KARAVASTA LAGOON

MANAGEMENT PLAN

1996

Acknowledgments

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How to Read this Document

This Management Plan is one of the outputs of the first phase of the specific Phare project for the Karavasta Lagoon-Wetland Management. The project Terms of Reference required a specific number of studies to be carried out during the years 1995-1996. Therefore, the Management Plan is essentially based on information compiled in these sectoral studies, covering the following tasks:

- an analysis of the legal and institutional framework,
- a proposed legal instrument for the Karavasta Ramsar Site,
- a report on participatory rural appraisals carried out in a dozen villages around the lagoon,
- a study on the tourist carrying capacity of the Divjaka beach area,
- an ecotourism development plan,
- an inventory of natural habitats,
- an ecological guide and information brochure for visitors,
- a study on the hydrobiological importance of the lagoon channels,
- a study on fisheries improvement, and
- a quantitative survey of waterbirds.

Detailed information can be found in these specific reports. For other sources of information, the reader is referred to the literature cited at the end of the Management Plan.

Two Documents: a Legal plus a Technical Instrument

The core document for the management of the Karavasta Ramsar Site is the proposed "Karavasta Area Protection Law", i.e. the legal instrument. This instrument proposes an institutional structure to integrate the management needs of the Area, it delimits its geographical coverage and zonation and it lists the management activities and processes affecting the site. Once adopted by the Council of Ministers, the legal instrument will provide the basic law directing all further activities in the Karavasta Area.

The Karavasta Area Protection Law provides for the preparation, implementation and regular review of a Management Plan which defines the management objectives for the zones established under the law. While the law is by its very nature a fixed legal instrument, the Management Plan remains a flexible, dynamic document that should be reviewed on an annual basis and properly revised at least once every five years, after consultation with local inhabitants and other interested parties.

Upon the entry into force of the Law, the provisions of the Management Plan will replace the provisions of existing territorial development plans which relate to land within the management Area.

The Management Plan (i.e. the present document) is the result of the first phase (15 months) of the Karavasta Lagoon-Wetland Management project. It is therefore a**preliminary**, rather than a final **document**. Eventually, truly integrated cross-sectoral management is needed for the Karavasta Ramsar Site. Given the Terms of Reference of the project, the current document focuses on the **management of environmental resources** to protect the ecosystem biodiversity and to derive economic benefit for the local communities.

Other, equally important requirements, such as the restoration and improvement of major village infrastructures, are not dealt with in detail. Prescriptions for such development plans still need to be elaborated by the Ministries concerned, in accordance with the proposed Law and the general management principles outlined in this Management Plan.

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1. Preamble

On 22 August 1994, with Decision Nº 413, the Council of Ministers declared the natural ecosystem of Karavasta Lagoon and Divjaka Park as a site to be included in the "List of Wetlands of International Importance" established by the Ramsar Convention. By acceding to the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar, 1971), Albania agreed to **maintain the ecological character** of this site. The Karavasta wetland ecosystem is a dynamic area, open to influences from natural and human factors. In order to maintain its biological diversity and productivity and to allow wise use of its resources, an overall agreement is needed between the various owners, occupiers and interested parties. The management planning process provides this overall agreement.

Sound integrated management of the Karavasta lagoon ecosystem depends on a clear understanding of the physical, chemical and biological processes which control its functions and the ability to find a balance between the environment and the development needs of the local communities. Management planning will take a holistic approach, it is a dynamic process the many components of which will have to be considered in coordination. The management plan recognizes the underlying complexity and will need to be developed in parallel with the institutional and administrative structures to implement the plan. Finally, an adequate budget for its implementation will have to be made available.

Management planning is a way of thinking which involves recording, evaluating and planning. It is an interactive process subject to constant review and revision. The process includes three basic actions: describing, defining objectives, and taking the necessary actions.

2. Description

2.1 General Information

2.1.1 The Geographical Context

Location and Characteristics

The Karavasta area lies in the central part of Albania, at the Adriatic coast. The flat and sandy coast is

continuously modified by the combined forces of sediments carried by large rivers, and eroding and accumulating marine currents. A most diverse mosaic of natural coastal habitats lies between Shkumbini and Semani river deltas. The major feature is the large Karavasta lagoon (c.4,200 ha), located 40°55'N and 19°30'E (Figure 1). On old dunes along the coastline, rich forests of deciduous and pine trees subsist, while the coastal plain inland of Karavasta lagoon has been almost completely drained for agricultural purposes. Currently, the drainage and irrigation system, with large pumps and many reservoirs in the adjacent hillsides, is poorly maintained and hardly functioning.

Geology and Geomorphology

The central part of Albania's coast forms part of the Adriatic lowland, composed of Miocene and Pliocene molasses on top of which one finds Quaternary marine and alluvial deposits. The transgressive location of the molasses deposits influenced the formation of paleographical gulfs which are important for oil and gas deposits. Also the anticlinal chains further inland, with Pliocene and Tortonian deposits, are expected to contain oil and gas deposits. Considering the tectonic characteristics, such deposits can be expected on the continental shelf as well (according to information taken from the report compiled by Truta in 1996).

The dynamics of the geomorphology is manifested through two processes: a) accumulation and deposition changing the coastline, creating lagoons, and replenishing the beaches with sand of mostly continental origin, and b) moderate to strong erosion processes affecting low-lying shores and sand spits. The Karavasta area lies in the most dynamic part of the Albanian coast, as a result of sediment transport at the past and present river mouths of Shkumbini and Semani (Truta 1996, Ciavola & Simeoni in press).

Hydrology

Two large drainage channels drain the agricultural plain inland of the Karavasta area, west of the district town Lushnja. The water catchment basin draining directly into Karavasta lagoon is therefore rather small, limited by Tërbufi channel in the North, the Divjaka hills in the East, and Myzeqe channel in the South. A substantial number of small reservoirs have been constructed in the Divjaka hills to provide water for irrigation in the plains (Figure 2). Local people in Divjaka and the dozen or so villages around Karavasta lagoon obtain their water for domestic use from a large number of individual wells driven into the groundwater aquifer of the coastal plain. As Karavasta lagoon is situated next to two large river mouths, Shkumbini in the North and Semani in the South, their waters are likely to be carried into the lagoon by coastal currents.

Shkumbini has a catchment basin of 2,445 km2 with a mean annual discharge of 60 m3/s and 5.7 million tonnes annual sediment transport. Its waters are polluted upstream by the Elbasan metallurgic factory and urban sewage outflows. Semani drains a catchment of 5,649 km2 with a

mean annual discharge of 90 m3/s and 12.6 million tonnes annual sediment transport. It is heavily contaminated by industrial and urban liquid waste from the upstream towns Ballshi, Patos and Fieri, as well as leakages from the oil drilling fields in this area. Both rivers meander over a stretch of several kilometres through the coastal plain. Their beds are unstable due to large flow variations. The position of the river mouths is rapidly and constantly changing, leaving many abandoned meanders and oxbows. In the coastal plain, embankments alongside the river courses protect the drained agricultural plain from floods (Truta 1996).

The coastal plain contains a highly productive alluvial groundwater aquifer, generally characterised by a high transmissivity of 500-8,000 m3/day. The capacity of the many wells in the plain, with a depth of 15-70 m, varies from 2-5 to 40-50 l/s. The Lushnja plain as a whole has a groundwater capacity of 52,000-60,000 m3/day. In general, this water is of good quality. However, the gravel aquifers are vulnerable in recharge areas near the rivers, and particularly in infiltration wells. The pollution risk is greatest in the Rrogozhina area, due to the pollution of Shkumbini river from iron works upstream near Elbasan (Truta 1996).

Figure 1 Location of Karavasta Lagoon in Albania and Water Catchments of Shkumbini and Semani Rivers [not available].

Near-shore Characteristics

Continuous marine currents move counter clock-wise, following the general circulation scheme of water masses in the Adriatic Sea, with a speed of 0.3-0.5 nautical miles/h, tending to slow down during summer. Wind-driven currents can be very strong, persisting over several days. Average tidal rise is 0.2-0.4 m, depending on the speed of winds, highest tides being registered in autumn and winter. The highest waves are caused by the NE "murlan" off-shore wind. The SE "shiroku" generates smaller, on-shore waves. In the coastal bays, waves may reach 3.5 m height, in the open sea up to 4.5 m. The near-shore surface water temperature oscillates between an average 12°C in February and 25°C in July and August. Average salinity of coastal waters is around 30 g/l in winter, going up to 39 g/l in summer. The water depth increases slowly with increasing distance from the shore, the sandy sea bottom becoming more muddy with increasing depth. Strong currents prevent the installation of abundant bottom flora and fauna (Truta 1996).

Climate

The climate of the area is Mediterranean with average annual rainfall of 950-1,200 mm on 85-100 days/year, mainly during autumn and winter. Average monthly temperatures vary from 12°C in February to 24°C in August. Due to the influence of the Adriatic Sea, local temperatures seldom fall below freezing. The vegetation period (>10°C average temperature) starts in March and lasts until the first days of December. Plant growth depends during the summer months on sufficient water

supply. The coastal plain is particularly windy, with strongest winds in February. During winter, the most frequent winds blow from SE, during summer from NW (Truta 1996).

Mineral Resources

Gas deposits are found along the coastline. Most of the extracted gas is used for the fertilizer factory at Fieri. Some extraction takes place in the coastal plain west of Divjaka. Future exploitation plans focus on off-shore resources. Apparently, along Shkumbini mouth, titanium deposits exist.

2.1.2 The Socio-economic Context

Population Structure and Dynamics

During 1945-1990, without cross-border migrations, the State controlled urbanisation and artificially maintained an equilibrium between cities and rural areas. The birth rate decreased constantly from 6 births/1000 women in 1969 to 2.7 in 1990, while the mortality remained stable. As a result of State interventions, there has been no difference between the growth rates of rural villages in the hillsides and those in the coastal plain during the last twenty years.

In 1989, Lushnja district had a population of 132,000, including 30,000 inhabitants of Lushnja town. Currently, the main characteristic of the Albanian population is its large percentage of young people, as a result of high fertility and natural growth rates. The urban population is growing faster than the rural population, including migration flows towards the cities, especially the coastal towns (Durresi, Vlora, etc.). This immigration to the coastal area counteracts effects of locally decreasing natural growth rates (Truta 1996).

Population Projections

With the current privatisation of land and economy, and the expected development of previously neglected economic activities, such as commerce and tourism, more dynamic population movements can be expected during the next ten years. In the coastal zone, the population growth will be above national average, given the migrations from Albania's interior areas to the coast. Population projections for Lushnja district are 137,000 for 1995 and 167,000 for 2005 (with 36,000 and 51,000 respectively for Lushnja town). Some outward movement, to the attractive urban centres of Durresi, Tirana, and probably Vlora to a lesser degree, is projected. However, in the immediate vicinity of the Karavasta lagoon, significant population growth is projected due to an active settlement policy and the increasing attraction of beach tourism and leisure-related economic possibilities (Truta 1996).

Economics

Until 1991, the coastal strip was of minor importance to the Albanian economy. Industrial and agricultural production constituted the backbone of the employment sources in the coastal plain.

District towns, such as Lushnja, function as distribution centres, facilitated by the country's main communications route from Tirana to Durresi and Vlora. The importance of this area is demonstrated by the fact that most of the industrial plants in the area (fertilizer plant in Fieri, paper mill and glass factory in Kavaja, chemical factory in Durresi, soda factory in Vlora) were producing intermediate products for use in many other districts. However, since the political changes in 1991, only a minor part of the manufacture remains active, and the heavy industries stopped operating, since their outdated facilities could not withstand international competition (Truta 1996).

Electricity

Albania satisfies its electricity needs mostly with hydro-electric plants. All settlements are supplied with electricity. However, some parts of the network are operating at or above maximum capacity, including the Lushnja (110/35kV) transformer station (Truta 1996).

Figure 2 Water Catchment Basin of Karavasta Lagoon.
Shown are the main rivers, lagoons, oxbows and drainage channels in the catchment plain, plus the Divjaka hills with their main watershed and artificial reservoirs for irrigation.
[not available]

Water Supply

Water sources justifying investments for human water supply are abundant and in general close to the potential consumers. However, the present supply system is characterized by shortages, heavy losses in the obsolete distribution network, and increasing pollution risks. This situation also hampers badly needed investments for urban, agricultural and industrial development (Truta 1996).

Liquid and Solid Waste Disposals

Most coastal towns utilize a combined sewerage system (mixed urban and industrial liquid runoffs). Waste waters are discharged into canals or the Adriatic, without any treatment. The Lushnja sewer discharges into the Myzeqe drainage channel. Solid waste is collected in larger settlements and transported to landfills, where garbage is disposed without further treatment (Truta 1996).

Agriculture

Lushnja (with 61 per cent of all land cultivated) and Fieri (72 per cent) figure among the most significant Albanian agricultural districts figure. For more than forty years, the structure of agricultural production was directed by a policy of self-sufficiency with a high percentage of field crops (82 per cent of all cultivated land, mostly wheat and maize); olive groves, orchards and vineyards occupying the remaining 18 per cent. Two thirds of the agricultural area are irrigated. Although the irrigation infrastructure is currently mostly inoperative, individual efforts provide irrigation water to many individual plots. At present, although about 90 per cent of the agricultural land has been privatized, output is very low due to the delapidated infrastructure and the tendency

of farmers to produce for their own subsistence needs. However, there is a trend, especially in the coastal plain, to mechanize agriculture, to rehabilitate irrigation infrastructures, and to secure access of the products to national and international markets. At present, imported products are still dominant on the domestic market, due to the lack of standardization and trading systems, but in the long run, domestic products will be in much higher demand, especially vegetables, fruits, meat, and dairy products (Truta 1996).

Settlements in the Karavasta Area

The intensive land reclamation in the coastal plain started in the Fifties, accompanied by the establishment of many small settlements (Figure 3). Divjaka town (6,500 inhabitants) plus a dozen small villages (total population 10,000; ranging from 500 to 1,700 inhabitants/village) are situated immediately around Karavasta lagoon. Only the populations of Divjaka and Miza in the NE of the lagoon increased significantly during recent years (Inglis 1996).

Village Infrastructure

Only Divjaka town and its beach area can be reached by a tarmac road. All other villages are extremely difficult to access because of the poor state of the connecting tracks. The participatory rural appraisals (PRA) undertaken in Divjaka and a dozen villages in the immediate surroundings of Karavasta lagoon (cf. Figure 3) identified the almost complete absence of any communal infrastructure, such as drinking water supply (based mainly on individual wells) and sewage management (individual septic tanks) as major structural problems (Inglis 1996). Furthermore, the need to develop solid waste management and telecommunications facilities was identified (cf. Table 1).

Local Economic Occupations

Main occupation of the inhabitants is (subsistence) farming in the coastal plain immediately next to the lagoon, on allocated individual lots of 1.5 ha/family, including cereal, vegetable and fruit crops and some livestock (cattle, sheep, donkeys, horses, buffaloes, goats, geese, chicken). When available, manure from individually owned livestock is used for crops, complemented, if affordable, by chemical fertilizers. Pesticide use is increasing, depending on the economic resources of individual farmers.

The secondary occupation of the inhabitants is fishing (c.500 people) along the coast and in the lagoon. However, only a few people (c.40) from the local settlements are members of the lagoon fisheries cooperative, the remaining local people fish in the lagoon without permission.

Increasingly, the Divjaka beach area is used by Albanian (and a few foreign, almost exclusively Macedonian) tourists. Outside of the beach hotel and holiday facilities (appartments, camping),

most private accomodation facilities are offered by families in Divjaka town (Goodwin 1996, Inglis 1996).

2.1.3 The Legal and Administrative Context

International Obligations

Albania has ratified the Biodiversity Convention, the Barcelona Convention for the Protection of the Mediterranean Sea against Pollution and its related protocols (notably the Protocol on Specially Protected Areas and Biological Diversity in the Mediterranean), and the Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat. Within the framework of the Mediterranean Action Plan (coordinated by a United Nations Environmental Programme office in Athens, UNEP/MAP) Albania embarked on an integrated Coastal Area Management Programme (CAMP). The first results of this programme, covering the Karavasta Area, are summarised by Truta (1996).

Figure 3 Settlements and Main Road Connections in the Karavasta Catchment Area.
Village names are shown for those settlements where PRAs have been conducted (except Divjaka Beach and the Fisheries cooperative installations).
[not available]

Table 1 Main Results of the Participatory Rural Appraisals (taken from Inglis 1996).

Settlement	Basic problems to be addressed	Additional desired actions
Divjaka 6,500 inhabitants c.250 foreign tourists per year	Traffic conditions litter and garbage management drinking water supply electricity supply sewage treatment	improve tourist facilities improve roads and square
Xengu 600 inhabitants	road quality drinking water supply telecommunications links	improve irrigation system finish school building
Miza 1,400 inhabitants	road quality electricity supply drinking water supply telecommunications links	improve irrigation system
Zharneci 690 inhabitants some foreign tourists	lack of irrigation water road quality drinking water supply electricity supply	allow pasture on land owned by the Forestry Directorate
Kryekuqi 1,700 inhabitants	electricity supply no telephone lines drinking water supply road quality transport facilities garbage and sewage treatment	reactivate the irrigation pump give control over the lagoon use
Kamenica 490 inhabitants	electricity supply garbage management sewage treatment road quality	establish fishing and hunting rights in the lagoon improve tourist facilities
Guri 1,200 inhabitants	electricity supply drinking water supply sewage treatment road quality transport facilities	create new religious institution create a socio-cultural centre repair irrigation system create a new school create a credit scheme for

	garbage treatment	farmers
Muçiasi 640 inhabitants some foreign tourists	lack of marketing facilites for crops road quality damaged irrigation system sewage treatment drinking water supply electricity supply	establish fishing rights in the lagoon develop tourism create a socio-cultural centre
Remasi 740 inhabitants	electricity supply drinking water supply garbage and sewage treatment damaged irrigation system telecommunications links road quality	create a public garden have local people employed by the lagoon fisheries cooperative the lagoon should become Commune property
Karavasta 615 inhabitants	road quality drinking water supply sewage and garbage management electricity supply	create a socio-cultural centre reconstruct the church and school afforest around the lagoon provide fishing rights in the lagoon re-establish the agricultural marketing centre create a pelican protection group
New Karavasta 1,100 inhabitants	road quality drinking water supply sewage treatment	revitalise the stock breeding centre improve road improve drinking water supply improve sewage treatment
Sektor Nº 2 670 inhabitants	road quality drinking water supply in summer sewage treatment soil salinity	improve transport facilities finish school building

By acceding to the Ramsar Convention, Albania accepted four main obligations relating to the conservation and wise use of wetlands throughout its territory: The first obligation is the designation of at least one wetland for inclusion in the 'List of Wetlands of International Importance' (cf. below). A general obligation concerns the inclusion of wetland conservation considerations within the national land-use planning, so as to promote, as far as possible, the wise use of wetlands in Albania. Furthermore, states which join the Convention are required to promote the conservation of wetlands in their territory through the establishment of nature reserves on wetlands, whether or not they are included in the List of Wetlands of International Importance. Finally, contracting parties

are obliged to consult with other contracting parties about implementation of the Convention, especially as regards transfrontier wetlands, shared water systems, shared species and development aid for wetland projects.

Institutions at National Level

Executive competence for the management, exploitation, conservation and development of natural resources and environmental protection is split between several State authorities. Institutional responsibility for environmental issues has been greatly clarified by the adoption of the Law on Environmental Protection of 1993, but there are still some administrative and jurisdictional overlaps.

The Ministries of relevance to the Karavasta area are:

The Ministry of Agriculture and Food, which incorporates:
- the General Directorate of Forestry (GDF) which directly administers protected areas through its district services;
- the Directorate for Nature Conservation, created in 1994;
- the Directorate of Fisheries (DF), which administers inter alia the water surface of lagoons, including in protected areas and coastal and marine fisheries; and
- the Directorate of Land and Water, which regulates the use of water for agriculture.

The Ministry of Construction and Tourism, which is responsible for developing the National Tourism Strategy which must be approvied by the Council of Ministers. The Ministry also incorporates:
- the General Directorate for Water which administers water supply and sewerage through district water supply and operations companies.

The Ministry of Industry, Mining and Energy.

The Ministry of Health and Environmental Protection (MHEP), which is required by law to develop the government's environmental policy to obtain sustainable economic and social development and maintain and improve the quality of life.

The Committee of Environmental Protection (CEP) is responsible for the implementation of this policy. This specialised central agency of the MHEP was established by Decree Nº 7452 of 5 January 1991 and does not yet have ministerial status or financial autonomy. Its powers and duties are laid down in Article 40 of the Law of Environmental Protection which also defines the composition and functions of the Inspectorate of Environmental Protection (IEP). The CEP has 12 regional agencies, employing 38 environmental inspectors who must comply with "circulars" issued by the Chairman of the CEP. The CEP is expressly required to work with other ministries, central institutions and local authorities (Art. 40).

The highest consultative bodies at national level are the Council of Territorial Planning (KRT) and the National Water Council, both chaired by the Prime Minister.

There is now a five-member national Interministerial Committee on Tourism. In the Karavasta Ramsar Site, the MHEP, the Ministry of Agriculture and Food and the Ministry of Construction and Tourism are expressively required to work together to resolve planning problems for the purpose of conserving the natural properties of the ecosystem (Art. 4 of Decision Nº 413 of 22 August 1994, cf. below) (Shine 1996).

Local Administrative Authorities

There are twelve **Regions** in Albania, each with an administrative Prefecture. The Karavasta area is situated in the Region of Fieri, which includes Lushnja and Vlora Districts. Three CEP experts are attached to Fieri Prefecture, one of whom is permanently based in Lushnja.

There are 32 **Districts** in Albania. The Karavasta Area is administered by Lushnja District which employs agricultural, fisheries and forestry specialists. An agricultural land tax is payable by each farmer to the District.

Communes or municipalities are individual villages or groups of smaller villages, with an elected Mayor. The Karavasta Area essentially covers two Communes: Divjaka and Remasi, each with a police station (Shine 1996).

Territorial Planning Legislation

Planning applications are decided by the Commune, or by regional or national Councils of Territorial Planning (KRT). The Commune has planning powers in respect of buildings or other installations for agricultural purposes on land outside the yellow boundary line of each village, whilst the Regional KRT has competence in respect of buildings within the yellow line around urban areas. The National KRT decides on applications for developments above 5,000 m2, taking account of the Region's views, and may override decisions made at Regional or Communal level.

The Council of Ministers' Decision Nº 321 of 20 July 1992 is of particular relevance to the Karavasta project. It established a Coastal Protection Belt delimited by a "red line" ("vija kufizuese bredgetare") which runs the whole length of the Albanian coast (Figure 4). Development is prohibited in specific zones within the Belt, namely 300 m from the seashore on sandy coasts, 150 m from riverbanks, and 200 m around historical and archeological sites. Any development in the rest of the Belt is subject to permission from the National KRT.

There is scope for jurisdictional conflict over development in protected areas, whether or not in the Coastal Protection Belt. The General Directorate for Forestry is responsible for such areas, but the

National KRT may override its planning decisions. To date, the enforcement of applicable development restrictions has been inadequate or non existent in the Divjaka coastal area, and this has led to many small buildings (kiosks) being established within the Coastal Protection Belt (Shine 1996).

Land Privatisation and Land Tenure

Land privatisation was initiated by the New Land Law Nº 7501 of 19 July 1991 which divides land into three categories:

- agricultural land used for arable crops;
- land occupied by forests, pastures and meadows; and
- non-agricultural land used for economic, social and cultural purposes, roads and railways, coastal areas and beaches, all waterways and wetlands, built land and land covered by monuments of historic and archaeological interest.

A property market has now been created pursuant to laws on the purchase and sale of land adopted in 1993 and 1995. The 1995 law provides that Albanian natural or legal persons may freely sell the land given to them during privatisation, and that foreign persons wishing to invest in Albanian territory, in accordance with the law on foreign investments, may buy publicly or privately-owned land. The process of land privatisation and distribution is not yet complete, and there is still insecurity over property rights, which is considered by some to have discouraged foreign investment in Albania.

By way of example, a Law on the Privatisation of Public Land to Compensate Former Owners, adopted in November 1995, authorises the transfer of state-owned land to private individuals in compensation for land taken during collectivisation. "Compensation areas" are defined according to national guidelines, following local consultations, and the final decision is taken by the National Committee of Land Compensation, which includes representatives of the Ministries of Agriculture and Tourism as well as the Chairman of CEP. A proposal to designate 450 ha south of Karavasta lagoon, in the Coastal Protection Belt, as a compensation area under this law has apparently been withdrawn.

Environment Protection Legislation

The Law on Environment Protection (Nº 7664) of 21 January 1993 is a framework law which sets out six objectives for sustainable development:

- prevention and reduction of pollution of any kind;
- conservation of biological diversity specific to the country's biogeographical background;
- rational management of the natural resources and the avoidance of their over-exploitation;
- ecological restoration of areas damaged by human activities or natural destructive phenomena;

- preservation of an ecological balance;
- maintenance and improvement of the quality of life.

Regulations or sectoral laws to achieve these objectives are to be laid down by the Council of Ministers (Article 52).

The law lays down detailed Environmental Impact Assessment requirements which apply to all natural and legal persons, Albanian or foreign, for territorial structure and urban development plans and their amendments, for projects and activities which have strong impacts on the environment and human health, for projects for reconstruction and enlargement of such activities, and for other projects, according to the judgement and definitions made by the local authority. The CEP, in consultation with relevant ministries and other central institutions, lays down rules for the preparation of EIAs.

Figure 4 The Coastal Protection Belt in the Karavasta Area. [not available]

In addition, licences for activities affecting the environment are required from the designated competent authority for inter alia:
- construction of buildings and infrastructure;
- land reclamation and the improvement of watercourses;
- exploitation of mineral and biological resources in waters intended for fishing;
- exploitation of forests of common interest, creation of forested areas, hunting, taking into account game species,
hunting seasons, means and admissible levels of hunting;
- exploitation of flora, fauna, natural resources, coastal zones and sea bottoms;
- opening up of new areas for growing fruits in zones with protected water resources;
- production, sale or use of toxic products, as well as those to be used for phytosanitary, agricultural and sylvicultural
purposes;
- the import and export of plant and animal species of wild flora and fauna;
- other activities that may have an impact on the environment as determined by the CEP.

Environmental offences may, at CEP's discretion, be punished as administrative violations or criminal offences. The income from all taxes, fees and fines generated under this law is paid into the Environmental Fund of either the CEP or the competent local authority. Licence fees for activities affecting the environment are payable to the authority which grants the licence. Environmental funds may be used to support specified activities such as the elimination of pollution sources, the rehabilitation of ecologically damaged zones and the provision of staff and offices.

The Legal Designation of a Ramsar Site

On 22 August 1994, with Decision Nº 413, the Albanian Council of Ministers declared the area of Karavasta Lagoon and Divjaka National Park as a site to be included in the "Ramsar List of Wetlands of International Importance". By acceding to the Ramsar Convention on Wetlands, Albania has undertaken to maintain the ecological character of this listed site. Furthermore, it has agreed to include wetland conservation considerations within its land-use planning so as to promote, as far as possible, the wise use of all wetlands on Albanian territory.

Decision 413 specifies the limits of the Karavasta-Divjaka Ramsar Site which includes a reserve for hunting (classified as IUCN habitats/species management area category IV), a strict flora and fauna protection area (wardened by the General Directorate of Forestry), the Divjaka Pine Forest National Park, and proposed zones for Dalmatian Pelican (Pelecanus crispus) protection, traditional fisheries, and public hunting (cf. Figure 5).

As a contracting party to the Ramsar Convention, Albania is required to formulate and implement its planning to promote the conservation of the Karavasta Ramsar Site. Decision 413 provides for limited cross-sectoral management by requiring the Ministry of Health and Environmental Protection, the Ministry of Agriculture and Food, and the Ministry of Construction and Territorial Planning to work jointly on planning and tourism issues through special projects to preserve the natural values of the ecosystem (Article 4).

The Karavasta Area Protection Law

This management plan, elaborated by Albanian and international specialists, within the framework of a programme of support by the European Commission to the Albanian Comittee for Environmental Protection (CEP), is a first contribution to the long-term implementation of the Ramsar obligations at the Karavasta Ramsar Site and other Albanian wetlands. The present management plan document is completed by a revised zoning proposal for the "Karavasta Area", better aligned with the Albanian Coastal Area Management Plan (elaborated under UNEP's Mediterranean Action Plan), and a proposed legal instrument for the Karavasta Area, provisionally called the "Karavasta Area Protection Law".

The proposed law is based on a unitary approach to nature conservation administration, to avoid decisions which are positive for a given sector but negative for others. It therefore provides for the creation of an Integrated Management Authority based in Divjaka (as the largest settlement in the Area), with clear duties and comprehensive powers to implement this management plan in accordance with the provisions of the Ramsar Convention. The suggested composition of the Authority includes representatives of key national ministries or directorates, local councils with territory in the Karavasta Area, residents of the Area representing certain economic sectors, conservation NGOs, and scientific institutions.

The Karavasta Area Protection Law delimits the Karavasta Area and specifies the general zoning of the Area (cf. Figure 6), including the tourist zone on the beach. It prohibits or restricts certain activities incompatible with the conservation objectives of each zone. It is an enabling instrument, conferring clearly-defined jurisdiction and powers on the Management Authority. For these powers to be used, guidance must be provided, and this is the role of the Management Plan, provided for in Article 9 of the proposed law.

The Karavasta Area Protection Law contains five chapters, specifying the delineation and zoning of the protected Area, the institutional framework necessary for the management and conservation of the Area, the management guidelines for activities and processes affecting the Area, and legal enforcement procedures, penalties and transitional provisions.

Figure 5 Zoning of the Ramsar Site According to Decision Nº 413 of 22 August 1994. [not available]

Figure 6 Revised Boundaries and Zones of the Karavasta Area According to the Proposed Karavasta Area Protection Law.

2.2 Specific Information Provided by the Phare Project

2.2.1 Hydrobiology of Karavasta Lagoon

Coastline Dynamics

The comparison of historical maps since 1870 with more recent satellite images reveals that coastal currents and water discharges and sediments carried by the rivers Shkumbini and Semani make the Karavasta area coastline evolve rapidly. The outer Godulla lagoon was created by coastal currents during this century, while the main Karavasta lagoon lost large parts to the intensive land reclamation works. Currently, the southern part of the sand bar separating Godulla lagoon from the Adriatic is eroded. Thus, Godulla lagoon is likely to become an open marine bay, with a southwards progressing sand spit at its northern end. Shkumbini river deposited many sediments creating a progressing sand spit closing off a new lagoon south of the river mouth. However, since winter 1995/96 Shkumbini river enters the Adriatic about 5 km further north. This is likely to inverse the sedimentation rate at the former mouth (cf. Figure 7).

These dynamics imply that it will become increasingly more difficult to keep the link between Karavasta lagoon and the Adriatic, through the northern channel, open. The two southern channels, linking Karavasta lagoon with Godulla lagoon are currently not silted up due to the absence of direct influences of coastal currents. However, with the likely erosion of the largest part of the sand bar separating Godulla lagoon from the Adriatic in the near future, the situation will most probably

evolve in a way that Godulla lagoon will disappear, and the central channel, where the fish trap is installed, will definitely become the main link between Karavasta lagoon and the sea.

Hydrodynamics of the Entrance Channels

The tidal flow (0.3 m in this region of the Adriatic) is an important parameter influencing the dynamic equilibrium between erosion and sedimentation in the inlet channels. The ebb and flood flow velocities through an inlet channel depend, for a given tide and lagoon geometry, on the channel length, its cross-section area and shape, and the bottom roughness. With increasing cross-section area flow resistance diminishes and velocity increases to a peak. Beyond that point, velocity decreases with increasing area as flow continuity considerations dominate. There is a critical velocity required to keep an inlet open at a stable equilibrium between cross-section area and velocity.

Calculations of the critical velocity, based on different sediment sizes, show that the northern and central channel, owing to their excessive length (700 m and 1200 m respectively) have a maximum tidal flow velocity only little higher than the critical velocity. In other words, they are likely to silt up without regular dredging. The same configuration could be expected for the central and southern channels in the case of Godulla lagoon opening up to the sea. Important sediment deposits (e.g. after a storm) are therefore likely to obstruct the water inlets rapidly (Technital 1995).

Considerations about Channel Stability and Water Salinity

The lagoon system consists of two communicating basins: the outer Godulla lagoon and the large Karavasta lagoon, connected via two channels (central and southern). Karavasta lagoon has a surface area of approximatively 4,200 ha and an average depth of 0.7 m (maximum 1.3 m), the bathymetry being basically uniform with no bottom channels directing the water flow. The bathymetry of Godulla lagoon is similar, with the exception of the north-eastern part, where a channel has been dredged with a maximum depth of 1.8 m (Crivelli 1996).

Water discharge calculations indicate, that even a complete opening of Godulla lagoon to the Adriatic, would not significantly alter discharge from Karavasta lagoon to the sea, due to the high energy head loss in the connecting channels. Thus, water flow in the system is largely determined by tidal currents and strong winds (Technital 1995).

In summer, high air temperatures increase the evaporation of lagoon water, water exchange between the lagoon and the sea decreases, inflow from the catchment basin is practically nil, and rainfall almost completely negligible. This increases the salt concentration in the remaining water table, with an increasing gradient with increasing distance from the inlets. The cause of this gradient being inflowing sea water with a lower salinity (Technital 1995).

Based on the assumptions of water loss due to evaporation, the maximum salt concentration is reached in October, when the values increase by 50-60 per cent compared to the lowest salinity in January. Simulations of this model confirm that under the present situation, where the water exchange between the sea and Karavasta lagoon is limited, the main factors influencing lagoon water salinity are climatic conditions, especially surface evaporation. With the possible disappearance of Godulla lagoon, and the hypothetical widening of the inlet channels by a factor of 35, annual salinity variations would drop significantly (about by half), according to Technital (1995).

Figure 7 Recent Evolution of the Karavasta Coastline 1982-1994 (taken from Technital 1995). [not available]

Water Salinity Measurements

Information about the lagoon water salinity is scanty and contradictory. Data by Pano & Hysi (1982), analysed in the report by Technital (1995), indicate that during summer the lagoon is hypersaline with salt concentrations varying between 48 and 58 g/l, increasing from the lagoon inlet to its shore. The same source shows that in winter the lagoon.
is brackish, with salt concentrations varying between 19 and 25 g/l, showing an inverted gradient with highest salt concentrations near the inlet, and lower salinities near the shore, due to freshwater inflows from the catchment basin. Field sampling in August 1993 revealed salt concentrations of Karavasta lagoon similar to coastal waters, ranging roughly from 25 to 38 g/l, with an increasing gradient from the inlet to the lagoon shore (Guelorget & Lefebvre 1994). Field sampling executed by the Phare project in June 1996 revealed similar salt concentrations, ranging from 28 to 34 g/l, however, with an inverted gradient increasing from the lagoon shore towards the inlet (Crivelli 1996). The same study revealed a slightly higher salinity of Godulla lagoon, ranging from 33 to 36 g/l.

The Phare study concludes that, in the absence of important tides, predominant winds (e.g. NW sea breeze) can easily push sea water into Karavasta lagoon and are likely to create currents inside the lagoon. Freshwater from the catchment basin is drained into the lagoon from the shore, especially where drainage channels enter the lagoon and where silted-up channels have been deliberately opened to the lagoon (cf. Figure 2). The combined, and varying, influences of inflowing freshwater and wind-driven seawater could explain the reversed salinity gradients recorded by the different studies (according to the prevailing meteorological conditions before and during the different sampling periods). However, to date, the reasons for the large differences in salinities recorded by Pano & Hysi on one hand and by Guelorget & Lefebvre and Crivelli on the other hand are unexplained. Longer-term studies are needed to establish a hydrological model explaining the factors influencing the lagoon water salinity and its periodical changes and evolution in time.

Water Temperature and Fish Kills

Due to the shallowness of Karavasta lagoon, high summer water temperatures (20-30 °C in June

1996) and low winter temperatures are expected. Between 1975 and 1995, there were three winter fish kills. The worst took place in December 1991 and January 1992, when the lagoon was completely frozen. Otherwise, in summer 1995, for the first time fish kills have been observed in some areas of the lagoon, as a consequence of increasing eutrophication (Crivelli 1996).

Sediments

The organic matter produced by lagoons ends up being mineralised by heterotrophic bacteria in the sediment. The sediment acts as a buffer, stocking the organic matter and nutritive salts at certain times of the year and releasing them at others. In this way, the sediment becomes an integrated factor of the lagoon ecosystem.

Most of the core samples taken in Karavasta lagoon contain phanerogam debris under about ten centimetres of pure silt. This mostly silty sediment is well oxygenated on the top few millimetres along the shore and on the top centimetres in the centre of the lagoon. Organic matter makes up between 7 and 18 per cent of the dry weight of the sediment and is most prevalent in the east and centre of the lagoon. A correlation exists between the amount of clay and the amount of organic matter in the sediment. The sediment is largely made up of fine particles, in particular clays which, on average, constitute more than half of the particles. The average level of nitrogen is 4.3 mg/g and of phosphorus is 0.43 mg/g of sediment dry matter. There is a correlation between the level of organic matter and the level of nitrogen, but not between the level of organic matter and the level of phosphorus.

The sediments of Godulla lagoon range from silty to silty sand which is oxygenated at the surface. The sediment is sandy around the central channel between the sea and Karavasta lagoon. Here the organic matter content is an average of 7 per cent of dry sediment. The area least rich in organic matter (2.8 per cent) is on the sandy edges of the outer part of Godulla lagoon north of the central channel (Crivelli 1996).

Assessment of the Trophic Status of Karavasta Lagoon

The productivity of Mediterranean lagoons is a result of their isolation and of the factors which influence them. These influences can come from the sea through channels which only flow seasonally or from the rainwater catchment area. The development of human activities determines the contribution from the rainwater catchment and mainly concerns nutritive salts. Inside Mediterranean lagoons, biochemical cycles govern the exchange of matter between the different elements which make up the ecosystem. These exchanges were mainly governed by climatic factors.

In order to manage these ecosystems, it is important to know in what state they are in. Too many nutritive salts (i.e. eutrophication), often caused by human activities (i.e. urban, industrial, agricultural, aquacultural runoffs) enrich the sediment, thus causing desastrous inbalances during

periods of hot weather. Such inbalances, caused by the hyperactivity of bacteria braking down the organic matter, result in a serious drop of oxygen levels which is detrimental to the entire ecosystem and human activities depending on it, either directly (fishing, aquaculture) or indirectly (tourism, nature conservation).

Karavasta lagoon seems to be in a serious state of eutrophication, and the cause is most likely to be found in the catchment area. This situation is worsened by the fact that Godulla lagoon, by its location, acts as a buffer against marine inflows. The sediment profiles sampled in June 1996 indicate that the nutrient inflows from the catchment basin do not seem to be a recent phenomenon, partly due to the fact that a community of plants and algae is buried beneath 10 cm of fine silt, and also due to the relative homogeneity of the profiles. Organic matter is badly mineralised in the sediment of Karavasta lagoon, but much better in Godulla lagoon, where concentrations of organic matter are below 10 per cent due to the significant marine influence. A significant risk of serious hyper-eutrophication exists for the ecosystem of Karavasta lagoon, where temperatures are near 30 °C in June. The ecosystem is only maintained functioning because of persistent winds which re-oxygenate the water body and push the sediment back into suspension (Crivelli 1996).

2.2.2 Biodiversity Conservation Zones

Natural Habitats

An analysis of the distribution of major natural habitat types in the Karavasta area reveals four remaining general classes of natural habitats: brackish and freshwater wetlands, open saltmarshes and grassland, scrub, and woodland. They represent different stages in the colonisation (i.e. succession) of sandy beaches and young dunes by terrestrial vegetation leading towards the development of scrub and woodland. Natural habitats remain essentially in a belt along the coast, including the land strip between the sea, Godulla and Karavasta lagoons. This is the area which is still exposed to the natural dynamics most influenced by coastal storms and river floods. Inland, the natural habitats are replaced by arable land in the reclaimed part of the coastal plain (cf. Figure 8).

The distribution of natural habitat types is not fixed over time, but forms part of the natural dynamics and changes slightly due to vegetation succession. Management of the remaining natural habitats should therefore take a comprehensive approach, assuring that the ecosystems with maximum diversity are least exposed to human interference. In the core zone of the Karavasta area, these are, above all, the old-growth mixed and coniferous forests inside and alongside the Fenced Nature Reserve, and the coastal wetlands and scrubs south of Shkumbini river mouth. In addition, the remaining narrow belt of natural saltmarshes around Karavasta lagoon, the coastal strip from Muzeqe channel south to Hoxhara channel, and the natural parts between the embankments of Shkumbini and Semani rivers separating them from the reclaimed agricultural plain (cf Figure 8).

Woodland

The old-growth forests are in most places dominated by the indigenous Aleppo pine (*Pinus halepensis*). In some areas, especially Kulari north of Tërbufi channel, old-growth umbrella pines (*Pinus pinea*) form an open canopy over scrub and open ground (somewhat "dehesa" like). Often woodland grows over dune slacks with temporary, or even permanent waters. This water supply is important for a diverse fauna living and hiding in the dense-growth forest, especially in the parts with mixed tree composition alongside the broader wet hollows or on the edge of clearings, with junipers, poplars, willows and tamarisks. Although, traces of human interference (including plantations) remain, given the old-growth of most of the pine forest that forms part of the Divjaka Forest National Park, this habitat has also outstanding biodiversity value. Some patches of endemic species are reported in the forest with the flowers *Aster albanicus paparistoi, Orchis albanicus* and *Orchis x paparisti*(Lansdown 1996).

Forest Animals

The most notable fauna species living in the forest habitats are, for their rarety or restricted distribution, Roe Deer (*Capreolus europaeus*), Horsehoe Bat (*Rhinolophus ferrumequinum*), European Nightjar (*Caprimulgus europaeus*), Syrian Woodpecker (*Dendrocopos syriacus*), Herrmann's Tortoise (*Testudo hemanni*) and others (Lansdown 1996). A herd of feral cattle (probably no more than 20) lives in the Fenced Nature Reserve. The animals, about whose history not much is yet known to the authors, resemble much ancient breeds of a rustic, Aurochs-like species and live a very hidden life that merits further investigation (Mix 1996).

Dune Slacks

Relict dune slacks are a typical habitat of the land-spit separating Karavasta lagoon from the sea, comprising linear wet hollows running north-south through the forest and more open areas. Some slacks are particularly species-rich with *Alisma, Carex, Cyperus, Euphorbia, Hydrocotyle, Isolepis, Juncus, Limonium, Lycopus, Salmolus* and other plants, to name but the most typical genera. South of the northern channel, between Godulla and Karavasta lagoon, the slacks have a more saline character, with elements of the surrounding saltmarshes (*Salicornia* flats).

Coastal Waters and Lagoons

The coastal temporary waterbodies and permanent lagoons are surrounded by open saltmarshes and dune grasslands of different type, representing different early stages in the vegetation succession from bare sandy beaches to reedbeds, scrub and woodland. These transition zones (ecotones) provide the habitat for several bird species, including Stone Curlew (*Burhinus oedicnemus*), Collared Pratincole (*Glareola pratincola*), Kentish Plover (*Charadrius alexandrinus*), Calandra Lark (*Melanocorypha calandra*), Yellow Wagtail (*Motacilla flava feldeggi*) and the occasional observation of individual Otters (*Lutra lutra*). Inland of the shore of Karavasta lagoon,

such habitats have all but disappeared, due to the intensive land reclamation close up to the lagoon shore.

Figure 8 Natural Habitats in the Karavasta Area between Shkumbini and Semani River Mouths (taken from Lansdown 1996). [not available]

Submerged Macrophytes

According to the sampling undertaken in June 1996, Ruppia cirrhosa is the only underwater angiosperm plant species to be found in Karavasta lagoon. This species, as well as the main macro-algae (*Chaetomorpha aerea, Valonia aegagrophyla, Chondria capillaris, Polysiphonia sp*. and *Ceramium diaphanum*) are found on the periphery of the lagoon. Enteromorpha sp. has been recorded in abundance, though very localised in the north of the lagoon near a freshwater inflow pipe. Although the sampling made in Godulla lagoon was only limited, it became apparent that the underwater plant and algae communities of this lagoon are more diverse than the ones of Karavasta lagoon, including*Zostera noltii, Ruppia cirrhosa* and *Cymodocea nodosa* and several species of algae.

Ruppia cirrhosa which dominates in Karavasta lagoon is common in Mediterranean brackish waters. The abundance of *Zostera noltii, Cymodocea nodosa* and the specific composition of algae populations show that there is a more significant marine influence in Godulla than in Karavasta lagoon. This is also manifested in its higher salinity, which is more stable over the course of the year in the outer part of the lagoon, better connected to the sea. In Karavasta lagoon, the topography and the specific composition of the underwater plant and algae communities suggest that the salinity is more variable over time, as a result from freshwater inflows from the catchment and a slower turnover of the water masses.

In Godulla lagoon, the abundance and diversity of angiosperms, as well as the abundance of*Cystoseira, Laurentia* and *Polysiphonia* indicate that levels of organic pollution are low. Karavasta lagoon is undergoing a process of eutrophication, where the underwater community is composed entirely of *Ruppia cirrhosa*, which is very quickly limited by water depth and where nitrogen-loving macro-algae are abundant, particularly *Chaetomorpha*, but also *Enteromorpha*. *Ruppia* is not found at depths larger than 1.2 m in Karavasta lagoon, whereas it forms dense communities at the maximum depth of 1.8 m in Godulla lagoon with *Zostera* and *Cymodocea*. This may be explained by the fact, that the low amount of organic matter and the silty sand sediment of Godulla lagoon create more transparent water conditions, that let larger amounts of light penetrate through the water. Competition with *Chaetomorpha* is also a likely contributing factor to the limitation of *Ruppia* in Karavasta lagoon.

Significant sources of nutrients seem to flow into Karavasta lagoon through the drainage channels at its northern, eastern and southern shores, as indicated by the abundance of nitrogen-loving macro-

algae. The abundance of algae and the levels of nitrogen in the sediment indicate that the eutrophication process is fairly advanced. This makes Karavasta lagoon vulnerable to an increase in the risk of anaerobic crises in the years to come. Until now, such crises have not been serious, probably due to the low level of phosphorus in the sediment. However, the urban developments around the lagoon are likely to increase phosphorus inflows rapidly, if nothing is done to prevent this. On the other hand, there seems to be no eutrophication in Godulla lagoon due to better exchanges with the sea and the filter effect of Karavasta lagoon concerning land-based inflows (Crivelli 1996).

Survey of Breeding Waterbirds and Raptors

The Karavasta Area has a community of breeding waterbirds of outstanding biodiversity value: 22 species of waterbirds have been recorded breeding in the Area (cf. Table 2). According to the quantitative criteria for Ramsar Sites, Karavasta Area is of international importance for two of these: Dalmatian Pelican and Little Tern. Nine of them are Species of European Conservation Concern (SPECs), classified as **endangered** (Collared Pratincole, Gull-billed Tern), **vulnerable** (Little and Great Bittern, Dalmatian Pelican [globally threatened], Garganey, Stone Curlew) or **declining** (Kentish Plover, Little Tern).

In addition to the waterbirds, the coastal and riverine forests in the Karavasta Area harbour a diverse community of breeding raptors, with confirmed breeding of Black Kite (*Milvus migrans*, classified as vulnerable), Buzzard (*Buteo buteo*) and Goshawk (*Accipiter gentilis*), and possible breeding of Booted Eagle (*Hieraaetus pennatus*, rare), Short-toed Eagle (*Circaetus gallicus*, rare) and Marsh Harrier (*Circus aeruginosus*, breeding in reedbeds and tamarisk scrub).

The coastal sand bar harbours nesting territories of Oystercatcher, Kentish Plover and colonies of Little Terns. Further important nesting sites for territorial and colonial waterbirds are found on islands and islets in Karavasta lagoon, along its shores, in the coastal saltmarshes, lagoon, reedbeds and scrubs near the mouths of Semani and Shkumbini rivers and in the open vegetation north of Karavasta lagoon (cf. Figures 9 and 10).

The Phare study executed during 1995 and 1996 revealed that human disturbance was a major limiting factor of breeding success. Several breeding attempts of Little Tern colonies unvariably failed after human intrusions, revealed by numerous footprints of humans and feral dogs (including broken egg shells) and direct observations. The repeated failures of breeding attempts of Dalmatian Pelicans (**globally threatened, vulnerable**) and Little Tern (**declining**) are particularly regrettable, as the Area meets the Ramsar criteria of international importance for these two breeding species. Human intrusion on the islands inside Karavasta lagoon and to the colonies in the coastal areas led to abandonment of breeding colonies and severely reduced breeding success.

Table 2 Population of Breeding Waterbirds in the Karavasta Area 1995-1996 (Hafner 1996).

Waterbird Species	Scientific Name	Conservation Status	Number of Pairs 1995	Number of Pairs 1996
Little Grebe	*Tachybaptus ruficollis*	●		2
Crested Grebe	*Podiceps cristatus*	●		1
Dalmatian Pelican	*Pelecanus crispus*	**1** vulnerable	52	50
Little Bittern	*Ixobrychus minutus*	3 vulnerable		1
Great Bittern	*Botaurus stellaris*	3 vulnerable	1	
Mallard	*Anas platyrhynchos*	●		1
Garganey	*Anas querquedula*	3 vulnerable	9	2
Water Rail	*Rallus aquaticus*	●		1
Moorhen	*Gallinula chloropus*	●		8
Coot	*Fulica atra*	●		8
Oystercatcher	*Haematopus ostralegus*	●	15	6
Black-winged Stilt	*Himantopus himantopus*	●		13
Stone Curlew	*Burhinus oedicnemus*	3 vulnerable	2	5
Collared Pratincole	*Glareola pratincola*	3 **endangered**	4	130
Kentish Plover	*Charadrius alexandrinus*	3 declining	30	14
Lapwing	*Vanellus vanellus*	●		2

Redshank	*Tringa totanus*	2 declining	9	7
Common Sandpiper	*Tringa hypoleucos*	●		1
Yellow-legged Gull	*Larus cachinnans*	●	56	43
Gull-billed Tern	*Gelochelidon nilotica*	3 **endangered**		2
Common Tern	*Sterna hirundo*	●	39	88
Little Tern	*Sterna albifrons*	3 declining	145	335

Global threat status:

1 = globally threatened species

2 = global population concentrated in Europe with an unfavourable conservation status

3 = global population not concentrated in Europe, with an unfavourable conservation status in Europe

4 = global population concentrated in Europe with presently favourable conservation status

● = favourable conservation status, not of European conservation concern

The terms "endangered", "vulnerable" or "declining" refer to the European threat status.

The 1995 breeding bird survey was incomplete. Number of pairs refer to number of nests for terns.

The problem of human disturbance affects also the breeding of waterbirds and raptors in the forested areas along the coast and Shkumbini river. Removal of this disturbance is likely to favour the re-establishment of former colonies of Great Cormorants (*Phalacrocorax carbo*) and herons (Ardeidae) (Hafner 1996).

Feeding Ecology of Key Species

Little and Common Terns forage in all four main habitat types for waterbirds, with highest densities in the coastal marshes and saltflats (cf. Figure 11). Considering that the main foraging habitat types differ in surface, most Little Terns forage within Karavasta lagoon, while Common Terns forage mainly in the sea. The prey types exploited during the chick-raising period include various fish species and a few terrestrial insects. Little Terns capture abundant small fish in Karavasta lagoon and

nearby channels (*Atherina, Aphanius, Gobius, Gambusia*), Common Terns capture mainly sea fish (*Sardina, Engraulis*). This foraging system is very similar to other Adriatic lagoons (Hafner 1996).

Ornithological Importance for Wintering Waterbirds

The censuses of wintering waterfowl carried out by Tour du Valat in 1995 and 1996 (Kayser et al. 1995, Bino et al. 1996) confirmed the international importance of the Karavasta Area meeting no less than six quantitative Ramsar criteria, concerning the overall number of wintering waterbirds and five individual species (cf. Table 3). Karavasta Area is the most important site for wintering waterbirds in Albania for both the number of birds and species richness. In addition to waterbirds, a diverse and abundant wintering raptor population was censused. Karavasta and Godulla lagoons, the coastal areas, particularly around Shkumbini and Semani river mouths provide complementary habitats for wintering birds in the sense that many of them use them successively during the daily cycle. For example, certain duck species roost during daytime on Karavasta lagoon and feed on submerged vegetation of Godulla lagoon at night.

Figure 9 Distribution of Nesting Territorial Waterbirds in 1996 (taken from Hafner 1996). [not available]

Figure 10 Waterbird Colony Sites 1996 (taken from Hafner 1996). [not available]
Number of nests in brackets.

Figure 11 Four Main Foraging Habitats of Waterbirds (taken from Hafner 1996).[not available]
Shown are 13 sample units for foraging distribution and activity observations.

Table 3 Quantitative Criteria of International Importance for Wintering Waterbirds Met by the Karavasta Area (cf. Hafner 1996).

	1995	**1996**	**Ramsar Criteria**
Number of waterbird wintering sites censused in Albania	13	15	
Number of waterbirds counted in Karavasta Area	38,859	45,935	**20,000**
Percentage of birds	27.0	25.4	

at all censused sites			
Dalmatian Pelican (*Pelecanus crispus*)	171	139	**25**
Great White Egret (*Egretta alba*)	151	120	**120**
Wigeon (*Anas penelope*)	8,118	19,072	**6,000**
Shoveler (*Anas clypeata*)	1,987	3,097	**2,200**
Avocet (*Recurvirostra avosetta*)	1,079	1,469	**700**

2.2.3 Tourist and Leisure Activities

Historical Development

Divjaka beach and its coastal pine forest have long attracted tourists. The nice scenery of the area was the main reason for the declaration of the Divjaka Forest National Park and the construction of a beach hotel, a governmental VIP-guest villa, apartment blocks, holiday cabins, and a (military) camp site. Since the Nineties, individual Albanians are increasingly visiting the beach area in private cars. Thus the frequentation of the beach and pine forest area is changing rapidly, increasing at a dramatic pace.

Leisure and Tourist Use of the Beach Area in 1995-1996

The Divjaka beach is most intensively frequented during the months June to September, with peaks on the weekends from the end of June to the end of August, reaching well above 8,000 visitors/day. Most of the visitors come for the day, about a quarter in private cars, and three quarters in minibuses and coaches operated from local towns and surrounding districts, some people of the local villages (incl. Divjaka) reach the beach on foot or bicycle. During the summer months, the accomodations listed above are full, housing roughly 1,000 holiday makers, mainly Albanians, but also some Macedonians.

The 200-bed hotel was built in the Seventies and is soon to be privatized. It is fully occupied during May-August (600 guests/month) with the lowest occupancy in January (about 100 guests). Among the foreign visitors figure predominantly Macedonians (basically ethnic Albanians living in the FYROM), followed by Italians (mainly hunters), Greeks, Germans, Americans, and others (mainly seminars and development consultants).

The infrastructure in the beach area is insufficient to cope with the increased numbers of visitors, and mostly in a derelict state. The access road is not of the size and quality to cope with the increased car and coach traffic. In the beach and forest area, no parking space is organised. Careless driving on the beach has already caused several accidents during the past years. There is little drinking water supply, as a former pipe broke down. Currently about six wells are still functioning and providing drinkable water that is pumped in some apartment blocks and the hotel. In addition, there are a few functioning public wells remaining. No waste management system is in place. Septic tanks and cesspits are mostly broken or out of order, and currently raw sewage is drained directly in the forest area towards the lagoon. Public toilets and most water wells are out of order. Solid waste is dumped into the forest and saltmarsh area. The beach is littered with garbage and broken glass.

Lushnja District manages the beach area. In 1996, some efforts have been undertaken to improve the cleanliness of the beach. During heavily frequented week-ends, some policemen patrol the area.

Lushnja District is also responsible for the issue of construction permits for the increasing number of kiosks and bungalows, of which there are 31 licensed ones. With increasing speed, new coffee shops, kiosks, grill-bars and small guest houses are constructed in the forest area along the beach road and access path, inside the Coastal Protection Belt (cf. above page 12). During June 1996, there were about 40 operating, in autumn 1996 about ten more. They are built and operated by local people from Divjaka but also from father apart: Fieri, Berat, and Elbasan (Goodwin 1996, Eotourism 1996, Shine 1996).

Tourist Infrastructure in Divjaka and Nearby Villages

Outside of the beach area, which is mainly used by daytime visitors, tourists are accomodated in Divjaka, and to a much lesser extent in a few villages around the lagoon (Muciasi, Xengu, Zharneci, New Karavasta). In Divjaka there are about two dozen coffee bars and about 30 private families hosting visitors in their premises (with flush toilets), including about 250 foreigners in 1995 (mainly consultants of development aid projects). There is a general wish among the inhabitants of Divjaka and the surrounding villages to increase these activities to provide some additional income. The Karavasta project information centre, opened by the Phare project on the central square in Divjaka, is supposed to facilitate the supply of information about available accomodation and tourist attractions. However, concerning the villages other than Divjaka, the improvement of the access

road, the drinking water supply and sewage systems are prerequisites to develop tourism (Goodwin 1996).

Hunting by Albanians and Foreigners

Until 1993, hunting was permitted in the fenced reserve, the National Park and Karavasta lagoon. Most studies of this time refer to the over-exploitation of game resources, the loss of faunal diversity, and the widespread violation of regulations (bag limits, prohibited methods, hunting season), mainly by foreign hunters.

Since the declaration of the Ramsar Site (Decision Nº 413, cf. page 14), hunting is prohibited in the zones mentioned above. It is permitted in the Kulari Hunting Reserve (815 ha) north of Tërbufi channel (cf. Figure 5, zone 1), where 150 ha are leased to a private entrepreneur, licensing him to accomodate 100 foreign hunters per season. The remainder of Kulari is open to licensed local hunters, who are required to inform the forest guards in advance of their visits. Hunting is also permitted in Godulla lagoon (cf. Figure 5, zone 6). Hunting is not regulated on privately-owned land in the reclaimed plain east of the shoreline of Karavasta lagoon (Shine 1996).

2.2.4 Fisheries

The Fish Community

The fish community of Karavasta and Godulla lagoons are typical of Mediterranean lagoons with two groups of species: migratory and sedentary fish. Sparidae, Mugilidae, Moronidae, Soleidae, Anguillidae and Belonidae are the main families of migratory species. Gobiidae, Cyprinodontidae, Atherinidae and Syngnathidae are the main groups with sedentary species, although some of them are also migratory. In Karavasta lagoon, especially in the shallower areas (<0.6 m) during the seining (i.e. sampling with 1 mm mesh size) in June 1996, Aphanius fasciatus was the dominant species, an indicator of enclosed areas and eutrophicated habitats. It was followed in numbers by Atherina boyeri, by Mugil spp., Syngnathus spp., Gobius bucchichi and crabs (Carcinus aestuarii). Belone belone and shrimps (Palaemon serratus) were rare.

In Godulla lagoon, the community is slightly different: Sandsmelt (Atherina) is the most abundant with Mullet (Mugil), Toothcarp (Aphanius), Goby (Gobius), Sea Bass (Dicentrarchus labrax), Flatfish (Solea), Pipefish (Syngnathus), Crabs and Shrimps (Palaemon serratus) following (Crivelli 1996).

Fishing Practices

Inside the lagoons different kind of fishing gears are used, belonging to three categories:
- fyke nets ("vallkoi", "paranca") to catch all fish species, used since the Sixties;
- gill and trammel nets for Mullet, Sea Bass and Gilthead Bream (Sparus auratus);
- hooks for Eels (Anguilla anguilla) and traps ("paticka") for Mullet.

During some years, a shortage of nets has occured, due to a lack of funds to import raw materials to make new nets. Recently, Italian professionals gave advise to the local fishermen how to improve their techniques. During the last twenty years, about 54 fishermen were working within the lagoons using only 15 boats. Three outboard motors were acquired recently, but the lack of funds and the cost of petrol hampers there use.
Fish traps are installed since long in the channels connecting Godulla and Karavasta lagoon to the sea. At the northern channel, the trap system has five capture chambers. In the central channel, with the fastest current, there are two groups of traps, separated by an island, with five and six capture chambers respectively. In the southern channel, the trap is composed of only four capture chambers. In 1980 the fish traps made of reed were replaced by plastic "reeds", more easy to use and more solid. Up to the formation of Godulla lagoon, the traps were often destroyed by storms and fast currents in the channels. Since 1981, this does not happen any more, because the exterior part of Godulla lagoon acts as a buffer. The existing three traps are operated by 13 fishermen who empty the traps twice a day, at high tide (Crivelli 1996).

Socio-economics
Before World War II, the fishing cooperative was private. In the Fifties, it was nationalised and became private again in 1991. The owners of the new cooperative are the fishermen working formerly in the State cooperative who all bought an equal share of the total capital. They have equal rights, including the elected managing president. In 1995, the cooperative was composed of 83 members (67 fishermen and 16 employees: guards, cook, mechanic, driver, storekeeper, economists, carpenter, etc.), with 26 boats (out of which 15 are functioning) and three 15 hp outboard engines.

There is no annual official registration of the number of fishermen, which might have doubled since the Sixties, reaching a maximum at the end of the Seventies and remaining stable since. Recently, 16 fishermen closed their contract for one year, to work in Greece, one sold his capital, three retired and were substituted by their sons. Only less than half of the fishermen live in the villages around the lagoons, the others coming from as far as Lushnja.

Each year, the cooperative receives a fishing and exporting licence from the Directorate of Fisheries. During 1995 and 1996, the fee was about 3,000 ALL (Albanian Lek) per fisherman working at the fish traps (x13) and 4,000 ALL per boat (x26), adding up to 150,000 ALL annual fees (corresponding to about 1,500 USD or 1,300 ECU). Since the recent privatisation, the cooperative entered a joint venture with an Italian company, bringing the outboard engines, an ice machine and a small dredger to the lagoon. This material is to be reimbursed during seven years through the sale of fish at preferential prices to the Italian company (Crivelli 1996).

The Fish Market

The cooperative is paying 30 per cent tax on the selling prices of fish, and if it is sold in Albania an additional 15 per cent of VAT. This is a very high percentage in comparison with other countries, where taxes do not exceed 10-15 per cent. Fish export is a recent phenomenon, only legally possible since 1986 within limits, and free since 1991. Sandsmelt and Crabs were longtime sold to state-owned pig and chicken farms during the centrally planned economy, since, this market has collapsed. Currently, Eel, Gilthead Bream, Sea Bass and Flatfish are sold almost exclusively to Italians. Gobies and Sandsmelt are only exported at the Italians' request. Mullet and "fritura" (i.e. all other species of low value) are sold locally. Due to a cholera epidemic in Albania in September 1994, export of fresh fish to the European Union was banned until January 1996.

The fishery statistics are considered very reliable until 1990 by the Directorate of Fisheries. Since, they do not any longer represent all catches, as illegal fishing in the lagoons, by local people non-members of the cooperative, and cheating by members of the cooperative (selling fish illegally) is increasingly occurring.

A preliminary economic analysis of the fishery statistics reveals that the sale of fish in 1995 created an income of c.240,000 ECU (including 30,000 ECU local sales, i.e. 14 per cent). Eel contributed the biggest share to this income, followed by Sea Bass, Gilt-head Bream, Flatfish, Mullets and others. The value of fish caught in the traps represents about 15 per cent of all sales. Salaries and social charges of the cooperative amount to 106,800 ECU, taxes and fees to 78,000 ECU. Remaining are thus about 55,000 ECU from which the reimbursment to the Italian partner and running and maintencance costs have to be decucted, leaving about 44,500 ECU, just enough to pay the salaries for the next six months.

Since the cooperative was privatised, its revenues from the sale of fish cover just about the regular costs. It is, however, difficult for the cooperative to pay petrol for the dredger or invest in other works. Currently, salaries of the cooperative members correspond to the Albanian average. Independent of possible salary increases elsewhere in Albania, they are likely to remain stable, as fish export prices are not likely to increase (e.g. the price for Sea Bass is already coming under strong competition from fish bred in aquaculture facilities) (Crivelli 1996).

The Productivity of Karavasta Lagoon

An analysis of the annual fisheries statistics between 1937 and 1995 reveals four specific periods: 1) 1947-67 with a small catch around 100 tonnes/year when fish was sold for the domestic market only, 2) 1968-85 with a an average catch of 234 tonnes/year, including Crabs and Sandsmelt sold for animal feed, and significantly increased fisheries efforts, 3) 1986-90 with a slightly higher average catch of 242 tonnes/year, due to the new possibility to export some fish (7 per cent of the catch on average, except for Eels exported at 100 per cent), and 4) 1992-95 with a drop in catch to an average

of 106 tonnes/year, due to the end of Crab sales, a small demand for Sandsmelts, and probably the incompleteness of the statistics because of non declared illegal catches (cf. above).

The catch of 100-150 tonnes of fish/year (200-300 tonnes if Crabs are included) seems to be close to the maximum sustainable yield. The drop in the most recent period could additionally be influened by the degrading water quality of the lagoon (eutrophication, cf. above). In quantitative terms, the Karavasta fishery relies on Mullets and Eels, to a lesser extent on Sea Bass and Gilthead Bream (cf. Figure 12). Mullet catches are decreasing in many Mediterranean lagoons, especially of the most valuable species Mugil cephalus, probably due to overfishing and fry collection. Eels are declining generally in Europe and the Mediterranean. Catches of Sea Bass and Gilthead Bream are at a satisfactory level in Karavasta lagoon. However, eutrophication processes may pose a threat to Gilthead and Sea Bass. As Mullets and Eels stay more than a year in the lagoon before migrating back to the sea, they are most likely to be dependent on the lagoon water and sediment qualities (Crivelli 1996).

Figure 12 Sales of fish caught in Godulla and Karavasta lagoons and in the fish traps in the connecting channels in 1995 (taken from Crivelli 1996). [not available] Amounts are given in Italian Lira for exports to Italy and Albanian Lek for the local market.

3 Evaluation and Objectives

3.1 Evaluation

Evaluation means the assessment of the major features of the site, and is applied to the foregoing description. Based on information compiled in the reference documents and in part 2, this chapter summarises the major ecosystem features and values of the Karavasta Area.

3.1.1 Position in the Ecological Context

At Albanian and International Level

Karavasta lagoon is by far the largest (c.4,800 ha incl. Godulla lagoon) of eight main Albanian lagoons, covering together roughly 12,000 ha. These lagoons are the only remains of a former belt of wetlands and related habitats, which covered most parts of the extensive coastal plain, before nearly nine tenths of this plain were reclaimed for agriculture and urbanisation during this century, especially since World War II. Seven of the remaining lagoons drain towards the Adriatic Sea, from north to south: Viluni (Shkodra District), Çeke, Merxhani (both Lezha District), Patok (Laçi District), Karavasta (Lushnja District), Narta and Orikumi (both Vlora District). Butrinti lagoon (Saranda

District) in the south drains to the Ionian Sea. It is geomorphologically different from the others, being a lake (up to 22 m deep) created through tectonic subsidence, linked to the sea via a channel of c.4 km length.

These lagoons perform different functions typical for coastal wetlands, in particular, they stabilise the shoreline by preventing coastal erosion further inland, they protect the groundwater aquifer from pollution by providing a certain buffer to infiltration of toxic and polluted urban, agricultural and industrial runoffs, they help to ensure a year-round water supply by recharging the groundwater aquifer. Floodplains and flooded forests around these lagoons have the capacity to absorb floodwaters, thus preventing flooding of cultivated or inhabited areas. The fact that large parts of these lagoons have been designated as hunting reserves, is proof of their importance as natural habitats for the production of game resources and biological diversity in general. All of these lagoons support, to a varying degree, commercially important fisheries, corresponding to century-old traditions in the Mediterranean. Recent studies showed that these lagoons are strategically situated along the eastern Adriatic-Ionian flyway of waterbirds, providing wintering areas of international importance, and several nationally important breeding areas. Outside Albania, along the eastern Adriatic-Ionian coasts of Italy, Slovenia, Croatia, Yougoslavia and Greece, only few other lagoons and coastal wetlands of similar ecological importance (or extent) can be found (Salathé 1994, Salathé 1995, Bino et al. 1996, Peja et al. 1996).

The Karavasta Ecosystem

The Coastal Zone Management Strategy for the central part of the Albanian coast (region of Durresi-Vlora), elaborated as part of the Mediterranean Action Plan (UNEP/MAP), highlights the Karavasta Area as one of four biodiversity protection and conservation zones (the others being Rhodoni-Erzeni, Vjosa-Narta and Orikumi-Karaburuni-Llogara). The strategy proposes to create a Biosphere Reserve with limits that correspond about to the proposed new Karavasta Ramsar Site Area (cf. Figure 6), including the existing Divjaka Forest National Park (corresponding to IUCN Category II of protected areas), the existing fenced reserve (an IUCN Category IV Habitat/Species Management Area) and the natural habitats and lagoons (an IUCN Category VI Managed Resource Protected Area). Furthermore, the Strategy proposes to restore biodiversity in different habitats, notably around the river mouths and in the coastal area, in the Divjaka hills, and in the reclaimed plain immediately south of Godulla and Karavasta lagoons (tables 9/10 and map 6 in Truta 1996).

The Area covered by this Management Plan incorporates an entire ecosystem formed by the lagoon, its catchment basin and its coastal waters. The natural coastal habitats of the Karavasta Area show the most complete mosaic of all successional stages between recently created beaches and old-growth climax forests on stabilised dunes (cf. chapter 2.2.2) found at any coastal lagoon of Albania. Godulla lagoon forms currently the best developed interface between the near-shore sea and coastal terrestrial and wet habitats of any of the Albanian lagoons.

The proposed Karavasta Area Protection Law is applicable to a defined Area which covers the entire catchment basin of the Karavasta lagoon. However, waters carried by the large rivers Shkumbini and Semani, which lay outside the Karavasta catchment, can enter the lagoon from the sea through coastal currents. Therefore, developments in the large catchments of these rivers may also have downstream influences on the Karavasta Area s. s.

Table 4 Globally Threatened Vertebrate Species Known to Occur in the Karavasta Area.
Based on an internal compilation by P. Defos du Rau for MedWet & Tour du Valat.

Species	Scientific Name	Conservation Status	Remarks
Reptiles			
Hermann's Tortoise	*Testudo hermanni*	**vulnerable**	abundant
Birds			
Dalmatian Pelican	*Pelecanus crispus*	**vulnerable**	resident breeder
Pygmy Cormorant	*Phalacrocorax pygmeus*	**near threatened**	many wintering
White-headed Duck	*Oxyura leucocephala*	**vulnerable**	irregularly wintering
Greater Spotted Eagle	*Aquila clanga*	**vulnerable**	several wintering
Pallid Harrier	*Circus macrourus*	**near threatened**	few wintering
Mammals			
Otter	*Lutra lutra lutra*	**vulnerable**	present

3.1.2 Biological Diversity

Missing Species Lists

Unfortunately (but in common with many other important sites in Albania and elsewhere in Europe or the Mediterranean), at this stage, detailed inventories of flora and fauna are missing, or were impossible to access during the first Phare project phase, notably studies and reports in Albanian from the University of Tirana and the Natural History Museum. A general, cross-sectoral bibliography concerning the Karavasta Area, and lists of flora and fauna species occurring in the Area

do not yet exist. Although the tools for inventorizing and monitoring species and habitats have recently been elaborated (under the MedWet initiative, cf. Tomàs Vives 1996, Costa et al. 1996), no specific work has yet been undertaken in the Karavasta Area. Based on accessible published information, a preliminary list of globally threatened species occurring in the Karavasta Area can be drawn (cf. Table 4). Other species of conservation concern, known at this stage to be occurring in the Karavasta Area, are the endemic flowers *Aster albanicus paparistoi, Orchis albanicus* and *Orchis x paparisti* (cf. chapter 2.2.2).

One of the few Breeding Sites of Dalmatian Pelican

Since several years, the Chair of Zoology of the Faculty of Natural Sciences of Tirana University and Tour du Valat Biological Station monitor the Karavasta population of Dalmatian Pelicans. The lagoon holds the only Albanian breeding colony of this globally threatened species, that breeds in not more than 20-21 regularly occupied colonies. Its global population is estimated at 3,200-4,300 pairs, of which 40-70 (1-2 per cent) breed in the Karavasta Area, showing a large decline during the last 25 years (Tucker & Heath 1994). Admittedly, it was the presence of the breeding colony of Dalmatian Pelicans that led to the declaration of Karavasta lagoon as a Ramsar Site of International Importance in 1994.

A Unique Old-growth Coastal Forest

The old-growth coastal forest in the fenced reserve provides a rare example of mature woodland on fixed dunes along the Adriatic coast, and arguably for the Mediterranean as a whole. It harbours a diverse flora and fauna, including a group of feral cattle that merit further investigations (cf. chapter 2.2.2).

A Waterfowl Site of International Importance

Species for which more detailed faunistical information is available, are the birds, and especially the waterbirds which formed the subject of several Albanian and international field studies since the Nineties. To date, a total of 210 bird species (including 90 species of waterbirds) have been observed in the Karavasta Area (Bino et al. 1996 and H. Hafner pers. comm.). A community of 22 waterbirds breed in the Area, nine of them are of European conservation concern (cf. Table 2). In winter, up to nearly 46,000 waterbirds were counted. The numbers of waterbirds using the lagoon and its related habitats in winter fulfill the criteria of international importance, according to the Ramsar Convention, notably for the overall number of wintering waterbirds, and the numbers of Dalmatian Pelican, Great White Egret, Wigeon and Shoveler (cf. Table 3). The bird community of Karavasta Area makes it a unique and outstanding place in Albania, with regard to species richness and the presence of rare species (details cf. chapter 2.2.2).

3.1.3 Naturalness and Rarity

The Karavasta Area has been singled out as a coastal area of natural value by the Coastal Zone Management Strategy (cf. above, chapter 3.1.1). The Strategy proposes "Areas of natural value, especially wetlands, with Karavasta and Narta lagoons being the most important, are the physical entities whose natural diversity should be protected and promoted through the process of future coastal development." While nearly the entire coastal plain of the Karavasta lagoon catchment has been reclaimed for agriculture, the coastal belt and the river mouths of Shkumbini and Semani have remained in a remarkably natural condition (cf. chapter 2.2.2 and Figure 8).

Karavasta lagoon harbours the only coastal breeding site of Dalmatian Pelicans along the Adriatic and Ionian Seas (the next closest breeding colony is situated inland, at Mikra Prespa lake in Greece, next to the Albanian border). The fenced coastal forest reserve harbours an enigmatic herd of feral cattle, of yet unknown origin, that may well be unique in the entire Adriatic-Balkan region.

Coastal currents, river flows and sediment transports are constantly changing the coastline producing the effects of erosion and sedimentation. This has, so far, prevented major human interventions. The coastal area around Shkumbini mouth (which recently changed its location 5 km northwards after a flood in winter 1995/96) with natural habitats such as sand bars, mudflats, shallow bays, near-shore lagoons, reedbeds, saltmarshes and scrub, together with the adjacent coastal forest on old dunes (the fenced reserve and surroundings), is arguably the area most exposed to natural dynamics, that has therefore remained in a most natural, original and diverse state, amongst all coastal habitats of the entire sandy coast of Albania. This most natural and unique core zone inside the Karavasta Area is highlighted in Figure 8 above.

The only Albanian coastal area comparable in its degree of naturalness and rarity to Karavasta is Karaburuni peninsula. This area is, however, situated in the rocky part of the Albanian coast, and therefore of a completely different type.

3.1.4 Fragility

The coastal ecosystems have survived in a natural and diverse state due to the geomorphological instability which prevented important human interventions so far. With the recently increased mobility of Albanian individuals (availability of private cars), the pressure on the natural coastal habitats is increasing annually. Without rapid interventions and regulations, many fragile ecosystems are likely to be seriously degraded soon.

Field sampling of the water and sediment qualities undertaken in 1996 in Karavasta lagoon has shown that the water quality is approaching a critical point where further eutrophication can lead rapidly to serious hypertrophic crises (cf. chapter 2.2.1). It is therefore urgent to obtain a better understanding of the lagoon functioning in order to plan and undertake remedial action.

The current expansion of uncontrolled human activities (tourism and visitor pressure, agriculture, constructions, and dumping of waste around the lagoon and in the fragile coastal area) could easily create irreversible damage to natural habitats or provoke environmental accidents (forest fires, drinking water pollution, etc.).

3.1.5 Typicalness

The Karavasta Area provides the most typical example of a Mediterranean lagoon and related coastal habitats in Albania, and probably along the entire eastern Adriatic coast. It is also a typical example at Mediterranean scale, compared to similar-sized Mediterranean lagoons in nearby countries, such as Greece or Italy, or further afar in Spain, Turkey or Algeria. The Karavasta lagoon fisheries are a typical example for a traditional form of wetland resource use in the Mediterranean.

On the other hand, current human pressures, such as increasing leasure and tourist use, increasing urban and agricultural development, with an increasing amount of liquid and solid waste entering the lagoon and its surrounding habitats, are also typical problems currently experienced at many Mediterranean coastal areas, especially in the East and South. The essentials of environmental management procedures and solutions, elaborated and tested in the Karavasta Area, are therefore likely to be easily transferable to other sites. At a national scale, the successful management of Karavasta lagoon has the potential to become a model for efficient integrated management of complex natural areas elsewhere along the coast.

3.1.6 Recorded History

During the first Phare project phase, it was not possible to unearth many historical details. In general, the Albanian coast seems to have been little colonized by humans before World War II, except for a few harbour towns (Durresi and Vlora being the closest and largest) and some traditional villages (e.g. Karavasta with a 17th century orthodox church). The coastal plain has been drained on a large scale since the Fifties along the entire Albanian coast for intensive agricultural use, and many rural settlements created therein.

3.1.7 Potential for Improvement

Ecological Improvements

The remaining natural coastal zones in the Karavasta Area are of outstanding quality. As much of the former natural habitats in the coastal plain have already disappeared, and as visitor pressures in the coastal belt are increasing, it is crucial not to allow further degradation to take place, in order to maintain the ecological character of the Karavasta Area. Fortunately, the potential to realise urgent interventions and remedial actions is important.

The current situation in the Divjaka beach area can be improved substantially with better visitor management, including improved access facilities and infrastructures at the public beach area, alongside access restrictions to sensible natural areas. Wood cutting has to be stopped, and fire prevention measures need to be instored, including a ban on making fires. As human disturbance is a limiting factor for many waterbirds, better hunting regulations and their better enforcement constitute another potential for improvement. This will have to include severe access restrictions to breeding sites of waterbirds during the crucial period of the year. Finally, studies to find means to improve the Karavasta lagoon water quality on a long-term basis constitute an enormous potential for the maintaining of the ecological character of the Ramsar Site and the sustainable use of its natural resources (fish, crustaceans, etc.) in the long term.

Socio-economic Improvements

Although this was not part of the first phase of the Phare project, studies on the most important infrastructure deficiencies, and on ways to improve them, have the important potential to provide first results in view of a lasting improvement of the living conditions for local people of the villages in the coastal plain surrounding the lagoon. Such studies need to cover essential issues such as the improvement of access roads, water supply, sewage and waste treatment facilities. Already during the Phare project, the inhabitants of local villages and the visitors of the beach area expressed their dissatisfaction about the limited existing infrastructures and their degradation, and the littering of sensible sites. The management of agricultural practices in the buffer zone needs to be improved by better regulations and their enforcement, adapted to the specific conditions of the Karavasta Area. Integrated planning will provide the most important potential for the conservation of the ecological character of the Area in the long-term, as it is the local people and their socio-economic activities in the catchment basin which will influence the ecosystem most directly.

3.1.8 Esthetic, Cultural and Religious Value

The coastal pine forest is of great esthetic value, and has been declared a National Park for this reason. Since 1991, uncontrolled wood cutting and waste dumping has taken place, and uncontrolled leisure use of the beach area is increasing at an alarming rate. Both factors are degrading the ecological and esthetic value of the natural habitats in the core zone of the Karavasta Area. Degradation of the esthetic or landscape value of this zone, will in the long term diminish greatly the tourist attraction and potential of the Area.

Although it was not possible to investigate cultural and religious values during the Phare project, it is obvious that several cultural and religious monuments in the surroundings of the lagoon are currently re-discovered and re-used, namely the 17th century orthodox church of Karavasta village with rich wall paintings. It has now again a priest and is regularly used for religious services. Another former church and graveyard exist near the village Xengu, at the foot of the Divjaka hills.

3.1.9 Social and Economic Value

Over 20,000 people live in the immediate surroundings of the lagoon and depend to a large extent on subsistence farming in the plain of the lagoon catchment basin. Although it is difficult to predict the rate of population increase in the catchment basin with precision, the population is likely to increase to some extent, due to an active settlement policy in the agricultural area and the increasing attraction of the beach area for its tourist potential. Currently, agricultural land formerly exploited by State cooperatives is given to individual families. Although currently, most of them depend only depend on subsistence farming, this is likely to change towards modern, marked-oriented agricultural practices. In the medium term, one of the most important management challenges will therefore be the need to regulate the development of modern agriculture in the drainage basin in a way that, while providing the basis of a sustainable local economy, it will not harm the ecological character of the Karavasta lagoon through toxic, polluted and nutrient-loaded runoffs or the over-exploitation of renewable water resources. Agriculture will most probably remain the main basis for the local economy in the long-term, although the present project did not include any study on the environmentally compatible agricultural development potential. However, besides agriculture, two other sectors: tourism and related services and lagoon fisheries and aquaculture have the potential to make substantial contributions to the local economy.

Until the planned Spilea tourist beach development will have been realised (one of the four national coastal tourist priority areas, situated only about 10 km north of Shkumbini mouth), current visitor pressure to the Divjaka beach area is likely to increase. To avoid irrevokable destruction of the core natural habitats situated in the immediate vicinity of the core beach zone, and in order to develop sustainable sources of income for the local economy (i.e. for local individuals and the Management Authority) through tourist services, beach access needs to be carefully regulated and the main visitor facilities to be upgraded and renovated. It is predicted that Divjaka beach, for its low beach (sand mixed with clay, overgrown in large parts) and swimming water qualities (in terms of turbidity, i.e. sediment loads) will not be able to stand competition with the planned mass tourism facilities at Spilea beach, once this area will be easily accessible by a tarmac road. Therefore, in the long-term, the Karavasta Area has the potential for a limited, high-quality nature tourism, which can well contribute a substantial part to the local economy, if planned and executed carefully and equitably. This would ot only include the provision of facilities in the restricted Divjaka beach area, but also in Divjaka town and other villages in the plain, and in the Divjaka hillsides (cf. the report by Ecotourism 1996).

The lagoon provides currently support of up to 500 fishing people, although most of them are local villagers that fish unlawfully, and any sustainable form of lagoon fishery will not be able to support more than about the current number of fishermen members of the exclusive cooperative in the long term. However, this contributes a substantial part to the local economy. Furthermore, in the drained

plain around the lagoon, namely in the south, the potential exists to develop aquaculture facilities, either in specifically created basins or in waterbodies to be restored (or newly created) for inter alia sewage treatment, pasture or hunting purposes.

3.1.10 Education and Public Awareness

Despite their outstanding potential, little use has yet been made to use the diverse habitats and ecosystems that remain in a remarkably natural state for educational purposes, neither for local schools and villagers, nor for students at a national, or even international, scale. A main reason for the absence of visiting students and scholars may have been the difficulty and lack of means of access. However, an enormous potential exists: 1) for local school in the villages surrounding the lagoon, 2) secondary and high schools from Lushnja and other towns, 3) scientists and naturalists from national institutions and abroad, to visit the area, undertake excursions, start sampling or monitoring programmes and specific field studies.

To increase the public awareness about the ecological values of Karavasta Area, information campaigns, guided tours, exhhibitions and oral presentations could be foreseen for local people in Divjaka and local villages, in regional district towns, in Tirana capital and abroad. The preparation and broadcasting of TV films on the Area (as has already happened in Germany) would provide an easy way to create more understanding, awareness and involvement in the area management by local and other Albanian people, and the international community.

3.1.11 Recreation

During recent years, with the explosive increase in availability of private cars since about 1992, the Divjaka beach area has become a major attraction for people from Lushnja district and further afar, including visitors from Vlora, Durresi and Tirana. Also in the long-term, Divjaka beach area will attract mostly day-time visitors rather than longer-staying tourists. Thus, the potential for recreation through beach activities (including windsurfing) and nature tourism (including naturalist excursions, birdwatching, and probably, carefully regulated angling, hunting, or horseriding) is real, not only in the beach and Divjaka forest area, but could also be developed further inland, especially in the Divjaka hills. However, land and resource uses of this new recreational tourism need to be managed carefully and strictly limited to avoid further degradation of fragile habitats and ecosystems.

3.1.12 Research

Operational research is urgently needed in different fields: notably to understand the functioning of the lagoon as an ecosystem supporting the professional fisheries and on the biodiversity and its monitoring, especially in the Divjaka coastal and forest areas. The fenced reserve, but also

neighbouring parts of the very diverse coastal forests and open coastal habitats provide excellent opportunities to study more fundamental ecological subjects in the field. Such studies would provide the backbone for regular field courses of Tirana University, and foreign research institutions. Applied research in the surrounding villages could cover the field of socio-economics, history and agronomy.

The great need and the excellent opportunity to carry out applied and fundamental ecological research in the Karavasta Area should be advertised widely at national and international level.

3.2 Overall Long-term Goal

"The principal objective - and the mission of the Karavasta Area Management Authority - is to preserve the ecological character and the biological diversity of the Area through establishing ecologically sustainable limits to natural resource and land uses."

3.2.1 Factors Influencing the Achievement of the Long-term Goal

Factors which may influence or hinder the achievement of the overall long-term Karavasta Area management goal fall into the following categories:

- o To attain the long-term goal of the Karavasta management plan, a clear political will, at national, regional and local levels, needs to be developed through cooperation between different sectors, and between public and private interests.

- o This will depend on the recognition that integrated management of natural resource uses, human welfare and economic development are intrinsically linked in the long-term, and that one of these sectors cannot be neglected in favour of another.

- o Aspirations regarding fundamental infrastructures (road access, drinking water supply, sewage and waste management, telecommunications) of the local villages and Divjaka town need to be fulfilled in order for far-reaching investments in the conservation of natural resources to be politically acceptable.

- o Management decisions need to be directed by long-term aspects of sustainable resource uses rather than by potential short-term gains.

- o Efficient management will depend on the long-term development of institutional capacities, the elimination of procedural weaknesses, and improvement of human resources through specific training. This will need to be taken into account when planning the financial resources needed.

o Legislation needs to be improved. To this end, the Karavasta Area Protection Law is proposed as the legal basis for this management plan. The proposed Management Authority needs to be given the mandate and means to implement the prescriptions and obligations of the Law.

o In the absence of sufficient financial and human resources inside Albania, international support needs to be solicited through the Ramsar Convention Bureau and other appropriate bodies, in order not to delay unduly the implementation of the management principles.

3.2.2 Limits of Acceptable Change

The Karavasta Area has been designated a Ramsar Site for its uniqueness in Albania and representativeness at Mediterranean scale. It harbours an outstanding biodiversity, notably in the old-growth coastal forest on the dunes between Karavasta lagoon and the Adriatic Sea. The site holds a breeding colony (of only 20-21 worldwide) of the globally threatened Dalmatian Pelican and over 45,000 wintering waterbirds, including internationally important numbers of wintering Dalmatian Pelicans, Great White Egrets, Wigeons and Shovelers. Nine colonial waterbird species of European conservation concern breed in the Area, and a number of rare or vulnerable raptors use it during winter.

By ratifying the Ramsar Convention, Albania agreed to maintain the ecological character of the Karavasta Ramsar Site, i.e. the structure and inter-relationships between its biological, chemical, and physical components. The ecological character derives from the interactions of individual processes, functions, attributes and values of the ecosystem. A change in ecological character of a wetland is the impairment or imbalance in any of those processes and functions which maintain the wetland and its products, attributes and values.

Concretely, unacceptable ecological change would include: a reduction in the Karavasta natural wetland and dune forest area, negative changes of its water regime (water abstraction, separation of the lagoon from the sea) and water quality (eutrophication, pollution), unsustainable exploitation of lagoon products (fisheries and hunting), the introduction of alien species (non-European domestic breeds, plants, game or fish), disappearance of the indicator species listed above, e.g. due to mis-management, neglect or ill-fated restoration measures, etc.

3.2.3 General Objectives and Management Targets

Four complementary and inter-related general objectives for the management of the Karavasta Area are identified below:

1) To maintain, and enhance where appropriate, the ecological character of the lagoon and surrounding habitats.

2) To optimize the conservation of biological diversity (species, habitats) in the long-term.

3) To provide support to human activities and sustainable use of natural resources where compatible with biodiversity conservation.

4) To increase public awareness of the values of the Area.

At an operational stage, these general objectives need to be broken down to specific management targets:

- o To monitor and manage the hydro-geomorphological system of Karavasta lagoon, including its catchment basin and the link with the near-shore marine currents, in a way that offers long-term optimum yield for fisheries and optimum habitat for aquatic birds.

- o To investigate, monitor and manage the natural habitats in order to maintain and develop a maximum biodiversity of the coastal zone of the Karavasta area between Shkumbini and Semani river mouths and beyond, including the old-growth forests and earlier stages of coastal successions, including scrub, saltmarshes, coastal wetlands, mudflats, shallow bays and beach areas.

- o To develop agricultural and tourist-related activities and the related infrastructure in a way compatible with the lagoon and biodiversity conservation requirements and to provide the local villages around the lagoon with long-term sustainable forms of activities and income to assure their survival without harming the lagoon ecosystem.

- o To undertake lobbying, advocacy, training, information and public awareness activities in a way that the present management planning process for the Karavasta area will become a model case for management projects of other Albanian coastal wetland sites.

4 Management Strategies and Programmes

4.1 Management Strategies

4.1.1 The Specific Karavasta Area Protection Law

The general management objectives outlined above should lead to the formulation of management strategies that indicate the appropriate options that should be chosen. For complex sites such as the Karavasta Area, where ownership and human activities are diverse, general prescriptions need to be established as part of an overall plan. Furthermore, in order to provide the overall plan with the necessary legal basis, the Terms of Reference of the Phare project requested the elaboration of such a plan in the form of a legal instrument. This instrument is provided in the proposed "Karavasta Area Protection Law" (Shine 1996). It is the Law that provides the framework for the management strategies to be chosen. It requires, inter alia, the preparation, implementation and regular review of a Management Plan (Article 9). Thus, the Management Plan has to be seen as a complementary, technical document that specifies those details which are not dealt with in detail in the Law. The division between a rigid legal framework in the form of a Law, and a technical plan that will be regularly adapted to evolving management needs, reflects a strategic choice.

Notably, the Law defines and delimits the boundaries of the management Area and divides the Area in three categories of zones (shown in Figure 6) (Articles 1-3). The Law prescribes an institutional framework for the Area in the form of a locally-based integrated management body (the "Management Authority" cf. below). It explains the composition of the Authority and its executive organ (i.e. the director and personnel) (Articles 4-6), lists its statutory duties (Article 8) and the rules of procedure (Article 12). Furthermore, the Law prescribes the establishment of a consultative Scientific Committee to supervise the monitoring programme and advise on any technical and scientific matters relating to the conservation of the Area (Article 7). The Law deals with the necessary funding for the management of the Area and calls for the creation of a specific "Karavasta Fund" (Articles 10-11).

In great detail, the Law deals with the management of activities and processes affecting the Area, outlining the scope of jurisdiction and management powers of the Authority (Articles 13-14). The Law lists the activities prohibited in the Area (Article 15) and requires the Management Authority to be consulted in respect of developments within the catchments of Shkumbini and Semani that may influence the Area (Article 16).

Naturally, the Law establishes provisions for the enforcement of the management rules and specifies the penalties for non-respect of such rules, in accordance with the Law on Environmental Protection (Articles 17-19). Necessary transitional and final provisions are also included in the Law (Articles 20-23).

4.1.2 Scope of the Management Authority's Jurisdiction

Although the Law lists the scope of the Authority's jurisdiction in very precise terms (Article 13), it is useful to recall here the main points of relevance for the actual management of the Area.

Full control over the use of publicly-owned land should be transferred to the Authority. It should have the power to award concessions and to lease land or waters to natural or legal persons, and the right of preemption in respect of land offered for sale in the Area.

The Authority should constitute the sole planning authority for the Area. This departs from the existing system whereby planning applications are handled by different Councils of Territorial Planning (KRTs).

The Authority should also be competent to implement the EIA-environmental licencing provisions of the Law on Environmental Protection and would therefore have the power to regulate methods and levels of economic, productive, tourist and recreational activities in the area in accordance with the Management Plan. The Authority should also have general powers to make byelaws to implement the provisions of the Karavasta Area Protection Law.

The Authority is required to implement and periodically revise the management plan. It must therefore have express powers to undertake active management measures to realise the conservation objectives, to promote education and training, to use incentive measures, to promote certain forms of land management and to provide appropriate technical support to different resource user groups, etc.

The Authority should employ its own wardens with extensive powers of inspection and enforcement.

4.1.3 Management Zones of Karavasta Area

Since the objectives of the Karavasta Area management relate to economic activities as well as conservation (i.e. "integrated management"), the Law proposes to establish a cross-sectoral Management Authority and to use zonation of the Area as an essential tool to adjudicate between the claims of different resource user groups (farmers, fishermen, hunters, tourists and visitors, rising local populations) and to protect the most ecologically sensitive areas against external threats. The Karavasta Area Protection Law specifies three categories of management and conservation zones (cf. Figure 6). They are briefly described below. Each of the categories will be broken down into specific management zones. Management prescriptions are outlined for each zone in chapter 4.2.

Category A: Biodiversity Conservation Zones

These are the strictly protected nature conservation zones, where access is limited for scientific, educational and conservation management purposes, in order to provide maximum protection. Hunting and fishing are prohibited. Sandbanks, mudflats, islets and islands, and coastal bars are

important places for breeding and feeding waterbirds. They are included in this category because they are extremely sensitive to human disturbance.

Category A includes the Fenced Reserve, Divjaka Forest National Park and adjacent saltmarshes, the coastal area around Shkumbini mouth, the sandbar between Godulla lagoon and the sea and all islands and islets inside Godulla and Karavasta lagoons. Category A includes zones for nature education and training. In general, access is only allowed on foot on marked paths. Only guided tours should be arranged for interested groups inside the Fenced Reserve.

Category B: Natural Resource Zones

These are the natural coastal and lagoon zones in which traditional economic activities and sustainable resource management practices occur (e.g. fishing, hunting, etc.). Depending on the specific management objectives for each zone (cf. below), and in accordance with the conservation objectives for the entire Area, long-term sustainable resource use plans shall be promoted and developed for these zones.

Approaching (i.e. getting closer than 150 m) and access of all islands and islets in Karavasta lagoon and of the sandbar separating Godulla lagoon from the sea (i.e. zones of Category A) are prohibited from April to July inclusive, to avoid disturbance of breeding waterbirds.

Zones of Category B include the protection belts of Shkumbini and Semani rivers, in which construction developments are forebidden (cf. chapter 2.1.3) from their mouths several kilometres upstream next to the Karavasta lagoon catchment plain, the Kulari zone upstream of Shkumbini mouth with a rich habitat and species diversity, where hunting is allowed under specific rules, the coastal zone around Semani mouth, and both Godulla and Karavasta lagoons (with the exception of the islets being part of the zones of Category A, cf. above).

Category C: Buffer Zones

In the terrestrial buffer zone of the Karavasta Area, human activities (agriculture, fishing, tourism, recreation, etc.) shall be developed as to provide long-term sustainable benefits for the local economy and local people which are compatible with the conservation objectives for the Area. Agricultural development will follow specific rules, to be determined by the Management Authority. In the Divjaka hills, specific forest conservation measures shall be developed and implemented to avoid erosion and improve the hydrology. The reclaimed plain and the hillsides contain an enormous potential for ecological restoration of formerly drained wetlands and cut-down forest and matorral. Specific restoration projects need to be developed and implemented for the sake of the local economy, based on the long-term sustainable exploitation of natural resources (agriculture, pasture, forestry, etc.).

The marine buffer zone is included in the Management Area in order to avoid overfishing and disturbance of key fish species entering or leaving the lagoon. No fishing shall therefore occur within this zone of 3 nautical miles along the coast of the Karavasta Area. Other human (leisure) activities will be regulated in accordance with the conservation objectives for the entire Area.

Zones of Category C include the reclaimed agricultural plain in the water catchment of Karavasta lagoon and the human settlements therein, the Divjaka hills, and a near-shore marine zone of 3 nautical miles width from the shore between the drainage channel south of Rreth-Grethi in the North and Hoxhares drainage channel in the South.

4.2 Specific Management Programmes

Specific management programmes relate to the different categories of zones outlined above. They are directly based on the management obligations outlined in the Karavasta Area Protection Law (essentially in Article 14). The following management proposals cut each category of zones (A-C) down into specific management zones, after introductory comments and a narrative outline of the development potentials. For each of the zones, operational objectives are identified, management options selected and prescriptions outlined, as a guideline for implementation on the ground.

4.2.1 Category A: Biodiversity Conservation Zones

Conservation and Research

The Fenced Reserve and surrounding scrub, saltmarshes and beach habitats provide a unique opportunity in Albania to study ecological processes submitted to the extremely active coastal dynamics around Shkumbini river mouth, from pioneer habitats (bare beaches and mudflats) to climax old-growth forests with their particular diversity of plants and animals. Minimum field research infrastructures (field laboratory, accomodation for researchers) can easily be established in the existing remains of the pheasant-rearing station inside the Fenced Reserve.

Existing floristical and faunistical litterature should be compiled to identify knowledge gaps, followed by inventories of missing groups. Ecological studies should not only include specific short-term aspects, but also the long-term monitoring of species communities and questions related to their long-term evolution and change. It is yet not possible to propose specific habitat or species management measures for most of the biodiversity conservation zones, because of a lack of precise information about the occurence and location of species of conservation concern. Investigations into the presence and status of large vertebrates (except birds, for which much is already known) seem to be highly desirable, notably on marine turtles, tortoises, lizards, snakes and amphibians. Particular attention should be given to large mammals (deers, carnivores, etc.) and especially to clarify the status of the feral cattle living in the Fenced Reserve. Scientific knowledge about the

presence of insects and arthropodes (i.e. other invertebrates like spiders, scorpions, ticks, etc.) is completely missing.

These studies should be directed by Tirana University or the National History Museum, possibly in coordination and with the support of foreign research institutions. The studies would identify the areas of most important biodiversity and those with species deficits. Accordingly, these studies would recommend habitat and species management measures, if and where required. Such recommendations, and also the research plans as a whole, need to be screened by the Scientific Committee (cf. Article 7 of the Karavasta Area Protection Law) to provide advise and comment on the conclusions.

Information and Education

In the Divjaka Forest National Park and the adjacent saltmarshes and coastal habitats between the Adriatic and Karavasta lagoon, maximum benefit should be made from the rich landscape and habitat mosaic through the installation of nature trails, an observation tower and visitors' information centre and the organisation of guided nature walks and excursions, to increase the awareness of the visitors about the natural values of the Area. This nature discovery zonewill only be accessible on clearly marked paths, either on foot or on bicycle. Nature trails with observation points and hides and explanatory panels will be installed.

Close to the northern channel linking Karavasta lagoon with the Adriatic (cf. Figure 13), a small visitor information centre should be established, consisting of a house accomodating a warden, a boat house, an information centre plus an observation tower. The presence, during the key season (spring/summer), also overnight, of a warden is crucial 1) to protect aquatic birds breeding on islands in the lagoon from disturbance, 2) to warden the material kept in the boat house (boat, telescope, binoculars, etc.), 3) to survey the observation tower nearby and nature trail, and 4) to provide information to visiting naturalists and other interested people.

Karavasta Area holds a specific attraction particularly for schoolchildren from Lushnja district, but also from other Albanian regions or cities. Depending on the size of the groups, visits on the lagoon by boat could be envisaged, as long as they are compatible with the needs of the lagoon fisheries and the conservation requirements for aquatic birds breeding or stopping-over at the lagoon. In addition, the Fenced Reserve and adjoining habitats could serve for guided tours or study weekends or weeks for interested individuals and students (essentially from abroad). This would provide some income to the Management Authority (responsible for the visitors' planning) and to local people in Divjaka or a neighbouring village, who could accommodate the students.

The biodiversity conservation zones (Category A) of the Karavasta Area are composed of four management zones: the Fenced Reserve (A1), the Waterbird Breeding Zones (A2), the Coastal Conservation Zone (A3) and the Biodiversity Discovery Zone (A4) (cf. Figure 14).

Figure 13 Core Management Zones of the Karavasta Area. [not available]
In the Biodiversity Discovery Zone (A4) nature trails and their entry points (I) are indicated by broken lines, the location of the proposed small visitors' centre and observation tower with a white square (in the South).
The main parking area for beach visitors in zone C2 is indicated with "P".

A1 Fenced Reserve		
Operational objective	**Management option**	**Outline prescription**
To maintain and enhance the unique diversity of natural habitats and of flora and fauna.	To maintain the *status quo*of a strictly wardened fenced reserve without public access.	To continue the strict wardening of the reserve against trespassers and poachers. To develop a programme of floristical and faunistical inventories. To develop a monitoring programme of indicator species and communities (micro-habitats). To develop specific ecological research programmes with Albanian and other research institutions. To refurbish the ancient pheasant-rearing station in order that it can serve for student training camps. To prepare a programme of professionnally guided excursions for the interested public.

A2 Waterbird Breeding Zones		
Operational objective	**Management option**	**Outline prescription**
To maintain and enhance the populations of breeding waterbirds.	To prevent human disturbance of breeding waterbirds during April–July inclusive.	To strictly control access of sensitive areas and intervene rapidly in case of trespassing. To monitor breeding colonies and pairs of waterbirds and their breeding success. To undertake nest habitat improvement measures where appropriate, notably on islands in Karavasta lagoon to provide disturbance free nesting sites.
A3 Coastal Conservation Zone		
Operational objective	**Management option**	**Outline prescription**
To maintain the natural coastline dynamics and habitat and species diversity.	To prevent human disturbance of breeding, foraging, migrating or wintering waterbirds.	To warden the area against trespassers and poachers, including fishing people. To monitor coastline and river mouth dynamics and

		key species. To undertake nest habitat improvement measures where appropriate, notably for nesting terns.

Figure 14 Management Zones for Biodiversity Conservation (Category A). [not available]

A1 = existing strictly protected Fenced Reserve

A2 = Waterbird Breeding Zones

A3 = Coastal Conservation Zone

A4 = Biodiversity Discovery Zone

A4 Biodiversity Discovery Zone (including Divjaka Forest National Park)		
Operational objective	**Management option**	**Outline prescription**
To maintain and enhance the rich landscape, habitat and species diversity for educational and nature tourism purposes.	To restrict public access to specifically signposted and equipped nature trails. To provide information and educational infrastructures and undertake public information and awareness activities.	To warden the area against trespassers and poachers leaving the official nature trails. To install fences or other physical barriers (e.g. large stones to prevent car access) to enforce access restrictions where necessary, notably across the beach (in the North between zones A4-C1) and along the Pine Forest National Park (South and East of the access road between zones A1-A4 and C1-A4). To install, where feasible, minimum forest fire prevention utilities, and to control the area regularly to prevent

		forest fires. To construct an observation tower and small information centre next to a warden's cabin and boat house (cf.**Figure 14**). To construct and signpost nature trails and to equip them with explanatory information panels (cf. **Figure 14**). To maintain the information and observation infrastructures. To undertake guided tours for interested visitor groups. To prepare and distribute (sell) information and promotion materials at the small information centre (cf.**Figure 14**). To establish a programme to monitor the maintenance of the quality of the landscape character.

4.2.2 Category B: Natural Resource Zones

Zone B1: Karavasta and Godulla Lagoons

Karavasta and Godulla lagoons, and the dunes and saltmarshes in between constitute management zone B1 (cf Figure 14). The lagoons serve since long for traditional fisheries inside the lagoons and in the channels connecting them. The general management objective for the Karavasta Area aims to maintain and improve these lagoon fisheries in a long-term sustainable way, compatible with the conservation objectives for specific species, notably breeding waterbirds, including Dalmatian Pelicans, and wintering waterfowl taking refuge on the lagoons (day-time roosts).

Therefore, the maintenance (Godulla) or improvement (Karavasta) of the lagoon water qualities is a high management priority that concerns also the buffer zone (C). Within economically reasonable limits, maintaining a link between the sea and the lagoons, through regular dredging, is a management priority. This has, however, to take into account the limits imposed by the very active geomorphological coastline dynamics (coastal erosion and sedimentation), and the need to maintain a naturally functioning ecosystem for conservation purposes. The latter prevents the possibility of any installation of heavy rigid infrastructures to stall the coastline dynamics (e.g. concrete or other coastal defences).

Other human activities are incompatible with either fishing or the protection of breeding waterbirds. Thus, notably hunting and all forms of leisure uses of the lagoons (boating, windsurfing, swimming, etc.) are forbidden. Guided boat tours, by fishermen or specific wardens of the Management Authority, can be envisaged, if and when compatible with fisheries and bird conservation requirements (outside the breeding and wintering seasons and outside zones A2) .
Two natural resource zones (B2 and B3) are integrated in Category B (cf. Figure 6), rather than Category A, because of the less developed habitat diversity and the human natural resource use activities therein.

Zone B2: River Protection Belt of Shkumbini
Zone B2 comprises the Shkumbini Protection Belt up to the embankments protecting the drained agricultural plains on each side from river floods (except the small village Sulzotaj), from the village Ballaj in the NE downstream to the Coastal Conservation Zone A3. It includes the Kulari forest and scrub area, which is currently used for hunting. A well developed riverine forest along the lower parts of Shkumbini is important for its tree diversity providing a habitat for breeding and wintering raptors. Hunting activities should therefore avoid disturbance of this particular area.

Zone B3: River and Coastal Protection Belt of Semani
Zone B3 comprises the coastal zone between Godulla lagoon in the north and Hoxharës drainage channel in the south, including the Semani River Protection Belt, between the embankments protecting the drained agricultural plain, upstream to Rreth-Libofsha village. Hunting and traditional forms of natural resource uses (angling, collecting of mushrooms, etc.) are allowed in both zones (B2 and B3), while mining of gravel, sand or clay is forbidden.

4.2.3 Category C: Buffer Zones

Agriculture and Rural Development
Future developments in the Karavasta lagoon catchment will be crucial for the survival of the lagoon as a functioning ecosystem and as a source of fisheries resources. Thus, the Management Authority will have to elaborate guidelines, and set limits to the population numbers and settlement and

agricultural developments around Karavasta lagoon that are compatible with the assurance of proper functioning of the lagoon ecosystem.

Domestic and agricultural runoffs from the settlements and agricultural plain around the lagoon should not enter the lagoon, except clean, treated waters. This requires heavy infrastructure developments to provide the dozen or so settlements in the lagoon catchment with a system of drinking water supply, waste water treatment, water recycling for agricultural irrigation, and solid waste treatment. It is advisable to profit from the works necessary to install the required piping network or the restoration of delapidated irrigation/drainage canals, to upgrade the access and transport network (paved roads and paths) which is currently in a derelict state. Finances for these works need to come from appropriate budgets or donors, outside of the environmental budget linked to the Ramsar Site.

Agricultural activities need to be regulated in order to manage water use and recycling and aspects of irrigation and drainage. Water quality is a major issue. Fertilizer use needs to be limited to specific areas, products and seasons.

In a first development phase around Karavasta lagoon, a belt of sewage treatment wetlands needs to be created on soils with low agricultural value (too salty) currently disused or only non-intensively grazed. Such wetlands need to be constructed (or formerly drained wetlands restored) in a way that they can clean large quantities of nutrient-rich domestic and agricultural effluents, preparing them for irrigation of nearby cultures. The aquatic vegetation active in the cleaning process will serve for enhanced grazing in these wetlands. In addition, such waterbodies should be established in a way that they attract wintering waterfowl, thus providing enhanced hunting facilities for local people (possibility to lease rights to foreign hunters). Ideally, the network of these water purification wetlands will allow flushing of the lagoon with oligotrophic freshwater (of rather limited amount, given the small freshwater resources in the catchment basin), to contribute to a sufficient lagoon water quality. At a later stage, depending on the human development in the catchment, the construction of technical sewage treatment plants may become necessary to complete the natural water treatment wetlands.

It is crucial, that the management programme includes a careful analysis of the hydrology and its water fluxes in the catchment basin, in order to make proposals on how to manage the essential water flows inside the lagoon catchment. At a later stage, when their respective water qualities seem acceptable, waters of Shkumbini or Semani rivers, or of Tërbufi or Muzeqë channels may also be taken into consideration to flush Karavasta lagoon.

Tourism and Leisure Activities in the Beach Area

The visitor pressure on the natural habitats is extremely high in the core zone at Divjaka beach (zone

C1) and in the adjacent coastal forest (A4). Therefore, the management strategy for these adjacent zones must focus on careful regulation and restriction of visitors access, especially during the summer months, when thousands of tourists flock to this area. In addition, building construction, and the infrastructures related to them: roads, drinking water supply, sewage treatment, waste management, etc. need to be managed in a way that they do not harm the natural environment in the long-term. This will require a strict system of permits and fees, providing the Management Authority with the means to maintain the infrastructures and combat degradation of the zones. As tourist pressure is greatest during the summer months, some of the access restrictions may be released during the rest of the year.

B1 Godulla and Karavasta Lagoons		
Operational objective	**Management option**	**Outline prescription**
To maintain and enhance the lagoon fisheries compatible with the maintenance of the ecological character of the lagoon ecosystem and in accordance with the requirements of breeding and wintering waterbirds (cf. zones A2).	To establish clear rules regulating the lagoon fisheries and access to the lagoon.	To conclude, implement and survey the implementation of an exclusive management agreement for the lagoons, according to Article 31 of the Fisheries Law (including the need to regulate necessary dredging of the connecting channels). To instigate studies on the lagoon catchment hydrology and its functioning, necessary to maintain or improve the water quality. To undertake information and awareness activities on the lagoon ecosystem functioning and the fisheries dependent on it. To control and enforce a strict hunting ban and access regulations in both lagoons.
B2 Shkumbini Protection Belt		

Operational objective	Management option	Outline prescription
To maintain and enhance the natural river dynamics and biodiversity.	To survey that no prohibited human activities occur.	To monitor water inflows into the zone and their quality, and undertake remedial actions in case of insufficient quality. To undertake inventories and monitoring studies on the species present in the zone, and their conservation requirements. To establish agreements with hunters (or leaseholders), assuring that hunting is executed in a way compatible with the conservation requirements of the habitats and species present in the zone. To control the zone to prevent prohibed human activities (notably mining) and poaching. To establish rules for any other form of human activities in the zone when the need arises.

Beach tourism will be restricted to the core zone of Divjaka beach (C1). Access for leisure use to the beach will have to be limited in the north by a fence across the beach (separating zones C1 and A4) and in the south by the northern channel (cf. Figure 13). As most damage to fragile natural beach and dune habitats is done by car access, this will be banned (except for emergencies).

During the summer months of most important tourist affluence (Saturdays and Sundays between 15 June and 30 August, all days between 1 July and 15 August), an access fee will be levied, and cars of day visitors will have to be left on a parking lot to be constructed at the entrance, just outside of the biodiversity conservation zone (in zone C2, cf. Figure 13, or closer to or inside Divjaka town, cf. Murison Small 1996). From there to the beach hotel (c.3 km), regular bus shuttle services will be organised by the Management Authority between 6h and 20h. The bus shuttle fee will include an access fee to the beach area (paid to the Management Authority). Owners and employees of the beach hotel, other licenced buildings, beach coffee shops, grill bars and kiosks, fishermen, scientists and wardens will need to display an annual licence for car access to specific parking spaces, to be designed next to their respective buildings.

B3 Semani and Southern Coastal Protection Belt		
Operational objective	**Management option**	**Outline prescription**
To maintain and enhance the natural river and coastline dynamics and biodiversity.	To survey that no prohibited human activities occur.	To monitor water inflows into the zone and their quality, and undertake remedial actions in case of insufficient quality. To establish agreements with hunters (or leaseholders), assuring that hunting is executed in a way compatible with the conservation requirements of the habitats and species present in the zone. To undertake inventories and monitoring studies on the species present in the zone,and their conservation requirements. To control the zone to prevent prohibed human acitivities and poaching. To establish rules for any other form

		of human actvities in the zone when the need arises.

Similar, overnight guests of the hotel and other beach accomodation facilities (appartment houses, cabins, camping site) may obtain a special permit (against a fee) for car access to specific parking lots next to these facilities. For people on foot or bicycles, access to the beach area will depend on a fee to be levied at the entrance gate next to the entrance parking in zone C2. Buses and minibuses may bring daytime visitors to the beach area, but the drivers need to park their vehicles back in the parking space in zone C2.

The fees levied by the Management Authority will contribute to the costs of installing litter bins along the beach and forest access road and to collect solid waste weekly for treatment in Lushnja. Dumping of any litter outside special bins will be persecuted. As well as for the renovation of existing delapidated public toilets and the construction of new shower blocks along the public beach. The Management Authority will furthermore organise the regular cleaning of the public beach, and wardens to survey and avoid further degradation.

No overnight staying is permitted on the beach, except in the camping area and in licenced holiday accommodations (i.e. the existing hotel, appartment blocks and cabins). The Karavasta Area Protection Law subjects the construction of new houses and fixed installations to a licence requirement (Article 14.7). The area where houses and kiosks can be constructed is strictly limited (inside zone C1 and in accordance to the Law). Houses and fixed installations outside will have to be removed. If these have been constructed with a valid licence during 1995/96, some form of compensation will be offered.

A high priority is to devise fire protection measures for the biodiversity conservation and beach zones (A4, C1), including the Fenced Reserve (A1). While the risk is relatively small that a fire starts in the Fenced Reserve, given its access restrictions and wardening, the danger is substantial in zone C1 and A4 where many visitors are picknicking, smoking, etc. Thus barbecue fires will only be allowed at specific, safe fireplaces next to the built-up area of zone C1. Fire combatting tools need to be made easily available at strategic points, and local people of the beach area (coffee shop owners, etc.) need to be regularly briefed about fire prevention measures and trained in fire combatting techniques.

Beach access restrictions to the sensitive bird breeding zone (A2) west of the village Sektor Nº2 (in zone C2) will have to be enforced by the wardens of the Management Authority during April-July inclusive, furthermore ensuring that no cars enter zone B3. To this end, some physical barriers (i.e. large stones, digging of a ditch) may be installed at the border between zones B3 and C2.

C1 Tourist Beach		
Operational objective	**Management option**	**Outline prescription**
To maintain a natural beach area for leisure use, in a way compatible with the strict conservation needs of the surrounding natural habitats.	To warden the zone in order to control access and human activities, and to keep the area tidy.	To install a system of access fees (payable to the Management Authority) and access restrictions for cars (to be left only on specific parking spaces), where necessary with physical barriers (fences, large stones, ditches). To renovate, install, maintain and survey infrastructures such as public toilets and showers, litter collecting and drinking water facilities. To implement the application of construction regulations specified in the Law, and to remove buildings that do not conform to the Law. To establish agreements with kiosk, grill bar and coffee shop owners, concerning the treatment of their liquid and solid waste, and their supply with drinking water. To control visitor behaviour in order to avoid forest fires, littering, tree cutting, and other damaging activities.
C2 Drained Coastal Plain		
Operational objective	**Management option**	**Outline prescription**
To implement a settlement policy and to develop non-	To assure the correct implementation of the	To develop, in consultation with local stakeholders and interested parties, a

intensive agricultural activities that are compatible with the need to maintain the ecological quality of the lagoons.	accepted integrated development policy regarding settlements, agriculture and possibly other human activities.	long-term sustainable development policy for the human settlements in the zone and the activities carried out therein. To plan, construct and maintain the necessary infrastructures (i.e. drinking water, road access, waste and sewage treatment facilities, etc.). To develop rules and set limits for settlements, agricultural practices (fertilizer and pesticide uses, irrigation practices, etc.) and other human activities occurring in the zone. To monitor key factors indicating the state of the ecosystem composed of the lagoon and its catchment basin (i.e. essentially this zone CB). To evaluate the potential for the installation of aquaculture facilities, especially in the southern part of the zone.

C3 Divjaka Hills		
Operational objective	**Management option**	**Outline prescription**
To enhance and maintain the landscape and natural resource value of the zone.	To promote a restoration plan and to survey that only sustainable resource uses take place.	To develop and promote the implementation of a landscape restoration programme in order to enhance the natural resources productivity (forests and forest products, pastures, agriculture,

		tourism and recreation). To survey that human uses are compatible with the long-term needs of maintaining an optimum natural diversity and productivity for local people. To develop and implement a hydrological plan, taking into account the water resources of this zone, the water needs in the surrounding plains, and the necessary restoration works for existing infrastructures (reservoirs, etc.).
C4 Marine Protection Zone		
Operational objective	**Management option**	**Outline prescription**
To maintain a natural coastal zone with limited human interventions as a buffer to the lagoons important for fisheries and the very rich coastal wetland and forest habitats.	To implement fishing and hunting restrictions, and to prevent other harmful activities to occur (dumping of waste, etc.).	To devise clear rules for fishing restrictions. To monitor sea water and inflowing river water qualities and coastline dynamics. To survey that dredging activities (as part of the lagoon fisheries agreement) are done in accordance with the management and conservation objectives.

4.3 Priority Management Projects

The general management programmes required to achieve the operational objectives are broken down into clearly defined individual units of work, called projects. Each project description will contain, or provide reference to, sufficient information to enable the individuals responsible for the

project to complete the work. This will include details of the staff responsible for the work, when it should be done, how long it should take and how much it will cost. Each project is also allocated a priority and year when it will be active.

Collectively, project descriptions are used as the basis for the preparation of a wide range of work programmes. These include annual work programmes, work programmes for individual staff members, and financial programmes.

At this stage, three projects are outlined in very general terms to the Committee for Environmental Protection (CEP). They may be developed further in the near future.

4.3.1 Technical Support to the Interim Management Coordinator

The establishment and composition of the proposed integrated Management Authority is outlined in the proposed Karavasta Area Protection Law (Articles 4-5). During the transition period, until the Governing Body will be installed and the Executive Management Director appointed (cf. Article 6), it is important that the CEP designates an interim management coordinator. The interim coordinator could work from an office space inside the visitor centre to be opened in 1996 at the central square in Divjaka, and rely on further office and communications facilities at the PHARE-PIU office in Tirana.

The tasks of the interim coordinator include:
- to act as the focal point for the future installation of the management authority;
- to maintain regular contact with the local and district authorities;
- to coordinate and superwise the implementation of urgent measures to be undertaken in 1997;
- to promote the spirit of the proposed management strategies and legal regulations among target audiences (authorities,
donors, visitors and the general public);
- to undertake other appropriate and urgent tasks, including the planification and preparation of future programmes.

Once established, the tasks of the management authority are explicitly listed in the proposed Karavasta Area Protection Law .

An urgent follow-up activity to this first phase of the Phare Karavasta Lagoon-Wetland Management project would be to provide technical support to an interim management coordinator, as soon as this person will be designated. International and Albanian experts in conservation management and related tasks, including legal and administrative aspects concerning the Karavasta Area, at national and local level, should prepare and help the interim coordinator to execute his/her tasks outlined above.

Such technical support would include:
- the elaboration of clear guidelines and specific rules for the implementation of the executive powers of the
Management Authority, notably in the fields listed in Articles 13-16 of the proposed Karavasta Area Protection Law;
- the detailed development and further elaboration of the management strategies and programmes outlined in this
Management Plan, including the preparation of their implementation on the ground;
- the elaboration of job profiles for the recruitment of the Executive Director, support staff and wardens;
- the preparation of training programmes for the Executive Director, support staff and wardens;
- the execution of such training programmes, preferably in situ, once these people will have taken up their duties;
- any other technical and administrative support deemed to be urgent and necessary.

Outlook: Conservation and Resource Use Management
It is essential to coordinate the different management programmes for the Karavasta Area in the spirit of an overall vision for the long-term conservation and wise use of the Area and its natural and human resources. To this end, the Authority, or its interim forerunner, will need to pay particular attention to promote and apply the catchment basin approach:

- when assessing and implementing management measures, monitoring ecological parameters in the area;
- when regulating access to sensible zones;
- when regulating the collection, taking and disturbance of wild species of flora and fauna;
- when regulating destruction or restoration of natural habitats; and
- when taking or enforcing any other management measure in the area.

The Authority, or the interim coordinator, will have to report on their activities to this end on a regular basis, as a means of assessment and control for national and local authorities, as well as for the international community (through the Ramsar Convention) and potential donors.

4.3.2 Managing Visitor Access to the Divjaka Beach and Forest National Park

The detailed planning of visitor access management and the construction of the necessary infrastructures and facilities are urgent priorities. A project to construct specific parking and visitors' facilities and to install the necessary physical guidance and barriers in the coastal area, including detailed plans for nature trails, information panels, a warden's accomodation, boat house, observation tower, information centre, and education programmes should therefore be prepared

rapidly. Depending on the available budget, some construction costs could be covered from Albanian sources, others need to be requested from external (bilateral or multilateral) sources.

4.3.3 Pilot Study for Sewage Treatment Wetlands in the Coastal Plain

A third priority project consists of the execution of a preliminary pedological and hydrological study that leads to the construction of an experimental sewage treatment wetland in Remasi commune (as most activities have focused on Divjaka commune so far). As indicated above, this experimental wetland restoration project would provide a valuable experiment to test models about the hydrological functioning of the lagoon catchment basin, the capacities to clean urban and agricultural effluents, and the potential irrigation, pasture improvement and hunting capacities of such wetlands. It seems crucial to embark on a, potentially far-reaching, programme of wetland restoration in the drained agricultural plain, with an experimental study at realistic scale.

5 Management Review and Audit

Finally, reviews will have to be made under the management programme or project headings, detailing the work which has been completed and the results of monitoring and surveys. This information will provide the basis for short-term, usually annual, and longer term or major reviews. The purpose of the short-term review is to confirm that the Area is being managed in accordance with the requirements of the Management Plan. Thus, there will be two types of reviews: annual and major audits at longer intervals.

5.1 Review of Annual Work Programmes

The Management Authority will have to determine the procedures in detail.

5.2 Major Audits at Regular Intervals

Major reviews are applied in order to ensure that the operational objectives are being achieved and that they continue to be relevant. The period between major reviews will depend on a range of factors, notably the dynamics and vulnerability of the Area. It will rarely be less than one year and should not exceed ten years. The proposed Karavasta Area Protection Law indicates the need to undertake major audits every five years (Article 9.2).

The Management Authority will have to determine the procedures in detail.

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