosphorus pollution and bacteriological pollution in especially its parts where water is stagnant.

Hazar Lake is used for energy, fishing, recreation and irrigation purposes. Coastline of Lake (neighborhood of Elazığ-Diyarbakır Highway) is almost closed by training camps of public organizations and private holiday sites. Waste waters of District Sivrice and holiday sites are poured into this lake. Eutrophication control limit value is exceeded in this lake too.

According to the data at entrance stations (SHW) of Murat River, Munzur Water and Peri Water to Keban Dam Lake, they are in IV. Class water group (polluted enough to effect natural life) in terms of bacteriological parameters (total coliform and fecula). Similarly, Karasu River is also exposed to a high degree organic and bacteriological pollution. Erzurum city sewerage waste waters, meat combine, hot spring waste waters, Sugar Factory, Doyasan Oil Factory and Ettaş Plants waste waters and agricultural drainage waters are some of the reasons of pollution in Karasu River. Since the analysis of surface waters around Erzurum and Kars are performed considering only parameters of irrigation water (SHW), it is not possible to make any comment on the pollution of those waters.

Ground Water Quality

All of the provinces in the content of East Anatolia Project use ground water for drinking and cleaning purposes. In addition, a lot of pits exit for irrigation purposes.

Pit waters of Ağrı-Eleşkirt Plain, Suçatağı, Kumlu Geçit, Eğribelen and Yolluyazı Regions are bad quality salty waters. They are not suitable for irrigation.

In the region between Halifeli and Karakuyu and also Erhacı and Iğdır of Iğdır Plain, where high salinity is seen, and in almost entire of East Iğdır Plain drainage is insufficient, water tray depth is very small and aquifer is salted. Ground waters in southern boundaries of Iğdır Plain are in a similar situation.

Surface and ground waters fed by Tendürek Volcanism in Doğubeyazıt Plain contains high ratios of fluorine.

In Van, Muradiye-Çaldıran plains, salinity exists due to insufficient drainage.

In Elazığ-Uluova ground waters, toxic matters that should not be contained in drinking waters like mercury, cadmium, lead, arsenic chrome are found with ratios higher than maximum allowable values.

Ground waters are much more sensitive than surface waters against pollution. Primary reasons of ground water pollution are discharge of domestic and industrial waste and waste water to environment without being treated and fertilizers and pesticides used in agriculture.

In some of the ground waters of provinces in EAP Region, coliform bacteria, nitrite and nitrate are found at pit exit and then at water network. Some of the drinking waters do not confirm TS 266 Drinking Water Standards (Bingöl, Elazığ, Erzurum, Tunceli and Van provinces). This is clearly seen especially in old networks and in open fountains. The most important reason for that is insufficient and improper chlorination to scientific rules.

Treatment Plant Limitations

Industrial establishments have to discharge their waste waters into a sewerage network or into a receiving medium after treating it to discharge standards. The primary industrial organizations effecting the environment in terms of water pollution are basic industrial organizations such as sugar factories, slaughterhouse and meat integrated plants, leather industry and milk industry in the Region. When production starts at full capacity, Organized Industrial Zones (OIZ) will have a high amount of waste water pollution load. In current situation, only waste waters of OIZ-I. in Malatya may cause pollution, where construction of a treatment plant is continued.

Residential areas have to discharge their waste water into receiving medium after treatment in accordance with Water Pollution Control Regulations. But the requirement of collection of waste water by sewerage network before treatment is an important limiting factor in EAP Region. Number of residential areas having no sewerage network is very high.

Very limited income levels of municipalities make building of treatment plants difficult. Since the operation of treatment plants is expensive, municipalities consider these plants as an extra work. An important reason to that is the limited amount of electrical energy due to its high price and high rate of illegal usage in the Region.

2.9.2.5.3. Water Pollution Control Plan

Water Basins

Due to abundance of water basins and their large sizes in the Region, organization on the basis of basin is compulsory. Taking inseparable relationships between soil, water and other ecosystem elements into account, organizations related to water quality and natural resources and investor organizations should be organized in the basin group basis and execute their works in the frame of basin integrity in the coordination of Ministry of Environment. For this reason, Basin Administrative Boards, which undertake management and control of basins, should be formed in the constitution of Ministry of Environment. Participations of municipal administrations, chamber of industries, voluntary organizations, people and related public organizations into Basin Administrative Boards should be provided.

In order to form basin based management model, hydrologic basins, coastlines, touristic basins and special protection regions should be identified by all of their features and population-area usage database should be formed.

Water protection basins for protection of drinking and potable waters should be determined and prohibitions on field utilization should be implemented.

In order to protect water basins, local society should be organized and take part in afforestation and protection, effective field usage practice, monitor and evaluation activities.

In order to minimize the negative effects of any activation (transportation, dam, industry, etc.) on water basins to environment, factors like selection of place and technology alternatives should be analyzed correctly. For this purpose, Environmental Impact Assessment (EIA) studies are accepted as the most effective way which is valid all over the world. It is not possible to say that EIA studies are implemented completely in Turkey and in EAP Region. The required importance should be given to EIA studies all over the country and expert staff should be employed in this subject.

Desired standards for pollutant sources should be determined considering the features of that specific basin.

Water Pollution Control

In short term, Ministry of Environment should complete its laboratory organization in provinces, and take a more active role in utilization and protection of soil and water resources. Until provincial organizations are established, water analysis results of organizations as SHW, Directorate of Provincial Agriculture, etc. should be collected and evaluated at Ministry of Environment.

EAP Region which is under the highest effect of erosion should be selected as a pilot region in studies for preventing wrong usage of agricultural fields (fertilization, plant protection, irrigation, etc) and reclamation of pastures.

In order to decrease negative effects of dams to a minimum, necessary environmental protection precautions should be taken at master plan stages and EIA reports should be prepared in this Region where there are 16 dams under construction and 68 dams are at plan-project stage. Solution of unemployment problem should be supported by encouraging animal husbandry and growing trees on the basis of an enterprise by providing the villagers whose fields remained under dam lakes with seedlings of selected tree species.

In EAP Region, construction of 1st Part of Organized Industrial Zones in Elazığ and Malatya are completed. There are 12 OIZ's under construction, and 1 at planning stage. A management plan should be developed for liquid, gaseous and solid wastes in those OIZs. Plots should be distributed by optimization considering sectors and the same kind of industries should be located together. This is important in air quality and construction of common waste water treatment plants. For example, a marble processing enterprise and an electronics industry should not be located side by side. In industrial pollution control, it should not be forgotten that the most proper solutions from the technical and economic points of view are common treatment plants where industrial and domestic wastes are treated together.

In EAP Region, organizations which participate in water pollution to a high degree as sugar factories, slaughterhouse and meat integrated plants, leather industry, milk industry and vegetable oil production factories should treat their waste water at discharge standards according to regulations of (WPCR). In order to decrease pollution at it's source in those establishments where standards could not be applied, in-plant precautions should be taken and those establishments should be obliged to build pre-treatment or waste water treatment plants.

According to Water Pollution Control Regulations, each source of waste water must be connected to sewerages in places where sewerage networks exist and some part of industrial waste water sources should be pre-treated. Pre-treatment should be applied to important pollutant sources.

For eutrophication control in critical watery areas, besides disposal of carbonized organic matters, nitrogen-phosphorus parameters should also be disposed in waste water treatment plants. In present waste water plants, no units exist for disposal of nitrogen-phosphorus and disinfections. The treatment plants to be built around watery areas taken under protection status should be compelled to add those units.

Municipal administrations, which have waste water treatment plants, must be obliged to spent treatment incomes again in operation and maintenance of those plants. Sources of environmental pollution prevention funds should again be used in environmental protection.

Slaughterhouse and integrated meat plants which are extensive industry sectors in the Region create important environmental problems in receiving medium in term of especially solid waste and waste water. In order to decrease pollution load in those plants, in-plant precautions (obtaining by-products by collecting blood separately; sifting waste water from grates and rotating wire sieves, using dry cleaning method instead of wet cleaning, utilization of solid waste in biogas production, etc.) have a big significance.

Milk products enterprises usually operate under their capacity. So, in-plant precautions (addition of cheese and oil waters in fodder, milk products and baked goods, utilization of it in baby food, etc.) do not seem so economic. It would be more economic to treat the waste water of this industry by proper methods and use it again for irrigation, etc. purposes.

Sugar factories belonging to public sector in Ağrı, Elazığ, Erzincan, Erzurum, Kars, Malatya, Muş and Van are the second largest industry sector creating environmental problems in the region after slaughterhouse and integrated meat plants. Wastes of them accumulate at bottoms of rivers and lakes and destroys normal growings of long plants and micro flora.

According to Water Pollution Control Regulations, all municipalities can only discharge their domestic waste waters to surface waters after treatment. Estimated values of investments required for construction of domestic waste water treatments in sub-regions are given in **Table 2.9.8** by periods. Costs of equipment for water analysis are given in **Table 2.9.9**.

For conservation and improvement of fishing which is an important source of income and food for the Region, the pollutions of natural and dam lakes should be decreased. Residential areas discharging their waste waters into lakes should be compelled to treat their waste waters by improved treatment and disinfections units. The reusage areas of waste water after treatment should be investigated. Lake basins should be afforested and utilization of fertilizers and agricultural insecticides should be controlled.

Lakes should be considered together with precipitation basins, point and distributed pollutant sources in the basin should be determined, and discharge of solid wastes to dry streams and rivers should be prevented. Application of legal regulations on coastline protection should be carefully provided.

In order to protect lakes, conservation programs which will be prepared under the coordination of Ministry of Environment including related institutions and organizations (giving priority to Van Lake, Hazar Lake, Keban Dam Lake, Karakaya Dam Lake) should immediately be implemented.

The strategies required for prevention of lake pollution are also valid for rivers. In order to determine the assimilation capacities of rivers (natural treatment), a database should be formed by performing analysis on samples taken from stations along rivers periodically.

In order to prevent ground water pollution in the Region; implementation of protection precautions around water resources, performing disinfections (chlorination, etc.) according to scientific rules, renewing old networks, taking necessary precautions to prevent leakages at intersection points of networks and sewerage, taking samples and performing experiments periodically according to standards are required.

Properties of mineral water and hot water in Erzincan should be protected and improved by taking necessary precautions according to different conservation areas.

Surface and ground water with a high fluorine content fed by Doğubeyazıt Plain Tendürek Volcanizm, should be used after dilution either by chemical methods or by diluting with waters of low fluorine (satisfying F<1 mg/L).

Ground waters of Erzincan-Böğert, Kaynarca, Saztepe, Kemah Defile are very salty, so it is avoidable to use them as irrigation water.

In Iğdır Plain, in bores opened for drinking and irrigation purposes where insufficient drainage and salinity in aquifer is observed, salty level should definitely be isolated from deep aquifers. Performing sufficient number of drainages, selection of durable plants against salt and continuous control of salinity is required in these regions.

Salinity due to insufficient drainage in Van, Muradiye-Çaldıran Plains can only be decreased by obtaining good quality water from bottom aquifer by isolating top aquifer.

It should be investigated whether the usage of Erzurum and Van (Erciş) geothermal areas in tourism, heating and industry is acceptable in terms of economy and environment. Fluids in these areas should be analyzed in detail by geological and geophysical methods and their chemical properties and effects to ecological balance should be investigated.

Legal and economic precautions should be taken to prevent the utilization of 1^{st}, 2^{nd} and 3^{rd} class farmlands in purposes other than agriculture such as industry, urbanization and tourism. Total fertile area used for housing in provinces of the Region is over 36,000 ha. Almost all of the industrial organizations were established on farmlands. It is compulsory to take necessary precautions in urban plans and to prepare administration plans for integrated and balanced field usage policies.

The important parameters in selecting a system in a waste water treatment plant are the type of sewerage network (separate, combined system, etc.), flow rate of waste water entering into plant, climate and topography of the mentioned region, availability and cost of field and energy, characteristics of medium where treated waste water is discharged or desired pollutant

concentrations in waste water to be discharged. After identifying those parameters, the system is selected by comparing applicable systems in terms of their costs.

Construction cost of a waste water treatment plant depends on the population it serves. As the population increases, initial cost of treatment plant decreases.

Since the data about waste water flow rate is not available in most of the municipalities in EAP Region, waste water flow rate is calculated according to regulations. In calculations, "Regulation of Provincial and District Drinking Water Project Preparation" which is implemented by Bank of Provinces is used and depending on population, daily average flow rate per capita value is taken and multiplied by 1.5 in calculation of usage flow rate. Waste water flow rate is assumed to be 80 % of usage flow rate (**Table 2.9.10**). As the population increases, pollution loads discharged to receiving medium is also increased.

In **Table 2.9.11**, estimated initial investment costs of the biological treatment systems given above are calculated according to minimum and maximum cost intervals of 1999 (since the factors in system selection are unknown) which are determined by using the initial investment cost data of treatment plants established by Directorate General of Bank of Provinces, Department of Sewerage in the name of municipalities all over the country. Later, the costs are recalculated for year 2000 by using "Building General Index" of SHW. Residential areas with a decrease in population are assumed to have the same population in the future.

In Turkey, domestic waste water treatment plants of residential areas are established by Directorate General of Bank of Provinces in the name of municipalities. According to Regulations on Preparation of Drinking Water Projects of Bank of Provinces, population and flow rate calculations are performed by the assumption that construction will be completed in 5 years at maximum. So, the annual expenditure should be determined by dividing waste water treatment plant costs given in this project by five (Cost/5).

First part of waste water treatment plants of Elazığ and Van cities and waste water treatment plant of Erzincan city was built and they are currently operated. But there are some problems related to building and operation in these plants. In especially Van city waste water treatment plant, important problems are encountered due to limited electrical energy. Treatment plants should be operated for 24 hours without stopping.

In order to prevent water pollution in EAP Region, constructions of waste water treatment plants of Erzurum and Malatya cities and 2nd parts of waste water treatment plants of Elazığ and Van cities should immediately be initiated and will have to be completed by the end of the period 2001-2005.

Table 2.9.8: Waste Water Treatment Plants to be Constructed by Bank of Provinces in the Names of Municipalities by Periods

PROVINCES	MUNICIPALITIES	PERIOD-I 2001-2005	PERIOD -II 2006-2010	PERIOD -III 2011-2020	SUB-REGION	BILLION TL
Elazığ	Center	*			Elazığ-Malatya	4,800
Erzurum	Center	*			Erzurum	8,650
Malatya	Center	*			Elazığ-Malatya	12,010
Van	Center	*			Van	3,970
Ağrı	Center		*		Erzurum	1,710
	Doğubeyazıt		*			1,390
	Patnos		*			1,850
Bayburt	Center		*		Erzurum	930
Bingöl	Center		*		Elazığ-Malatya	2,090
	Genç		*			630
	Solhan		*			610
Bitlis	Center		*		Van	1,520
	Adilcevaz		*			720
	Ahlat		*			690
	Tatvan		*			2,110
Elazığ	Kovancılar		*		Elazığ-Malatya	530
	Sivrice		*			190
Erzurum	Hınıs		*		Erzurum	660
	Horasan		*			640
	Oltu		*			810
	Pasinler		*			1,080
Hakkari	Center		*		Van	2,660
	Şemdinli		*			550
	Yüksekova		*			2,140
Iğdır	Center		*		Erzurum	1,370
Kars	Center		*		Erzurum	1,730
	Sarıkamış		*		Erzurum	530
Malatya	Battalgazi	*			Elazığ-Malatya	450
	Darende	*				270
	Doğanşehir	*				480
	Yeşilyurt		*			330
Muş	Center		*		Erzurum	2,390
	Bulanık		*			1,090
	Hasköy					6,350
	Malazgirt					670
	Varto					550
Tunceli	Center		*		Elazığ-Malatya	530
Van	Başkale		*		Van	540
	Erciş	*				2,180
Ağrı	Diyadin			*	Erzurum	360
	Eleşkirt			*		410
	Hamur			*		240
	Taşlıçay			*		100
	Tutak			*		140
Ardahan	Center			*	Erzurum	260
	Çıldır			*		410
	Damal			*		450
	Göle			*		110
	Hanak			*		810
	Posof			*		420
Bayburt	Aydıntepe			*	Erzurum	180
	Demirözü			*		550

Table 2.9.8: Waste Water Treatment Plants to be Constructed by Bank of Provinces in the Names of Municipalities by Periods (Continued)

PROVINCES	MUNICIPALITIES	PERIOD-I 2001-2005	PERIOD -II 2006-2010	PERIOD -III 2011-2020	SUB-REGION	BILLION TL
Bingöl	Adaklı			*	Elazığ-Malatya	160
	Karlıova			*		780
	Kiğı			*		240
	Yayladere			*		100
	Yedisu			*		80
Bitlis	Güroymak			*	Van	460
	Hizan			*		370
	Mutki			*		320
Elazığ	Ağın	*			Elazığ-Malatya	110
	Alacakaya	*				190
	Arıcak	*				130
	Baskil		*			140
	Karakoçan		*			310
	Keban	*				160
	Maden	*				210
	Palu			*		310
Erzincan	Center			*	Erzurum	1,130
	Çayırlı			*		810
	İliç			*		550
	Kemah			*		460
	Otlukbeli			*		580
	Refahiye			*		140
	Tercan			*		2,920
	Üzümlü			*		550
Erzurum	Aşkale			*	Erzurum	420
	Çat			*		170
	Ilıca			*		510
	İspir			*		260
	Karaçoban			*		230
	Karayazı			*		120
	Köprüköy			*		130
	Narman			*		410
	Olur			*		61
	Pazaryolu			*		120
	Şenkaya			*		130
	Tekman			*		150
	Tortum			*		240
	Uzundere			*		110
Gümüşhane	Center			*	Erzurum	480
	Kelkit			*		260
	Köse			*		110
	Kürtün			*		77
	Şiran			*		187
	Torul			*		110
Hakkari	Çukurca			*	Van	580
Iğdır	Aralık			*	Erzurum	210
	Karakoyunlu			*		130
	Tuzluca			*		310
Kars	Akyaka			*	Erzurum	67
	Arpaçay			*		51
	Digor			*		56
	Kağızman			*		350
	Sarıkamış			*		530
	Selim			*		88
	Susuz			*		73

Table 2.9.8: Waste Water Treatment Plants to be Constructed by Bank of Provinces in the Names of Municipalities by Periods (Continued)

PROVINCES	MUNICIPALITIES	PERIOD-I 2001-2005	PERIOD -II 2006-2010	PERIOD -III 2011-2020	SUB-REGION	BILLION TL
Malatya	Akçadağ	*			Elazığ_Malatya	320
	Arapgir			*		340
	Arguvan			*		66
	Doğanyol			*		140
	Kale	*				100
	Kuluncak			*		140
	Pötürge	*				71
	Yazıhan			*		110
Muş	Korkut	*			Erzurum	220
Tunceli	Çemişgezek	*			Elazığ-Malatya	82
	Hozat			*		230
	Mazgirt			*		76
	Nazimiye			*		58
	Ovacık			*		100
	Pertek	*				130
	Pülümür			*		42
Van	Bahçesaray			*	Van	120
	Başkale			*		540
	Çaldıran			*		310
	Çatak			*		155
	Edremit	*				15
	Gevaş	*				361
	Gürpınar			*		210
	Muradiye			*		430
	Özalp	*				230
	Saray			*		120

Table 2.9.9: Cost of Tools and Equipment Needed for Water Analyses in EAP Provinces

NAME OF EQUIPMENT	UNIT	QUANTITY	UNIT PRICE	COST (Million TL)
Water/Waste Water Analysis Device	Number	1	6,108,200,000	6,108
Turbidimetry Device	Number	2	427,574,000	855
AKM Determination System	Number	2	219,779,343	439
Stove	Number	2	695,504,250	1,391
Analytical Scale	Number	2	1,527,050,000	3,054
BOI Measurement Device	Number	2	458,115,000	916
Water Sampling Device	Number	1	427,574,000	427
Grease Oil Identification Device	Number	1	305,410,000	305
TOTAL: TL (US Dollars)				**13,497 (22,100)**
Total Cost of Water Analysis Devices For 16 Provinces in EAP: TL (US Dollars)				**2,159,550 (353,600)**

Source: Batchelar et.al. (1991).

Table 2.9.10: Annual Operating and Maintenance Costs of Waste Water Systems

(Thousand US Dollars)

SYSTEM	Maintenance	Power	Chemicals	TOTAL
Biofilters	16.9	3.0	10.4	30.3
Biodiscs	16.1	2.2	1.0	19.8
Stab.Ponds	14.9	9.8	6.8	30.6
Active Sludge	1.4	---	---	1.3

*** Population** = 5,000 people, **Source:** Batchelar et.al. (1991).

Table 2.9.11: Investment Plan for Waste Water Purification Facility (to Accommodate the Population of 2010)

PROVINCES (MUNICIPALITIES)	Volume to be Treated		ESTIMATED COSTS OF INVESTMENT BY PRICES OF 2000 (Billion TL)									
			Active Sludge		Long Aeration Active Sludge		Trickling Filter		Aeration Stab. Pond		Facultative Stab. Pond	
	m^3/day	lt/s	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
AĞRI	19,094.4	221.0	763	2,249	1,415	2,842	1,118	2,672	908	2,944	729	4,188
Diyadin	2,938.0	34.0	117	345	217	437	172	410	139	452	729	644
Doğubeyazıt	13,453.0	155.7	537	1,583	996	2,002	787	1,881	639	2,073	513	2,949
Eleşkirt	2,837.0	32.8	113	334	210	422	166	396	1,349	437	108	622
Hamur	1,168.5	13.0	46	1,375	86	173	68	163	55	180	44	256
Patnos	17,898.0	207.0	714	2,107	1,325	2,663	1,048	2,503	851	2,758	683	3,924
Taşlıçay	1,205.0	14.0	48	141	89	179	70	168	57	185	46	264
Tutak	1,396.0	16.2	55	164	103	207	81	195	66	215	53	306
ARDAHAN	2,808.0	32.5	112	330	208	417	164	392	133	432	107	615
Çıldır	401.0	4.6	16	47	29	59	23	56	19	61	15	87
Damal	440.6	5.1	17	51	32	65	25	61	20	67	16	96
Göle	1,283.0	14.9	51	15	95	190	75	179	61	197	49	281
Hanak	783.0	9.0	31	91	57	116	45	109	37	120	29	171
Posof	410.0	4.8	16	48	30	61	24	57	19	63	15	89
BAYBURT	8,279.0	95.8	330	974	613	1,232	484	1,158	1,158	1,275	316	1,815
Aydıntepe	1,739.0	20.1	69	204	128	258	101	243	82	268	66	381
Demirözü	533.0	6.2	21	62	39	79	31	74	25	82	20	116
BİNGÖL	20,195.0	233.7	80	2,373	1,493	3,000	1,181	2,820	959	3,107	770	4,420
Adaklı	1,555.2	18.0	62	182	114	231	90	217	73	239	59	340
Genç	6,155.0	70.0	245	724	455	916	360	861	292	948	235	1,349
Karlıova	3,249.0	37.6	129	382	240	483	190	454	154	5,001	123	711
Kiğı	1,702.0	19.7	68	200	126	253	99	239	810	262	65	373
Solhan	5,937.0	68.7	237	698	439	883	347	830	282	914	226	1,301
Yayladere	977.0	11.3	39	115	72	145	57	136	46	150	37	214
Yedisu	864.0	10.0	33	97	61	123	48	115	31	115	31	181
BİTLİS	16,053.0	186.0	64	1,889	1,189	2,389	940	2,245	763	1,649	613	3,519
Adilcevaz	7,956.0	92.0	317	936	589	1,184	466	1,113	378	1,226	303	1,744
Ahlat	6,660.0	77.0	266	784	493	991	390	931	316	1,026	254	1,460
Güroymak	4,605.6	53.3	18	642	341	685	269	644	219	709	175	1,009
Hizan	3,577.0	41.4	142	421	265	532	209	500	170	551	136	784
Mutki	2,093.0	24.2	83	246	155	311	1,225	292	99	322	79	458
Tatvan	20,390.4	236.0	813	2,398	1,509	3,031	1,193	2,850	969	3,139	778	4,466

Table 2.9.11: Investment Plan of Waste Water Treatment Plants (To Supply Needs of Population of 2010) (Continued)

PROVINCES (MUNICIPALITIES)	Volume to be Treated		ESTIMATED COSTS OF INVESTMENT BY PRICES OF 2000 (Billion TL)									
			Active Sludge		Long Aeration Active Sludge		Trickling Filter		Aeration Stab. Pond		Facultative Stab. Pond	
	m^3/day	lt/s	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
ELAZIĞ	95,872.0	1,110.0	2,548	7,513	4,726	9,496	3,737	8,927	3,035	983	2,437	1,399
Ağın	563.0	6.5	22	662	41	83	32	78	26	86	21	123
Alacakaya	864.0	10.0	33	100	63	126	49	1,189	40	131	32	186
Arıcak	1,339.0	15.5	53	157	99	199	49	187	63	206	51	293
Baskil	1,354.0	15.7	54	159	100	201	79	189	64	209	51	296
Karakoçan	3,024.0	35.0	121	358	225	452	178	425	144	469	116	667
Keban	1,676.0	19.4	66	197	124	249	98	234	79	258	63	244
Kovancılar	5,443.0	63.0	216	637	401	805	31	757	257	834	206	1,187
Maden	2,103.0	24.3	83	247	155	312	123	294	100	324	80	461
Palu	3,067.0	35.5	122	360	227	456	179	428	145	472	117	672
Sivrice	1,901.0	22.0	75	222	140	281	110	264	90	291	72	414
ERZİNCAN	29,213.0	338.0	873	2,575	1,620	3,255	1,281	3,060	1,040	3,371	835	4,796
Çayırlı	783.0	9.1	31	92	57	116	45	109	37	120	29	171
İliç	531.0	6.2	21	62	39	79	31	74	25	81	20	116
Kemah	449.0	5.2	17	52	33	66	26	62	21	68	17	98
Kemaliye	625.0	7.0	24	73	46	92	36	873	29	96	23	137
Otlukbeli	570.0	6.6	22	66	42	84	33	79	27	87	21	124
Refahiye	1,433.4	16.6	57	168	106	213	83	200	68	220	54	314
Tercan	2,266.0	26.0	90	266	167	213	132	316	107	266	865	496
Üzümlü	5,384.0	62.3	215	633	398	801	315	753	256	829	205	1,180
ERZURUM	122,429.0	1,417.0	3,253	9,591	6,034	12,123	4,771	11,396	5,812	12,554	3,111	17,861
Aşkale	4,104.0	47.5	163	483	303	610	240	573	195	632	156	899
Çat	1,679.0	19.4	67	197	124	249	98	234	79	258	64	368
Hınıs	6,398.0	74.0	255	753	473	952	374	895	304	986	244	1,402
Horasan	6,219.0	72.0	248	732	460	925	364	870	295	958	237	1,363
Ilıca	3,800.0	44.0	151	447	281	565	222	531	180	531	833	1,451
İspir	2,792.0	32.3	111	32	206	415	163	390	132	430	106	612
Karaçoban	1,659.0	19.2	66	194	122	24	969	231	78	254	63	362
Karayazı	1,145.0	13.3	45	134	108	170	67	160	54	176	43	250
Köprü köy	1,469.0	17.0	58	171	108	217	85	20	69	225	55	320
Narman	4,035.0	46.7	161	475	299	600	236	564	192	622	154	885
Oltu	7,862.4	91.0	313	924	581	1,169	460	1,099	373	1,210	300	1,722
Olur	726.0	8.4	29	85	53	108	42	101	34	111	27	15
Pasinler	10,454.0	121.0	416	1,229	773	1,553	611	1,460	496	1,608	398	2,288

Table 2.9.11: Investment Plan of Waste Water Treatment Plants (To Supply Needs of Population of 2010) (Continued)

PROVINCES (MUNICIPALITIES)	Volume to be Treated		ESTIMATED COSTS OF INVESTMENT BY PRICES OF 2000 (Billion TL)									
			Active Sludge		Long Aeration Active Sludge		Trickling Filter		Aeration Stab. Pond		Facultative Stab. Pond	
	m^3/day	lt/s	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Pazaryolu	1,235.0	14.3	49	145	91	183	72	172	58	190	47	270
Şenkaya	1,275.0	14.8	50	150	94	183	74	178	60	196	48	279
Tekman	1,475.0	17.0	58	173	109	227	86	206	70	227	56	323
Tortum	2,325.0	27.0	92	273	172	345	136	325	110	358	88	509
Uzundere	1,097.0	12.7	43	128	81	163	64	153	52	168	41	240
GÜMÜŞHANE	466,506.0	54.0	184	545	343	689	271	647	220	713	176	1,015
Kelkit	2,592.0	30.0	103	305	192	386	152	363	123	400	99	569
Köse	1,123.2	13.0	44	130	82	165	65	155	52	171	42	243
Kürtün	726.0	8.4	29	85	53	108	42	101	34	111	27	159
Şiran	2,678.4	31.0	106	314	197	397	156	373	127	41	10	58
Torul	1,106.0	12.8	44	130	81	164	64	154	52	170	42	242
HAKKARİ	25,747.0	298.0	1027	3,027	1,904	3,826	1,506	3,597	1,223	3,962	981	5,637
Çukurca	2,302.0	26.6	91	270	170	3,826	134	342	109	354	87	504
Şemdinli	5,356.8	62.0	213	630	396	796	313	748	254	824	204	1,173
Yüksekova	24,695.0	285.4	984	2,903	1,826	3,669	1,173	3,449	1,173	3,800	941	5,406
IĞDIR	13,271.0	153.6	529	1,562	982	1,974	777	1,856	631	2,044	506	2,909
Aralık	2,046.0	23.7	81	240	151	304	119	286	97	315	78	448
Karakoyunlu	1,490.0	17.2	59	175	110	22	87	208	70	229	56	326
Tuzluca	3,076.5	35.6	122	362	227	457	180	430	146	474	117	674
KARS	16,720.0	193.5	667	1,968	1,238	2,488	979	2,339	795	2,576	638	3,665
Akyaka	518.4	6.0	18	53	33	68	26	64	217	70	17	100
Arpaçay	518.0	6.0	19	58	36	73	28	69	23	76	18	108
Digor	605.0	7.0	21	64	40	81	31	76	25	84	20	119
Kağızman	3,376.0	39.0	134	397	250	502	197	472	160	520	128	740
Sarıkamış	5,616.0	65.0	224	660	41	835	266	784	266	864	214	1,230
Selim	864.0	10.0	34	100	63	126	49	119	40	131	32	186
Susuz	717.0	8.3	28	83	52	10	41	99	33	109	27	155
MALATYA	196,906.0	2.8	4710	13,885	8,736	17,551	4,605	16,498	5,610	18,175	4,504	25,857
Akçadağ	3,131.0	36.2	125	368	231	465	183	437	148	482	119	686
Araphir	3,335.0	38.6	133	392	246	49	195	466	158	513	127	730
Arguvan	777.6	9.0	29	87	54	110	43	103	35	11	28	162
Battalgazi	4,363.0	50.5	174	513	323	649	255	610	207	672	166	956
Darende	3,096.0	35.5	122	361	227	456	179	429	145	472	117	672
Doğanşehir	4,708.0	54.5	188	554	348	700	275	658	223	725	179	1,032
Doğanyol	1,469.0	17.0	57	169	106	214	84	201	68	221	54	315

Table 2.9.11: Investment Plan of Waste Water Treatment Plants (To Supply Needs of Population of 2010) (Continued)

PROVINCES (MUNICIPALITIES)	Volume to be Treated		ESTIMATED COSTS OF INVESTMENT BY PRICES OF 2000 (Billion TL)									
			Active Sludge		Long Aeration Active Sludge		Trickling Filter		Aeration Stab. Pond		Facultative Stab. Pond	
	m^3/day	lt/s	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Kale	1,037.0	12.0	39	117	73	148	58	139	47	153	38	218
Kuluncak	1,555.0	18.0	61	18	114	229	90	215	73	237	58	337
Pötürge	892.0	10.3	21	64	40	80	31	76	25	237	20	119
Yazıhan	1,123.0	13.0	44	131	82	166	65	156	53	172	42	245
Yeşilyurt	3,227.0	37.4	128	379	239	480	189	451	153	497	123	707
MUŞ	30,845.0	357.0	921	2,717	1,709	3,434	1,351	3,228	1,097	3,556	881	5,060
Bulanık	10,527.0	122.0	420	1,239	779	1,566	616	1,472	500	1,622	402	2,308
Hasköy	6,134.0	71.0	244	720	453	910	358	856	291	943	233	1,341
Korkut	2,123.0	24.6	84	249	157	315	124	296	100	327	81	465
Malazgirt	6,492.0	75.0	259	764	480	966	380	908	308	1,000	247	1,423
Varto	5,357.0	62.0	212	627	394	793	312	745	253	821	203	1,168
TUNCELİ	5,141.0	59.5	205	604	380	764	300	718	244	791	196	1,126
Çemişkezek	864.0	10.0	22	67	63	127	50	120	40	132	32	188
Hozat	1,599.0	18.5	63	187	117	236	93	222	757	245	60	34
Mazgirt	736.0	8.5	29	86	54	109	43	103	35	113	28	161
Nazmiye	584.0	6.8	23	68	43	86	34	81	27	90	22	128
Ovacık	964.0	11.2	38	115	71	143	56	134	45	148	36	211
Pertek	1,348.0	15.6	53	158	99	200	78	188	64	188	51	295
Pülümür	432.0	5.0	16	49	31	62	24	58	20	64	16	92
VAN	127,761.0	1,479.0	3,057	9,010	5,669	11,389	4,482	10,706	3,640	11,795	2,922	16,780
Bahçesaray	1,382.0	16.0	55	162	102	20	80	193	65	212	52	302
Başkale	5,290.0	61.0	211	622	391	787	309	739	251	815	201	1,159
Çaldıran	3,044.0	35.2	121	358	225	453	178	425	144	469	116	667
Çatak	1,495.0	17.3	59	176	110	222	87	209	71	230	57	327
Edremit	1,469.0	17.0	58	170	107	216	85	203	69	223	55	318
Erciş	34,733.0	402.0	1,038	3,060	192	3,868	1,522	3,636	1,236	4,006	992	569
Gevaş	3,485.0	40.3	139	410	258	518	204	487	165	537	133	764
Gürpınar	2,088.0	24.0	83	245	154	310	122	292	99	321	79	457
Muradiye	4,234.0	49.0	168	495	311	625	246	588	200	648	160	922
Özalp	2,219.0	29.0	88	261	164	330	129	310	105	341	84	486
Saray	1,301.5	15.0	51	153	96	193	76	182	61	200	49	285

* Calculated by using data of Bank of Provinces

Source: Bank of Provinces

2.9.3. Proposals For Sustainable Development

Primary topics for providing a sustainable development in the Region are listed in Development Plans. In addition to those, some particular topics may be suggested for this Region as follow:

- Improving capacities of voluntary and decision making staff in economic development,
- Evaluation of cultural, social and economic activities in applications,
- To increase public sensibility, improving education and supporting nongovernmental organizations,
- Having all sectors of society participate in works of environmental protection and development,
- Performing Local Agenda 21 Works with a wide participation and determination of primary activities,
- Development of sustainable development indicators for National Environmental Strategy and Activity Plan (NEAP), particular to Region.

Necessary conditions in application of those precautions above are as follows:

- Foundation of managements of water quality and water pollution in industrial zones,
- Assessment of industrial waste water treatment and treatment sludge,
- Development of technologies on solid wastes and recycling in industry,
- Integration of industrialization and ecologic strategies,
- Application of Regional Biologic Diversity Strategy and Action Plan,
- Development of Environmental biotechnology,
- Development of precautions in noise pollution and control,
- Development of precautions in air pollution and control,
- Development of precautions in soil pollution and control,
- Investigation of reusage possibilities of waste water,
- Development of treatment methods for hazardous wastes,
- Development of control methods for industrial pollution,
- Discussion of effects of energy types used in industry,
- Prevention of industrialization and irregular urbanization dilemma and establishment of regular residential areas,
- Behaving sensible in the selection of area for Organized Industrial Zones and implementation of EIA actively,
- Prevention of negative effects of non-metallic mineral industries to environment,
- Providing sensibility in the implementation of EIA,
- Providing management for drinkable water resources, formation of integrated systems,
- Having society take part in solution of environmental problems,
- Development of secondary organizations for an extensive environmental protection.

2.9.4. Summary of Ongoing Projects in Environment Sector and Investments

Ongoing projects are given in **Table 2.9.12** while total cost of necessary investments to be done in the frame of public services are given in **Table 2.9.13**.

Table 2.9.12: Ongoing Projects in Environment Sector

PROVINCE	PROJECT NO	NAME OF PROJECT	LOCATION	COST (MillionTL.)	STARTING YEAR	FINISHING YEAR	ESTIMATED EXPENDITURE BY THE END OF 2000 (Million TL.)	RESPONSIBLE ORGANIZATION
Erzurum	Project 1	Horasan Sewerage Project (Network Treatment)	Horasan	2,860,000	1992	2002	600,000	Bank of Provinces
	Project 2	Sewerage Project (Network Treatment)	Erzurum	16,000,000	1997	2001	5,000,000	Bank of Provinces
	Project 3	Solid Waste Management Study	Erzurum	171,900	2000	2000	171,900	
Gümüşhane	Project 1	Sewerage Project (Network Treatment)	Gümüşhane	3,575,000	1991	2003	210,000	Bank of Provinces
Elazığ	Project1	Advanced Investigation on Reusage of Ind. Solid Wastes	Elazığ	10000	1997	2003	1	---
Malatya	Project 1	Treatment and Reusage of Waste Waters of Akalın Factory	Malatya	21,955,524	1994	2002	1000	----
	Project 2	Treatment at 1st Organized Industrial Zone (R.P.)	Malatya	1,355,904	1996	2001	400,002	----
	Project 3	Advanced Investigation on Reusage of Ind. and Törem Wastes	Malatya	22,000	1997	2001	1	----
	Project 4	Sewerage Project (Network Treatment)	Malatya	25,000,000	1984	2002	31,000	Bank of Provinces
Van	Project 1	Sewerage Project (Network Treatment)	Van City	26,000,000	1973	2003	550,000	Bank of Provinces
	Project 2	Sewerage Project (Network Treatment)	Ercis I.	5,000,000	1979	2003	145,000	Bank of Provinces
	Project 3	Investigation of Water Level of Van Lake (R.P) (Advanced Research)	Van Lake	25000	1996	2000	5,000	SHW
	Project 4	Development of Health Services In Van City and Districts (Machinery, Equipment, etc)	ProvinceVan	15,363,000	1998	2001	3,00	----

Source: SPO.

Table 2.9.13: Cost of Investment In 2000 Prices for Environment Sector (Public)*

(By Prices of 2000, Billion TL)

Measurement Equipment (Water, Air, Noise Analysis)		**2,566**
Treatment of Domestic Waste Water (By Estimated Average Costs)		86,378
TOTAL	Turkish Liras	8,894
	US Dollars	150.8

* Cost of reclamation and protection of grass and pasture areas and cost of present waste water treatment plants are not included.

Table 2.9.14: Strategies to be Implemented in Environment Sector

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	I[st] PERIOD (2001-2005)	2[nd] PERIOD (2006-2010)	3[rd] PERIOD (2011-2020)	
Decreasing and Preventing Air Pollution	Performing air pollution measurements in provinces Ardahan, Gümüşhane, Kars, Iğdır,	Performing periodic measurements in all provinces, continuing the application of instant precautions,	Extending utilization of natural gas primarily to provinces Erzurum, Muş, Van, Elazığ, Erzincan and Malatya,	Three sub-regions
Poor Economy of People	Using good quality fuel with a proper technique in provinces Ağrı, Bayburt, Elazığ, Erzincan, Erzurum, Muş and Malatya,	Using unleaded gasoline in motor vehicles, encouraging the usages of biogas, solar energy, and geothermal energy,		
Performing Solid Waste Management	Increasing the role of Ministry of Environment, Forcing municipalities to make regular storages and taking necessary precautions for disposal of hazardous wastes separately, Educating people in recovery of wastes (Giving priority to Erzurum, Erzincan, Van and Malatya)	Encouraging technologies creating low amount of waste in industry, forming waste interchange inventories between industry sectors, Accelerating regular storage construction works, Making environmental arrangement in storage areas,	Performing scientific researches for waste minimization and recovery, Encouraging biogas from wastes,	Three sub-regions
Control of Hazardous Wastes	Separation of hazardous domestic, industrial and medical wastes, educating expert staff, implementing regulations in this subject,	Conducting inventory studies on hazardous wastes,	Conducting researches on hazardous wastes by universities and related organizations,	Three sub-regions
Taking Necessary Precautions for Noise Pollution	Educating people, providing noise and heat isolations of new buildings (especially hospitals), performing noise measurements, Controlling noise due to industry in Elazığ and Malatya,	Increasing green areas, development of public transportation, encouraging industrial technologies generating less noise,	Taking necessary precautions in urban plans,	Three sub-regions
Protection of Water Resources Water Quality and Water Ecosystems	Preparation of conservation programs for Van Lake, Hazar Lake, Keban Dam Lake, Karakaya Dam Lake and other watery areas,	Conducting periodic quality measurements of surface and ground waters, identification of point and distributed pollution sources on basin basis,	Confirming water quality criteria, performing feasibility survey on basin basis,	Three sub-regions
Necessity of EIA Preparation Before Dam Constructions and Industrial Establishments	Preparation of EIA reports, encouraging farmers to grow trees as an enterprise around dam constructions, Determination of present flora and fauna,	Monitoring the applicability of EIA reports, In areas which will be remained under water, finding proper places to grow vegetables and animals which are particular to that region,	Continuation to monitor the applicability of EIA reports,	Three sub-regions
Development of Waste Water Treatment Systems	Construction of treatment plants whose first part or project is completed (Elazığ, Van, Erzurum, Malatya), Investigating waste water treatment systems suitable to Regional climate features,	Construction of treatment plants by giving priority to Ağrı, Bingöl, Bitlis, Hakkari, Tatvan, Iğdır, Kars, Muş, and Tunceli.	In all residential areas, construction and operation of waste water treatment plants,	Three sub-regions

Table 2.9.14: Strategies to be Implemented in Environment Sector (Continued)

BOTTLENECKS (LIMITING FACTORS)	STRATEGIES TO BE IMPLEMENTED			LOCATION
	I[st] PERIOD (2001-2005)	2[nd] PERIOD (2006-2010)	3[rd] PERIOD (2011-2020)	
Treatment of Industrial Waste Waters	Compelling meat integrated plants, milk products enterprises to have pre-treatment plants and sugar factories to have treatment plant, Monitoring waste waters of ferrochrome and copper enterprises,	Construction of waste water treatment plants of organized industrial zones, Establishing industries of similar features close to each other,	Investigation of methods which decreases water pollution at its source, Encouragement of common treatment plants,	Three sub-regions
Prevention of Ground Water Pollution	Determination of necessary precautions and conservation areas around water resources, Performing disinfections primarily at Erzincan Maden Waters and Doğubeyazıt Plain	Changing of old network pipes and providing all residential areas with drinking water,		Three sub-regions
Utilization Possibilities of Geothermal Energy	Investigation of solution of environmental problems due to utilization of geothermal springs (primarily at Van and Erzurum)	Realisation of physical applications,		Three sub-regions
Protection of Soil Resources	Developing administrative programs for integrated and balanced land usage policy, initiating activities to prevent erosion.	Quality control of irrigation water, reclamation of grasses and pastures for controlling erosion, protection of forests and afforestation.	Continuation of combating erosion and afforestation activities	Three sub-regions

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