PART II : FORMULATION OF URBAN AND TRANSPORT PLAN

CHAPTER 11:   FUTURE PERSPECTIVE OF URBAN DEVELOPMENT IN DHAKA METROPOLITAN AREA

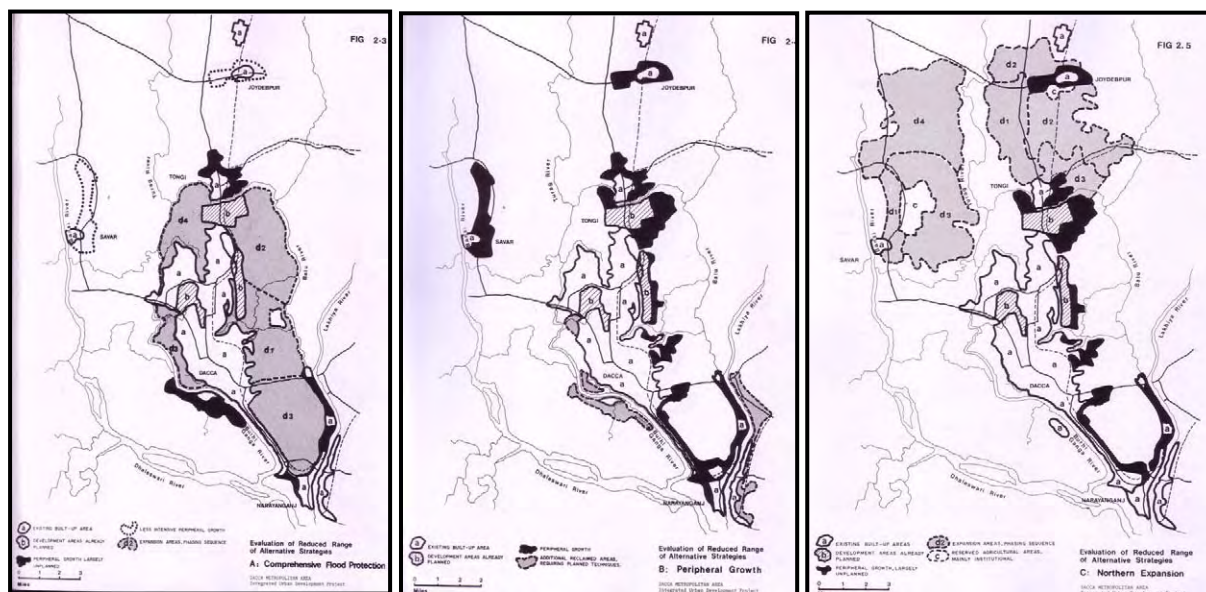## 11.1 Review of Previous Master Plans for Dhaka

11.1.1 The Dhaka Master Plan, 1959

The first Dhaka Master Plan was prepared in 1959 under supervision of the Dhaka Improvement Trust (DIT), which was established in 1956 under the provision of Town Improvement Act 1953. The objective of the DIT was aiming to improve physical condition of Dhaka City. The first Dhaka Master Plan covered the planning area of roughly 320 sq. miles (840 sq. km.), including Dhaka City, Narayanganj and Tongi Municipalities and their surrounding areas. It was prepared for a target period of twenty-years from 1959 to 1979. The population of 1959 was roughly 1 million persons in the DIT area: 575,000 persons in Dhaka City and 100,000 persons in Narayanganj. The population was projected to increase to 1.4 million in 1979.

The Master Plan proposed that the major expansion of the city was largely toward the north leading Mirpur, Tongi and Gulshan/Banani/Badda, A large-scale of reclamation area was proposed at Keraniganj, Postogola and part of DND triangle. It was estimated that those areas would accommodate an increased population of 250,000 until 1979. However, the development proposals in the Master Plan were not fully implemented due to lack of available funds and weak institutional capacity. Thus, the Master Plan did not perform proper planning and development, which eventually lead to uncontrolled development in the Dhaka city.

11.1.2 Dhaka Metropolitan Area Integrated Urban Development Project (DMAIUDP), 1981

The second Master Plan for Dhaka called Dhaka Metropolitan Area Integrated Urban Development Plan (DMAIUDP) was prepared in 1981, supported by ADB and UNDP. It provided three alternatives of a long-term growth strategy for urban expansion of Dhaka: (1) Comprehensive Flood Protection, (2) Peripheral Growth, and (3) Northern Expansion (Figure 11.1-1). The Plan recommended northern expansion of urban area to accommodate a population of approximately 9 millions by the year 2000. The plan also recommended further flood protection study to evaluate metropolitan development options.

| A. Comprehensive Flood Protection strategy | B. Peripheral Growth Strategy | C. Northern Expansion Strategy |

Figure 11.1-1   Alternatives of Growth Strategy for Urban Expansion in DMAIUDP
Source: Dacca Metropolitan Area Integrated Urban Development Project, 1981

Following the recommendation by the DMAIUDP and serious floods in 1987 and 1988, National Flood Action Plan (FAP) was formulated. Dhaka was covered by two FAPs: One is Dhaka Integrated Flood Protection Project (FAP-8B) for the western part of Dhaka under execution and funded by the ADB, covering an area of 260 sq. km. The FAP-8B was undertaken in 1991. The other is Greater Dhaka Flood Protection Project (FAP-8A) funded by JICA, which formulated a framework for comprehensive flood control in the Dhaka metropolitan area, covering an area of 850 sq. km. A feasibility study has been carried out for the priority areas of the eastern part of Dhaka, Narayanganj and DND Triangle.

11.1.3 Dhaka Metropolitan Development Plan (DMDP), 1995-2015

The Dhaka Metropolitan Development Plan (DMDP) is a multi-sectoral development plan for Dhaka Metropolitan Area within the RAJUK administrative area. It was formulated in 1995 through technical assistance of the UNDP, together with the World Bank and Asian Development Bank. The DMDP consists of three components: (1) Structure Plan; (2) Urban Area Plan (UAP); and (3) Detailed Area Plans (DAP). The planning documents of the first two components were published in the Bangladesh gazette. The DMDP was administered by RAJUK under the Town Improvement Act 1953.

The Structure Plan provides a long-term strategy for 20 years from 1995 to 2015 for the development of Dhaka Metropolitan Area with the 590 sq. mile (1,528 sq. km.). The Structure Plan identified direction of future urban growth and defined a broad set of policies considered necessary to achieve the overall planning objectives. The DMDP Structure Plan is shown in

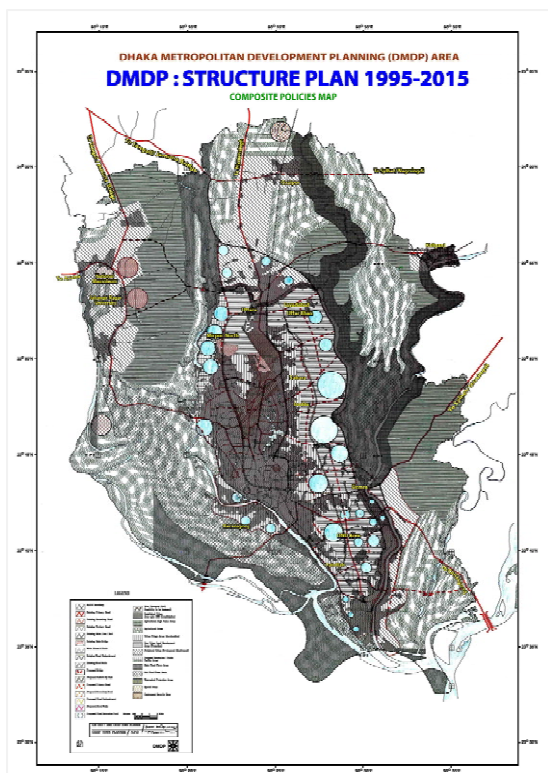Figure 11.1-2. It projected the population to increase from 9.1 million in 1996 to 15.6 million in 2016.

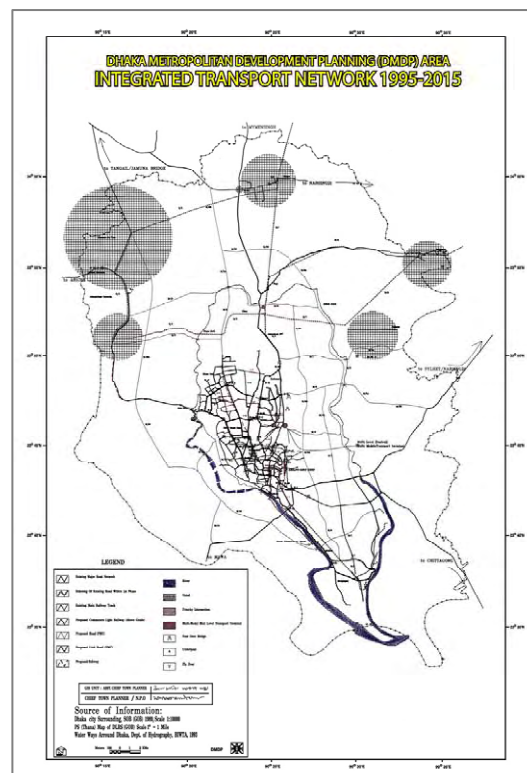**Figure 11.1-2 DMDP Structure Plan 1995-2015**

Figure 11.1-3 Satellite Communities proposed in DMDP

Major development policies in the DMDP Structure Plan are summarized as follow:

a) Areas of High Agricultural Value: Three areas (Savar, Narsingdi and Rupganj) of high quality agricultural land within the market catchment area of Dhaka will be conserved and promoted as areas of high intensity food production.

b) Flood Flow Zones: Land development, within the designated flood plain areas in the Structure Plan, will be controlled to avoid obstructions of flood flow, which might otherwise result in adverse hydraulic effects, such as the rise of flood water levels and changes in flow direction.

c) Flood Retention Ponds: Development control will be maintained over the areas designated in the Structure Plan for flood retention ponds to ensure that they remain capable of fulfilling their primary function of water storage at times of flooding.

d) Land Resource Optimization: To mitigate the impact of the densification, the Government will seek to optimize land resources within the established urban area by encouraging the infilling of vacant land, by allowing vertical development, and by redevelopment of lower density communities.

e) Urban Fringe Development Acceleration: The Government will initiate and coordinate a range of measures aimed at stimulating reorganization and re-subdivision of urban fringe

area.

f) Special Economic Zones: The proposed locations of special economic zones are Tongi, Dhamosana, Savar and Narayanganj. The existing industrial estates in Tejgaon and Tongi will operate full and optimum their capacities. In order to disperse the population, special economic zones will promote creating job opportunities for the people.

g) Open Space: To prevent further impoverishment of recreational facilities by means of exploiting the resource of vacant and/or under-utilized government land within the existing urban area. Especially, DND Triangle and Harirampur (north of Mirpur) will be developed with social facilities and recreational open space.

h) Improved Access to and within the CBD: To improve overall accessibility to the CBD by the promotion to upgrade transport services to and within the area

i) Eastern Bypass: It is high priority of the development of Eastern By-pass to become the national network of arterial roads and to relief the existing traffic in urban area. It provides an arterial road connecting Chittagong Highway and north-west of the country via Tangail and the new Jamuna Bridge.

j) Commuter Rail Network: The DMDP promoted the development of a long-term commuter rail network to serve the high density sections of the main urbanized area. Mass transit system would be essential to ease the traffic flow and proposed to operate by 2015.

k) Satellite Town Development: The DMDP proposed development of new satellite communities in the northern parts of the metropolitan area to absorb population growth. The priority location for the development of satellite communities would be in Gazipur, Savar, Dhamosona, Kaliganj and Purbachal (Figure 11.1-3). In the satellite communities, job creation is essential to reduce commuting traffic to DCC.

Based on the development concepts proposed by the Structure Plan, Urban Area Plan (UAP) was prepared with an interim mid-term strategy for the 10 years from 1995 to 2005. The UAP covers the existing urban area and its adjacent areas, which are likely under urbanization pressure over the next decades. The UAP describes the salient features for each of the 26 Spatial Planning Zones (SPZ), including DCC, Narayanganj, Jinjira, Uttara and the Eastern Fringe. Additionally the outlying areas of Tongi, Gazipur, Savar and Dhamarai/Dhamsona are considered as the SPZ. Although the UAP aimed to provide an interim mid-term development strategy for each SPZ, it was not much different from the contents of the Structure Plan.

Following the concepts of Structure Plan (SP) and Urban Area Plan (UAP), draft Detailed Area Plans (DAP) were prepared in the end of 2008. It provided more detailed planning proposals for specific sub-areas named Detailed Planning Zone (DPZ), which are smaller than Spatial Planning Zones used in the UAP. The DAP are, however, not finalized yet and still under process of approval and notification by Gazette.

Figure 11.1-4 shows a future land use plan proposed by the DAPs with target year 2015. It seems

that the land use plan of the DAPs does not reflect on the population framework prepared by the Structure Plan. The future urbanized areas proposed in the land use plan are over 220 sq. km in DMA area (Table 11.1-1), which are almost double compared to the existing urbanized areas in 2009. Furthermore, the target year of the land use plan is only 6 years ahead from now. Accordingly, it can be noted that the land use plan in the DAPs is not realistic and it provides planning proposals for a long term future, beyond the target of 2015.

Table 11.1-1   Land Use Composition in Detailed Area Plan, 2015

CATEGORY	DMA		RAJUK	
	km2	%	km2	%
Public	9.6	3.4%	20.3	1.4%
Commercial	4.0	1.4%	6.4	0.5%
Industrial	6.0	2.1%	24.9	1.8%
Non Conforming Use	1.2	0.4%	18.7	1.3%
Transportation	19.8	7.0%	42.5	3.0%
Residential	183.4	64.7%	358.6	25.4%
Rural Homestead	1.1	0.4%	131.4	9.3%
Agriculture and Open Space	10.1	3.6%	368.2	26.1%
Water, Water Flow and Retention Pond	33.9	12.0%	402.9	28.6%
Others	14.2	5.0%	35.9	2.5%
Total	283.3	100.0%	1409.7	100.0%

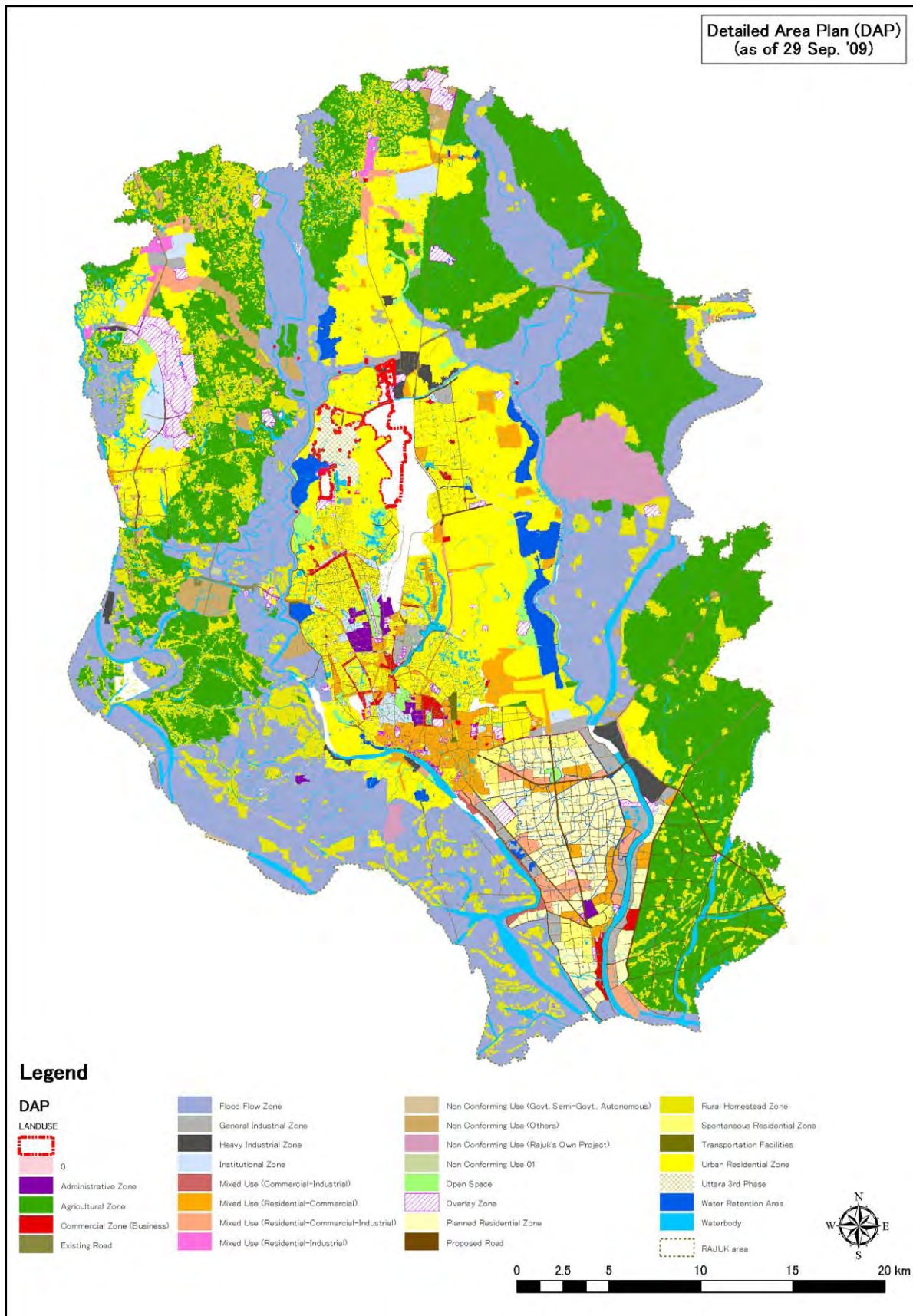*Note: Land use areas by category are calculated by the JICA Study Team*

Figure 11.1-4   Proposed Land Use Plan of 2015 in DAP

11.1.4   Strategic Transport Plan (STP), 2004

More recently, the Government of Bangladesh undertook a study of Strategic Transport Plan (STP) in 2004, which was administered by the Dhaka Transport Coordination Board (DTCB) under the Ministry of Communication (MOC). The STP formulated a long-term urban transport plan for Dhaka Metropolitan Area and it was approved by the MOC in 2009. The Plan covered the comprehensive transport development policies and strategies, including public transport, non-motorized transport, urban freight transport, mass transit, traffic management, parking, land use/transport planning, pedestrians, institutional and financial aspects, privatization, and so on.

For the purpose of future transport demand forecast, the STP examines three alternative land use scenarios: (1) Strong Central Spine Scenario, (2) Regional Growth Centers Scenario, and (3) Northern Dispersal Scenario, as shown in Figure 11.1-5.

The strong central spine scenario is the concept that future urban growth and development will be concentrated on the existing north-south axis and absorb population growth. The concept is basically an application of the urban corridor concept in which the dominance of central axis is reinforced by the development along the existing railway, from Tongi to Kamalapur railway station and up to the Narayanganj railway station. Along this railway line, main roads are also connected. Due to the development of existing north-south axis, urban development would be encouraged on both sides of rail and road way.

Strong Central Spine Scenario   Regional Growth Centers   Dispersal Scenario
                                              Scenario

Figure 11.1-5   Alternatives of Land Use Scenarios by STP

The regional growth centers scenario is based on central place theory and growth pole concept in which regional growth centers will accommodate a greater percentage of population growth in conjunction with the investments made in emerging industrial development areas. Transportation

and communication from regional growth centers to Dhaka are to be developed in a better way. In the north Savar has a great importance to develop commercial and industrial activities in Export Processing zone (EPZ). The STP proposed construction of the Western Bypass, which would enhance new developments from the northern growth centers towards southern of Dhaka city. The continuation of this Bypass through Narayanganj would provide additional opportunities for urban development within the southern part of the DND Triangle.

The Dispersal Scenario is the concept that future urban growth and development will be dispersed mainly toward the north and southeast, but with more balanced developments. Inter-linkage within existing communities and emerging development corridor will be encouraged. The northern towns like Savar, Ashulia and Gazipur are encouraged to be sub-regional centers with educational and medical facilities. The sub regional center of agro based industry is proposed in Kaliganj. The southern area including Narayanganj, Bandar, Munshiganj and Sonargaon would be developed by using inland water shipping services to send goods to the north. Within Dhaka city, it is encouraged to build self-sufficient communities.

Having considered the above three scenarios, the STP adopted the regional growth centers scenario and used to guide the investigations of transportation development policies and strategies.

11.2 Socioeconomic Framework, 2025

11.2.1 Population Projection in Bangladesh

Bangladesh Bureau of Statistics (BBS) conducted a population projection of Bangladesh for the period from 2002 to 2051, based on the data from Population Census 2001 as well as Bangladesh Demographic Health Survey (BDHS) and Sample Vital Registration Survey (SVRS). The population projection was made with the parameters of life expectancy at birth, total fertility rate, base population by sex and by age group, and growth ratio in urban/rural area. The total fertility rate (TFR).is a political parameter and derived from the population policy of the government (NIPORT, 2004).

The Sample Vital Registration Survey (SVRS) shows that the crude death rate (CDR) was 5.6 per 1,000 persons in 2007. The CDR had been dramatically improved during early 1990's; it was 10.0 in 1993 and 5.5 in 1997. Since then it has been almost constant for the last 10 years. In the CDR between urban and rural areas, the rate was 4.6 per 1,000 persons in urban area and 5.9 in rural area in 2007. The SVRS also shows that the crude birth rate (CBR) was 20.4 per 1,000 persons in 2007. The CBR decreased significantly from 28.8 in 1993 to 21.4 in 1997. It can be also seen a big difference of the CBR between urban and rural areas, i.e. 16.8 in urban area and 21.6 in rural area in 2007. The CBR in rural area had nearly 5 point higher than that in urban area. Total fertility rate (TFR) is the number of children that a woman bears in her life. TFR was 3.4 in 1996 and decreased to 3.0 in 2003-2004.

Based on the above mentioned situation, BBS prepared four scenarios for population projection; (1) Current TFR (TFR=3.0) would be maintained, (2) TFR would be decreased to 2.1 by 2021, (3) TFR would be decreased to 2.1 by 2016, (4) TFR would be decreased to 2.1 by 2011. Figure 11.2-1 shows the results of the projection. The population of Bangladesh would increase to approximately 300 million persons in 2050 if Bangladesh maintains current TFR of 3.0 continually by 2050 in Scenario (1). In other three scenarios the population projections of Bangladesh would show a similar curve and increase to 220-230 million in 2050. The differences of the projected population among three scenarios are about 10 million persons at the year of 2050.
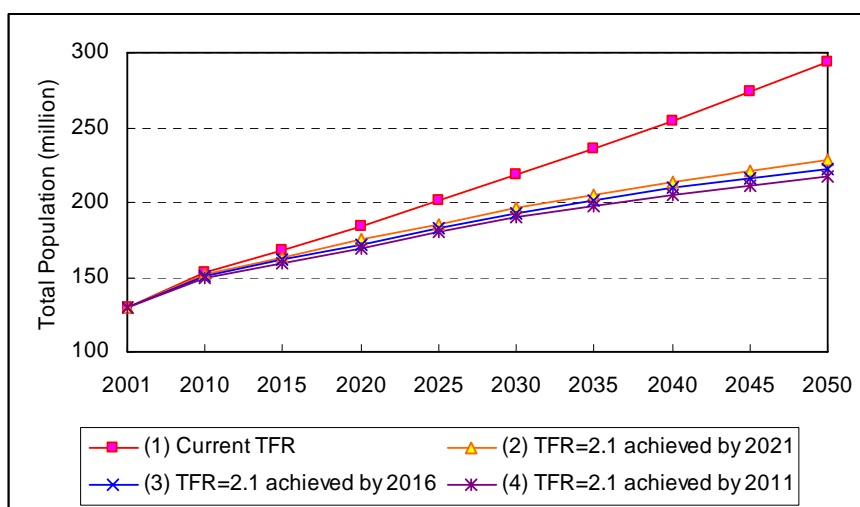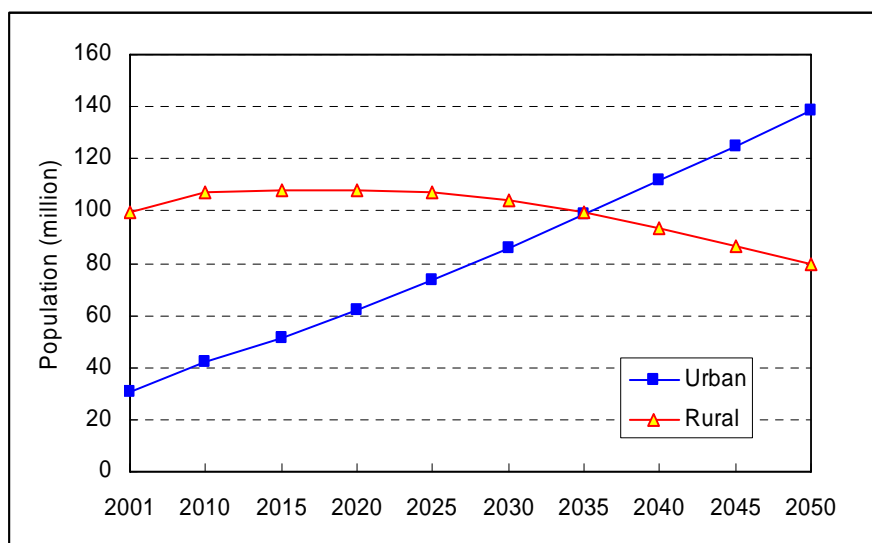

Figure 11.2-1   Projected Population of Bangladesh
Source: Sectoral Need-Based Population Projections in Bangladesh, BBS, 2006

The natural growth rate is calculated by the difference of CBR and CDR. The natural growth rate is higher in rural area than that in urban area. On the other hand, strong migration from rural area to urban area will contribute to the growth of population in urban area. As shown in Figure 11.2-2, urban population will grow rapidly, and it will take over rural population in 2035. About 63% of all population in Bangladesh will be accommodated in urban area by 2050 according to Scenario (4). BBS suggested that the scenario (4) is reasonable for future population projection toward 2050 in Bangladesh.

Figure 11.2-2   Urban and Rural Population Projection
(Scenario (4) TFR=2.1 would be achieved by 2011)
Source: Sectoral Need-Based Population Projections in Bangladesh, BBS, 2006

11.2.2 Population Projection for the Study Area

One of the important sources for future population projection in Dhaka is Strategic Transport Plan (STP), which was officially approved by the Government of Bangladesh in 2009. The STP provided future population projection in GDA[1] for the target year of 2024. The STP has past 5 years since the completion, and therefore, it would be necessary to review and update the population projection by using latest data. However, there is no recent population data available after the Population Census in 2001. Thus, we reviewed the methodology for future population projection undertaken by the STP and adopted it to the population estimation in DMA and GDA (RAJUK administration area) for the target year 2025.

The STP developed a model of the relationship between "population density" and "population growth." It is an assumption that "the process of population densification in an area cannot continue; rather the population growth in those areas will reduce after certain level of saturation of population." This concept is simply illustrated in Figure 11.2-3. By using this model, STP estimated the integrated population growth rate including natural growth and migrating growth. It was assumed that the population would increase up to the population density with 40,000 person/km^2; and then it would be slowly decreased because of the saturation. The population density was calculated for each "Thana" and/or "Upazilla."

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[1] *In the STP, the area of DGA was bigger than our definision and it includes Dhaka, Gazipur, Narsinghdi, Manikganj,*
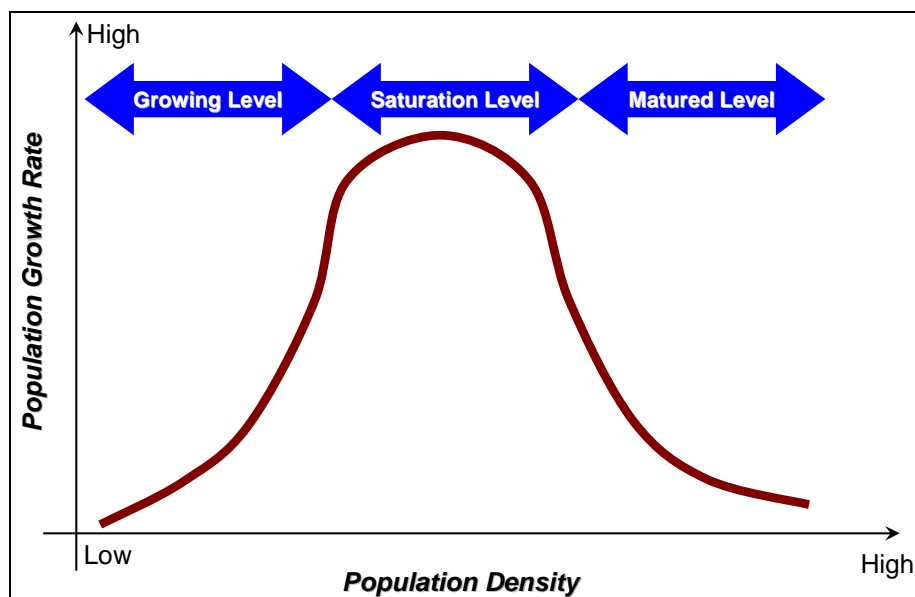*Munsihganj and Narayanganj Districts.*

**Figure 11.2-3   Relationship between Population Density
and Population Growth Rate**
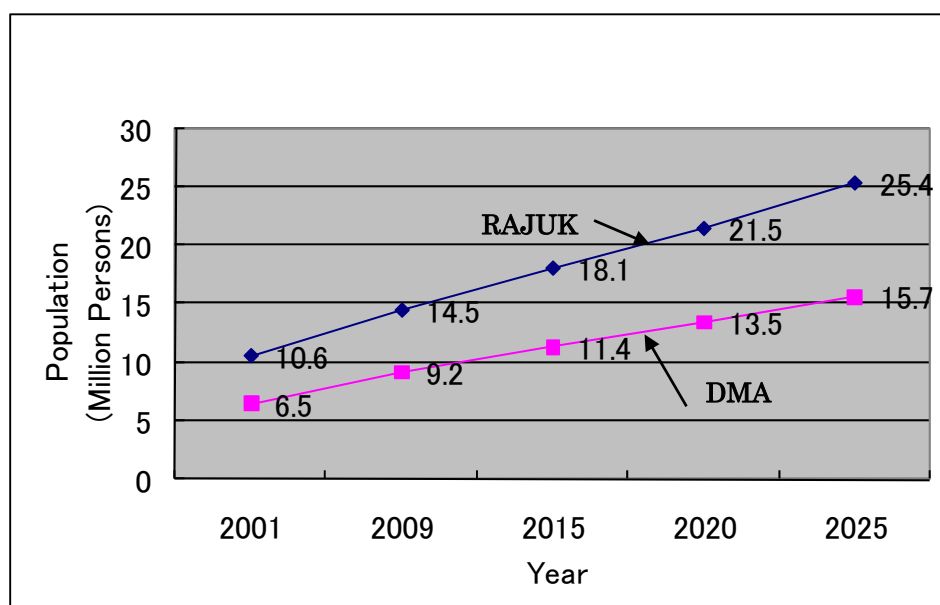
Source: JICA Study Team

The DHUTS Study followed a similar methodology to the STP. The purpose of population projection is to estimate a control total of population in the area of DMA and GDA for traffic demand analysis. It should be noted, however, that there are a lot of uncertainties in the past population data and administrative boundaries such as Thana and Upazila in Bangladesh, and therefore, it is quite complicated to estimate future population. Furthermore, the urbanization has been preceded with extremely high growth rate especially in DMA, and it might be more accelerated in near future by the development of eastern fringe area.

Table 11.2-1 shows population projection in the area of GDA and DMA during the period from 2009 to 2025. It is estimated that the GDA (RAJUK administration area) has 14.5 million persons in 2009 and it increases to 25.4 million in 2025. The DMA area, on the other hand, has 9.2 million persons in 2009 and it increases to 15.7 million in 2025. The percentage share of the DMA population in those of RAJUK area is 63.1% in 2009, which will decrease to 61.6% in 2025. The population growth rate in the RAJUK area is 3.98% p.a. during the period of 2001-2009 while 4.4% p.a. in the DMA during the same period. It is estimated that the population growth rate outside of DMA area will be higher than those in the DMA after 2015. This means that the DMA area will experience nearly saturated stage in population growth after 2015.

Table 11.2-1   Population Estimation by the DHUTS, 2009-2025

Population		2001	2009	2015	2020	2025
RAJUK (incl. DMA)		10,621,481	14,513,651	18,079,292	21,455,486	25,410,130
DMA		6,482,877	9,151,455	11,415,963	13,457,234	15,661,123
Population Density	**Area (ha)**	**2001**	**2009**	**2015**	**2020**	**2025**
RAJUK (incl. DMA)	185,949	57.12	78.05	97.23	115.38	136.65
DMA	30,292	214.01	302.11	376.86	444.25	517.01
Annual Growth Rate(%)			**2001-2009**	**2009-2015**	**2015-2020**	**2020-2025**
RAJUK (incl. DMA)			3.98%	3.73%	3.48%	3.44%
DMA			4.40%	3.75%	3.34%	3.08%

Source: JICA Study Team

Figure 11.2-4   Population Projection in the Study Area, 2001-2025

11.2.3   Future Distribution of Population in 2025

The future population was distributed to traffic zones [2] based on the characteristics of urbanization, existing land use pattern, distance from city center and future development policy. The basic concepts for the future population allocation are summarized in the following 6 large geographical zones:

a)   Core Area (City Center and existing urbanized area of DCC): This zone is already occupied by residential, commercial, business and government facilities. There are not much vacant lands for future urban development. Although the population in this zone nearly saturates, it would still absorb some migration population. The average population growth rate will, however, drop drastically from 4.3% p.a. in 2001- 2009 to 2.0% p.a. in 2020-2025.

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[2] *In the DHUTS the whole area of GDA is divided into 108 traffic zones as the smallest analytical zone, and these small zones are integrated into 56 medium analytical zone and 19 large analytical zones.*

b) Fringe Area (Eastern Fringe and Uttara): This zone is mainly occupied by low-lying area at present. With the development of embankment along Baru River, urban development will be accelerated in this zone due to relatively good accessibility to DCC. Thus, the population will increase significantly. The average population growth rate in this zone will be much higher than those of other areas. It should be noted that flood protection measures would be essential in the development of the fringe area.

c) North GDA (Tongi and Gazipur): This zone is occupied by relatively high land and Tongi is already densely populated area. It is expected that urbanization will be extended toward the north along Dhaka Mymensingh Road and satellite community will be developed in Gazipur. Thus, the population in this zone is expected to increase from 1.1 million habitants in 2009 to 1.9 million habitants in 2025.

d) South GDA (Narayanganj, Bandar and Sonargaon): This zone has a large population with 2.2 million habitants in 2009. Because of good accessibility to DCC it is expected to be accommodated more population especially in Narayanganj and DND triangle areas. Furthermore, the area along Dhaka Chttagong Road has a great potential for development of industry in near future. The population will increase to nearly 3.7 million habitants in 2025.

e) Eastern GDA (Ruppangi and Kaliganj). In this zone there are still a plenty of vacant lands and it can absorb future increasing population. The development of Purbachal new town will provide a big impact on this zone. The improvements of Dhaka By-pass Road and Tongi–Kaliganj Road will promote further development. The population in this zone is expected to increase from 0.8 million habitants in 2009 to 1.8 million habitants in 2025.

f) Western GDA (Savar and Keraniganj): The northern part of this zone is mainly occupied by high land and many industries including Dhaka EPZ are located in this area. When it is constructed better connection between Savar and DCC, urban development will be accelerated. On the other hand, the southern part of this zone is mostly occupied by low-land agricultural area. Recently, however, RAJUK proposed new housing development area in Keraniganj Furthermore the construction of Padma Bridge will give significant impact on this zone. The population is expected to be doubled from 1.2 million habitants in 2009 to 2.4 million habitants in 2025.

Table 11.2-2   Population Distribution by Zone, 2009-2025

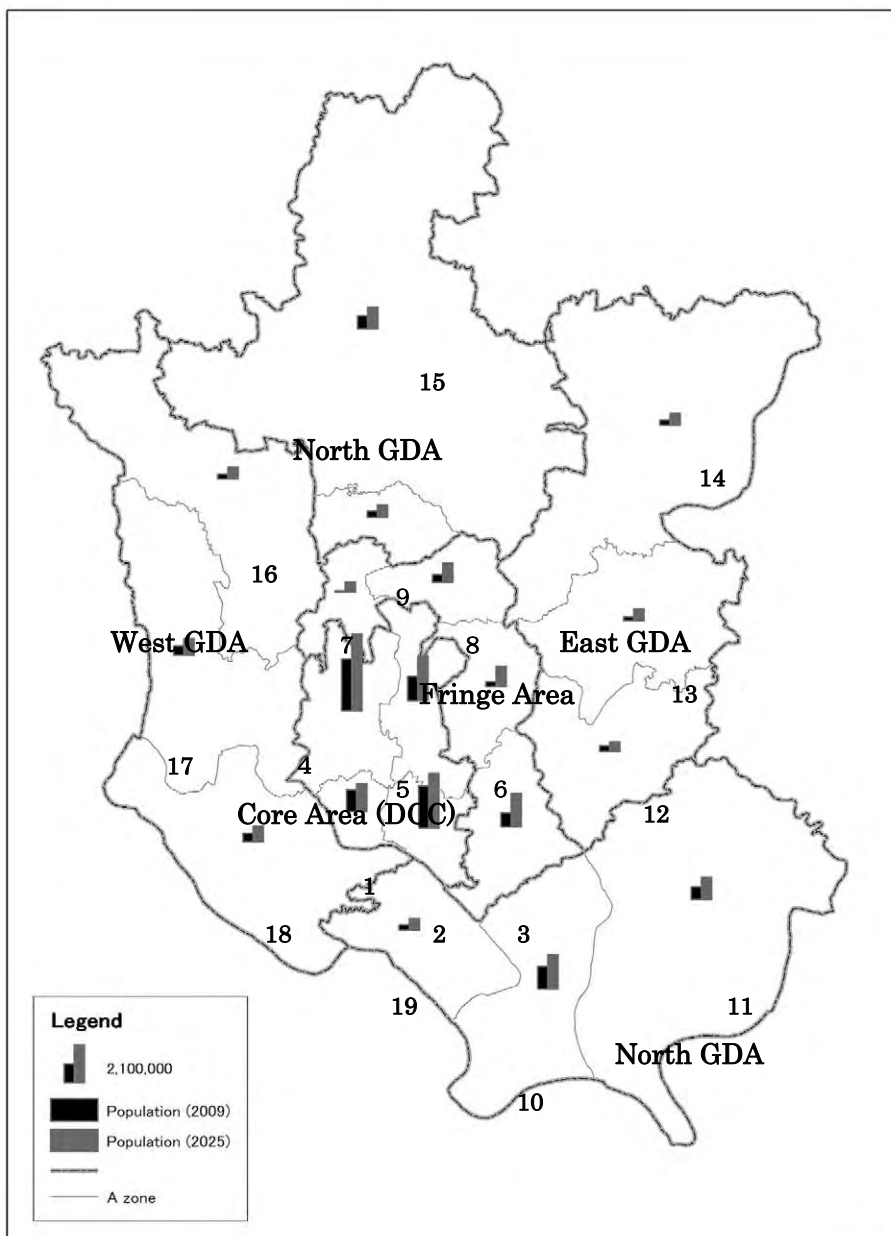| Zone	Area (ha)	Population in 2001	Population Projection				Increased Population 2009-2025
			2009	2015	2020	2025	
1	1,661	884,527	1,185,161	1,340,262	1,444,187	1,522,749	337,588
2	2,724	1,707,032	2,280,166	2,591,959	2,807,452	2,978,647	698,481
4	5,335	1,876,991	2,807,147	3,331,619	3,760,198	4,181,486	,374,339
5	4,358	942,422	1,327,567	1,700,966	2,049,215	2,436,139	1,108,572
Core Area	*14,078*	*5,410,972*	*7,600,041*	*8,964,806*	*10,061,052*	*11,119,021*	*3,518,980*
3	5,304	523,800	785,647	1,107,963	1,431,726	1,812,428	1,026,781
6	4,410	201,193	281,224	525,664	791,422	1,120,927	839,703
7	2,665	55,687	77,838	214,390	367,944	562,291	484,453
8	3,407	291,225	406,705	603,140	805,090	1,046,456	639,751
Fringe Area	*15,786*	*1,071,905*	*1,551,414*	*2,451,157*	*3,396,182*	*4,542,102*	*2,990,688*
9	3,273	283,099	355,825	450,048	548,095	677,680	321,855
15	42,449	583,441	733,323	874,686	1,013,332	1,190,545	457,222
North GDA	*45,722*	*866,540*	*1,089,148*	*1,324,734*	*1,561,427*	*1,868,225*	*779,077*
10	10,001	882,971	1,234,203	1,434,593	1,622,882	1,857,305	623,102
11	23,893	555,782	689,612	845,057	1,002,462	1,207,398	517,786
19	6,151	227,897	294,916	389,847	491,324	627,364	332,448
South GDA	*40,045*	*1,666,650*	*2,218,731*	*2,669,497*	*3,116,668*	*3,692,067*	*1,473,336*
12	8,537	243,412	314,994	375,715	435,269	511,390	196,396
13	9,723	160,217	207,333	324,193	455,711	636,604	429,271
14	22,462	239,527	286,754	386,522	494,152	639,123	352,369
East GDA	*40,722*	*643,156*	*809,081*	*1,086,430*	*1,385,132*	*1,787,117*	*978,036*
16	15,291	209,747	271,429	375,014	487,877	640,663	369,234
17	13,258	377,294	488,247	607,997	731,081	892,666	404,419
18	13,050	375,217	485,560	599,657	716,067	868,269	382,709
West GDA	*41,599*	*962,258*	*1,245,236*	*1,582,668*	*1,935,025*	*2,401,598*	*1,156,362*

Source: DHUTS Study

Figure 11.2-5   Population Distribution for GDA and DMA, 2009 and 2025

11.2.4   Economic Projection

Bangladesh economy has been good situation since 2000 and the annual economic growth rate has reached at around 6% p.a. after 2004 (Figure 11.2-6). Although worldwide economic recession affected on Bangladesh economy in 2008, it is considered that the high economic growth would continue in the future.
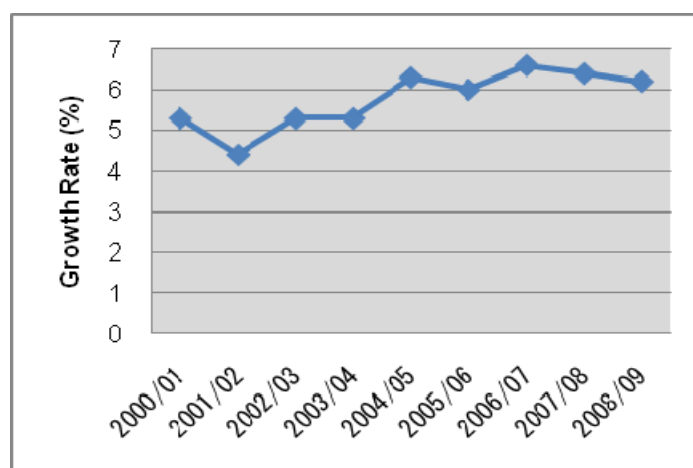
Figure 11.2-6   GDP Growth Rate, 2000-2008

The future GDP of the country has been projected by the Debt Sustainability Analysis (DSA) report prepared by World Bank[3]   According to this report, the annual growth rate of GDP is projected to be 7 % from 2013 to 2025. However, this growth rate might be slightly high taking into account the past trend. In this study, therefore, the following three (3) economic growth scenarios were examined.

a)   Scenario 1; High growth scenario: Annual growth rate of GDP will be 7 % from 2013 to 2025.

b)   Scenario 2; Medium growth scenario: Annual growth rate of GDP will be 6 % from 2013 to 2025.

c)   Scenario 3; Low growth scenario: Annual growth rate of GDP will be 5 % from 2013 to 2025

Based on the future GDP figures, per capita GDP is projected as shown in Table 11.2-3. In this study, Scenario 2 medium growth scenario was selected. The per capita GDP is estimated to be double increasing from US$591 in 2009 to US$1,204 in 2025.

Table 11.2-3   Future GDP and Per Capita GDP in Bangladesh, 2009 – 2025

		2009	2015	2020	2025	AAGR 2009-'25
High Growth Scenario	Real GDP[1]	87,883	129,069	181,026	253,899	6.9
	Population[3]	149	162	172	183	1.3
	GDP/Capita	591	799	1,052	1,388	5.5
Medium Growth Scenario	Real GDP[2]	87,883	122,908	164,479	220,109	5.9
	Population[3]	149	162	172	183	1.3
	GDP/Capita	591	761	955	1,204	4.5
Low Growth Scenario	Real GDP[2]	87,883	117,772	150,310	191,838	5.0
	Population[3]	149	162	172	183	1.3
	GDP/Capita	591	729	873	1,049	3.7

Sources: 1) Joint Fund – World Bank Debt Sustainability   Notes;   1) GDP: USD million as of 2009 prices
*   Analysis (DSA), Sep, 2008   2) Population; Million*
*   2) JICA Study Team   3) USD as of 2009 prices*
*   3) Population census 2001, Volume 1 Analytical Report*

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[3] *World Bank Debt Sustainability Analysis (DSA), September 2008.*

11.2.5 Income Group

Figure 11.2-7 shows percentage share of income distribution of inhabitants in Dhaka, based on the analysis of home interview survey conducted by the study team in 2009. According to this figure, about 40% of the total population in Dhaka has monthly income below Taka20,000, another 40% has monthly income between Taka20,000-50,000 and 20% has monthly income over Taka50,000. The average monthly income is Taka35,860 in the inhabitants of Dhaka.
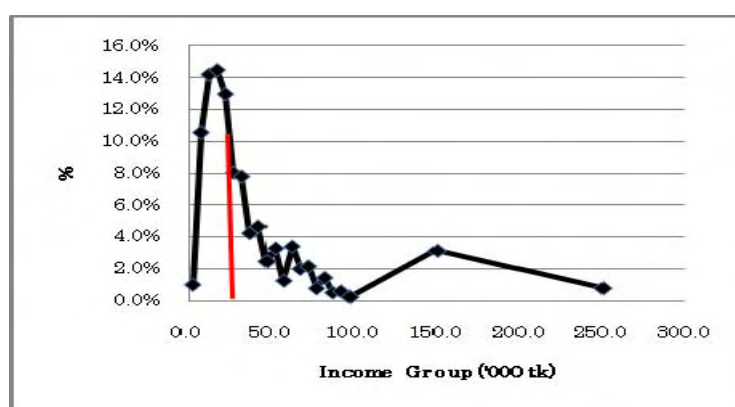

Figure 11.2-7   Income Distribution in Dhaka in 2009

Source: JICA Study Team

For estimation of future income distribution, the following assumptions are made in this study, i.e., each income group will increase its income equally in the future according to the economic growth. Based on this assumption, future percentage share of income group is estimated as shown in Table 11.2-4. The average monthly income is estimated to be BDT 73,071 in 2025 and percentage share of the inhabitants with monthly income over BDT 50,000 would increase from 19.6% to 48% in the inhabitants of Dhaka.

Table 11.2-4   Average Income by Income Group

Income (BDT)	2009		2015		2020		2025	
Range	% Share	Average	% Share	Average	% Share	Average	% Share	Average
0-20,000	40.2%	19,988	27.3%	13,332	18.1%	13,819	11.2%	14,181
20,000-50,000	40.2%	30,814	45.0%	31,945	45.0%	31,945	40.8%	34,771
50,000-	19.6%	84,610	27.8%	101,509	37.0%	111,237	48.0%	119,300
Total	100.0%	35,863	100.0%	46,176	100.0%	57,997	1.000	73,071

Source: JICA Study Team

11.3 Development Vision and Future Urban Structure for Dhaka

11.3.1 Dhaka in Regional and National Development Context

In this section, future role and function of Dhaka is examined in national and regional economic development context. Dhaka is located geographically in the center of the eastern sub-region of South Asia, including India (West Bengal, Meghalaya, Assam and Tripura provinces), Nepal, Bhutan and Myanmar. Among these countries and provinces, Nepal, Bhutan, and Meghalaya,

Assam and Tripura provinces in India are located in inland and there is no direct accessibility to the ocean. Thus, seaports in Bangladesh, such as Chittagong and Mongla as well as proposed deep sea port of Cox's Bazaar have a great potential to be international gateway in the sub-region.

In this respect, the World Bank made a recommendation on June 2009 to the Ministry of Communication, to carry out a feasibility study of Chittagong and Mongla ports as regional sea ports. Because these ports have an advantage to shorten the time and costs of land transport from the neighboring inland countries. The feasibility study was not completed during the period of this study. Also, the existing Chittagong and Mongla ports are located in river mouth and may not have enough depth for service of large ships. Therefore, development of deep sea port of Cox's Bazaar is important in the function of international gateway. Dhaka is located in the center of Bangladesh and has significant potential to become a land transportation hub connecting the neighboring inland countries and sea ports.

In addition, proposed Asian Highways are indispensable economic infrastructure to facilitate economic cooperation in the sub-region. On June 2009, UN-ESCAP proposed routes of Asian Highway. In Bangladesh, there are three routs: (1) Banapole – Jessore – Dhaka - Kanchpur – Sylhet - Tamabil, (2) Banglabandha – Hatikamrul – Dhaka - Kanchpur – Sylhet – Tamabil, and (3) Dhaka - Kanchpur – Chittagong – Coxs Bazar – Teknaf – Myanmar border. All these three Asian Highway routes are running through Dhaka (Figure 11.3-1). Further proposed Padma Bridge and Dhaka-Chittagong Highway will be developed in near future. Under such situation, the Government of Bangladesh announced national road development plan centering Dhaka, which aims to strengthen the economic development of the country and build Dhaka as the center of national and sub-regional economy.
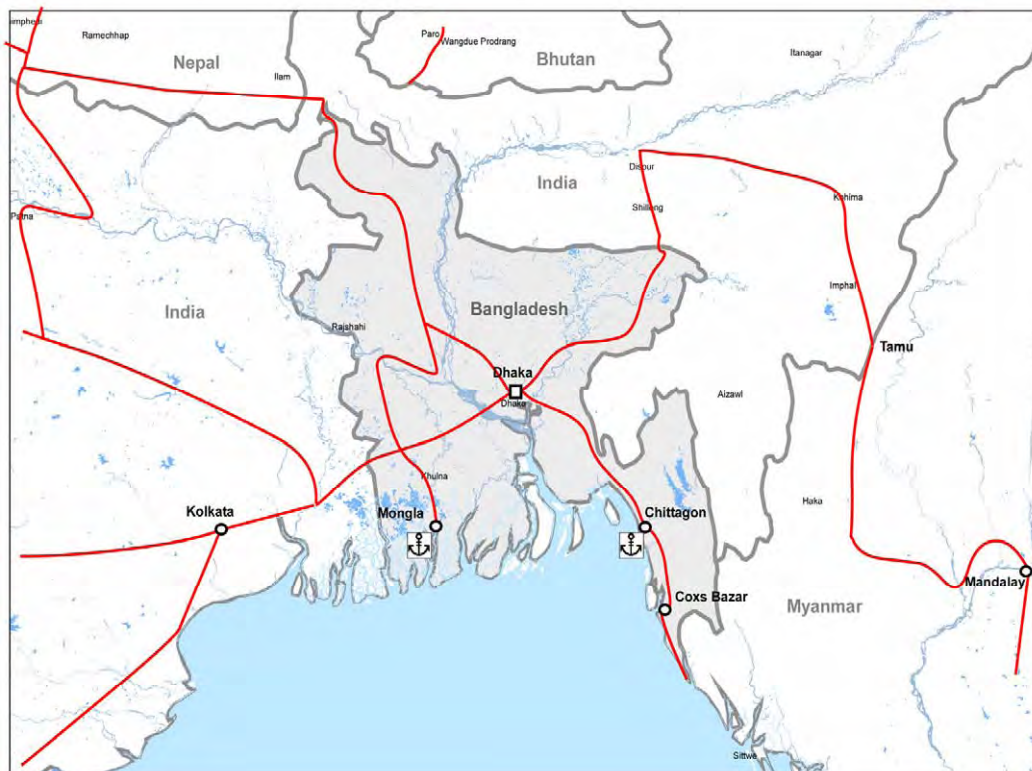
Figure 11.3-1   Proposed Routes of Asian Highway

Source: United Nations, 2004

11.3.2 Development Constraints and Potentials

The population of Greater Dhaka Area is estimated to increase from 14.5 million in 2009 to 25.4 million in 2025. This indicates that another roughly 10.9 million people will accommodate in the area for another decade or so. An important issue is where this huge population will be accommodated. It is already highly populated within DCC. If adequate land development policies are not prepared, disordered urban expansion, excessive population densification and illegal development would be accelerated, which cause chaotic congestions of road traffic and further deterioration of living environment.

The Structure Plan of DMDP designated potential hazardous areas including flood flow areas as unsuitable for future urbanization. It also identified high value of agricultural area to maintain natural resources. Such physical constraints for future urbanization are illustrated in Figure 11.3-2. The areas not suitable for future urbanization include low lying flood risk area along Dhaleswari River in the south, Turag River in the northwest, and Balu and Sitalakhya River in the east of the GDA. High value agriculture areas are located in the northern part of Savar Upazila, Rupganj and Sonargaon Upazilas.

RAJUK has proposed several large scale housing developments in the outskirts of Dhaka (Table 11.3-1). Purbachal new town is now under development, which is located in Kaliganj and Rupganj Upazilas, about 15 kilometers northeast from the city center. The total planned area is

about 2,460 ha and the estimated population is over 1.0 million[4] habitants. Uttara phase-3 housing project is an extension of Uttara Model town. It has the total planned area of 800 ha and about 500,000 habitants will accommodate in this new town. Another new town is proposed at Jheelmil with the total area of 720 ha, which is located in Keraniganj Upazila. Some other housing projects are proposed in Ruhitur, Savar, Gazipur and Dhamnona. All these housing development projects proposed by RAJUK, except Uttara-3, are located outside of DMA area. If we assumed that half of these housing projects are completed by 2025, nearly 1.5 million people will be accommodated in these newly development areas.

Table 11.3-1   Housing Developments Proposed by RAJUK

Name	Planned Area (ha)	Estimated Population		
		Assumption of Population Density (250person/acre or 625 person/ha)	2020 (Percentage of Development - 30%)	2025 (Percentage of Development - 50%)
Uttara-3	800	500,000	150,000	250,000
Purbachal	2,460	1,540,000	462,000	770,000
Jheelmil-1	160	100,000	30,000	50,000
Jheelmil-2	560	350,000	105,000	175,000
Ruhitpur, Savar, Gazipur, Dhamsona	800	500,000	150,000	250,000
TOTAL	4,780	2,990,000	897,000	1,495,000

Source: Based on the information prepared by RAJUK

In addition to the RAJUK development areas, there are many housing development projects proposed by private developers. Although each project has different stage, the total land area of private housing development amount to nearly 2,000 ha and the estimated population is about 1.2 million[5]. It should be noted that many private housing developments are proposed in the eastern fringe area.

In the future, some part of civic functions of DCC will be transferred to Sub-Center in suburb of Dhaka city. Therefore it is indispensable to promote industry in RAJUK Area. On the other hand, population engaged in commerce will be increased accordingly. These future population growth are considered for traffic demand forecast.

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[4] *RAJUK announces the planned population is about 1.0 million.*
[5] *This estimation is based on the assumption of population density of 250 persons/acre.*
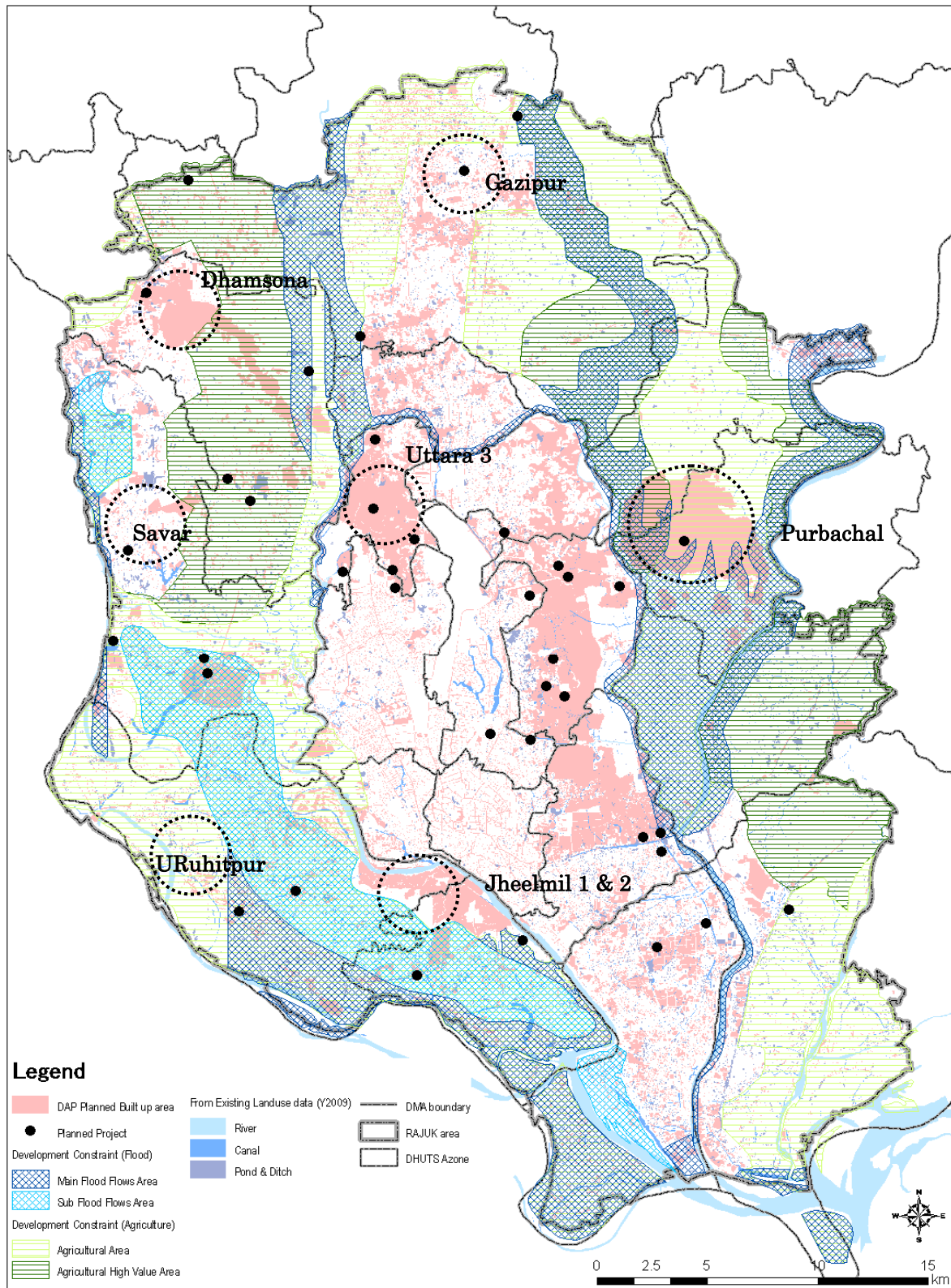
Figure 11.3-2   Constraints for Future Urban Development

Source: Prepared by the DHUTS, based on Structure Plan of DMDP, 1995.

11.3.3   Urban Development Vision and Scenario

Dhaka is capital city of Bangladesh with the functions of administrative, commercial, industrial, educational and cultural centers. It is often called Mega City[6], which indicates a large population agglomeration with more than 10 million. More significantly, Dhaka has extremely high density of population. Some areas in the old city area have a population density of more than 1,000 persons per hectare, which causes serious traffic congestion and deterioration of living environment.

According to the previous master plans like DMDP, it is proposed that Dhaka should be decentralized in population and employment opportunities from the inner city to the surrounding areas with satellite communities. Following the recommendations of the DMDP, the Government has developed satellite communities outside of DCC, such as Tongi, Gazipur, Savar and Narayanganj. More recently, Purbachal new town has been development by RAJUK. The DHUTS Study follows the concept of decentralization in population and work place from inner city to surrounding satellite communities. We call the concept of agglomeration of dominant city and surrounding urban/peri-urban/rural settlements as Urban Region, which is a system of cities with surrounding settlements[7].

Dhaka Urban Region consists of dominant city of DCC and surrounding satellite communities and rural settlements and they are economically integrated. Thus, future urban development in Dhaka will emanates from a dominant urban center and envelopes adjacent cities and settlements, such as Tongi, Gazipur, Savar, Narayanganj and Purbachal. These cities and settlements will constitute a multi-core mega urban region centering DCC.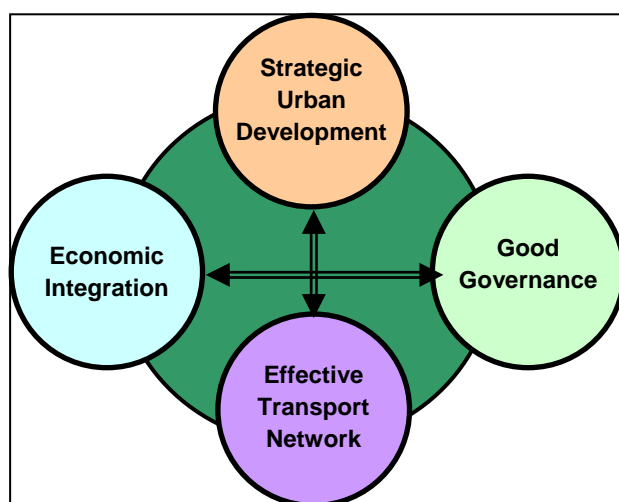 There are at least four key issues in the development of multi-core urban region. They are: (1) strategic urban development of satellite communities, (2) effective transport network to connect existing urban cores with surrounding growth poles, (3) economic integration between dominant urban center and surrounding urban/peri-urban/rural settlement, (4) good governance to manage the urban region in effective and efficient manners (Figure 11.3-3).

Figure 11.3-3   Key Issues to establish

Multi-Core Mega Urban Region

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[6] *The United Nations defines agglomeration of population with 10 million or more as Mega City.*
[7] *Regarding the concept of urban region, see Aprodicio A Laquian, Beyond Metropolis: The Planning and Governance of Asias Mega-Urban Regions, Woodrow Wilson Center Press, 2005; Allen J. Scott, Global City-Regions, Oxford University Press, 2001.*

The existing urban structure of Dhaka is the concentration of urban activities in the central area and along few arterial roads toward the north. It causes excessive congestion of road traffic in and around the central area. Due to the limitation of available land within DCC area, urban growth will expand towards the peripheral areas without effective control measures. If densification of population in existing city center and haphazard development in peripheral areas continue, serious urban and environmental problems would be accelerated. This is the worst scenario of the future urban structure in Dhaka.

The development of multi-core urban region needs to encourage decentralization of over concentration of urban activities and population from the central area to the satellite communities. A large number of employment opportunities and new residential areas for medium and low income people should be developed in the satellite communities. In order to introduce private investment into the satellite communities, new transport system connecting between the central area and satellite centers will be necessary to alleviate traffic congestion. The development of new satellite communities, however, takes a long time, and large amount of investment is essential. Furthermore, strong institutional measures must be established by the government initiative to attract private investment in the satellite communities.

The future urban structure making multi-core mega urban region in Greater Dhaka Area is illustrated in Figure 11.3-5. It is proposed that three development axes with mass transit corridors should be established: (1) Existing North-South Development Corridor, i.e., Tongi – Mirpur – City Center - Narayanganj, (2) East-West Development Corridor, i.e., Purbachal – Uttara – Savar, and (3) Eastern Fringe Development Corridor (Figure 11.3-4). Strategic urban development along these mass transit corridors should be encouraged. The mass transit includes Bus Rapid Transit (BRT) and rail oriented Mass Rapid Transit (MRT), which will become a trigger to change
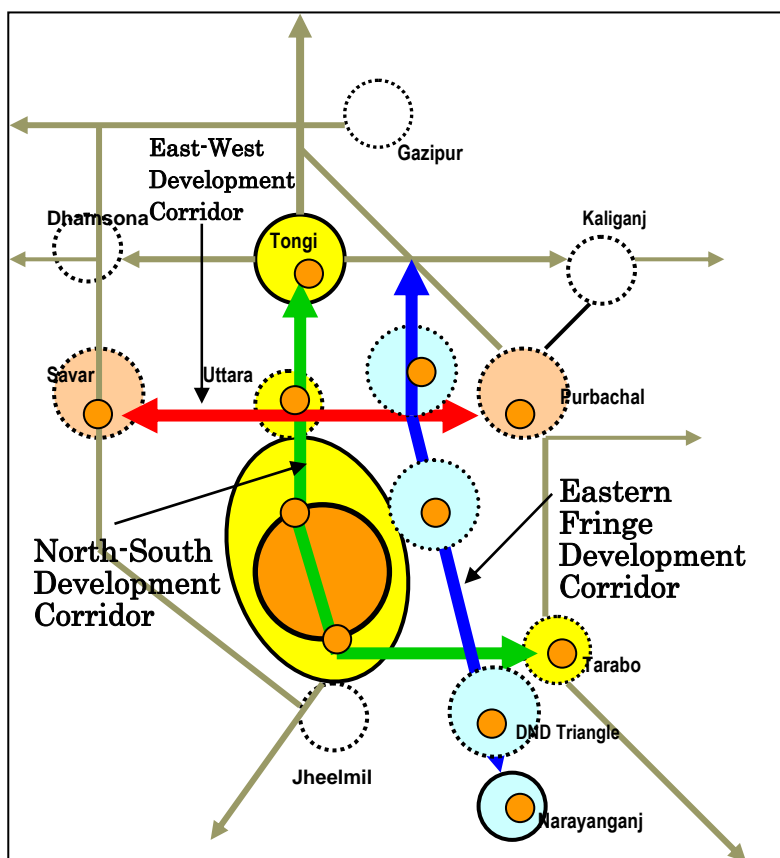

Figure 11.3-4   Concept of Corridor Development

the urban structure of Dhaka to multi core mega urban region. Mass transit development will provide a significant impact on urban activities.

The areas along the north-south development corridor are already urbanized and densely populated. In these areas, urban redevelopment at stations or transport nods should be encouraged. In the east-west development corridor and eastern fringe development corridor, it is encouraged densification and strategic urban development along the mass transit corridor to promote effective land use. Figure 11.3-6 shows the overall development scenario for Dhaka in a timeframe from 2009 to 2050.
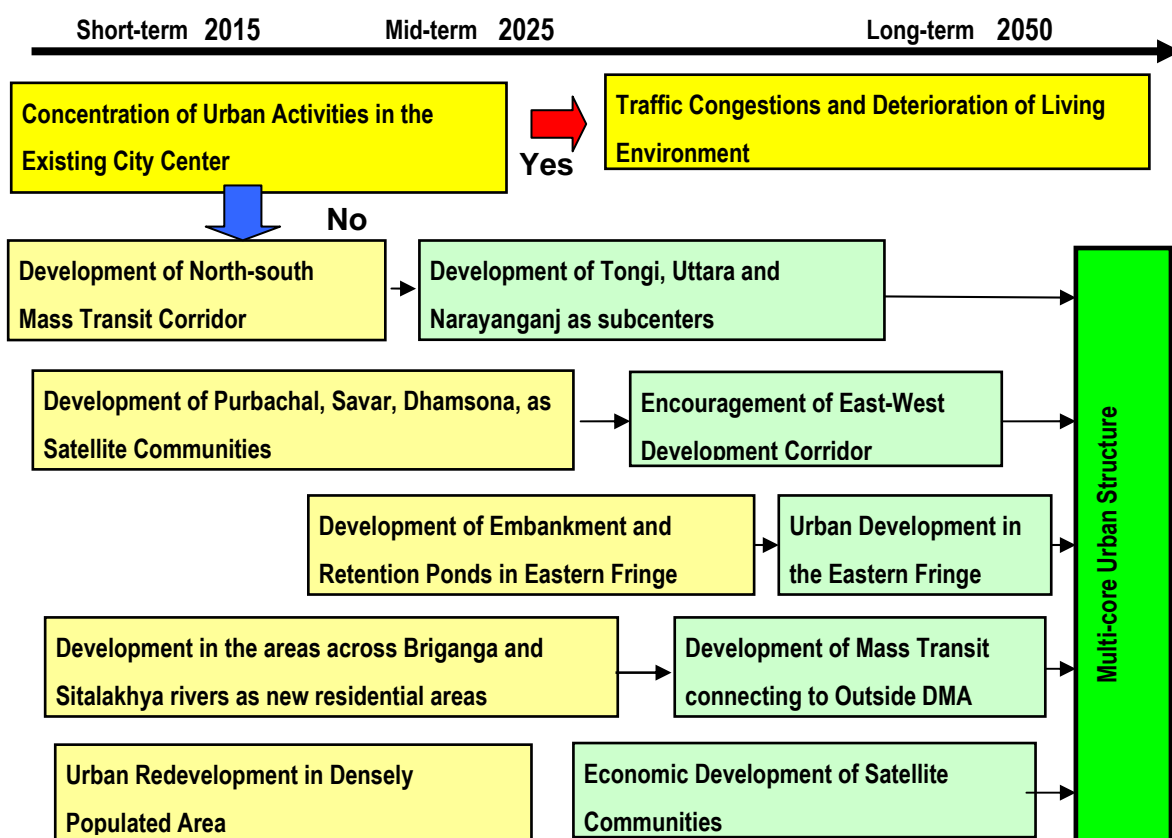

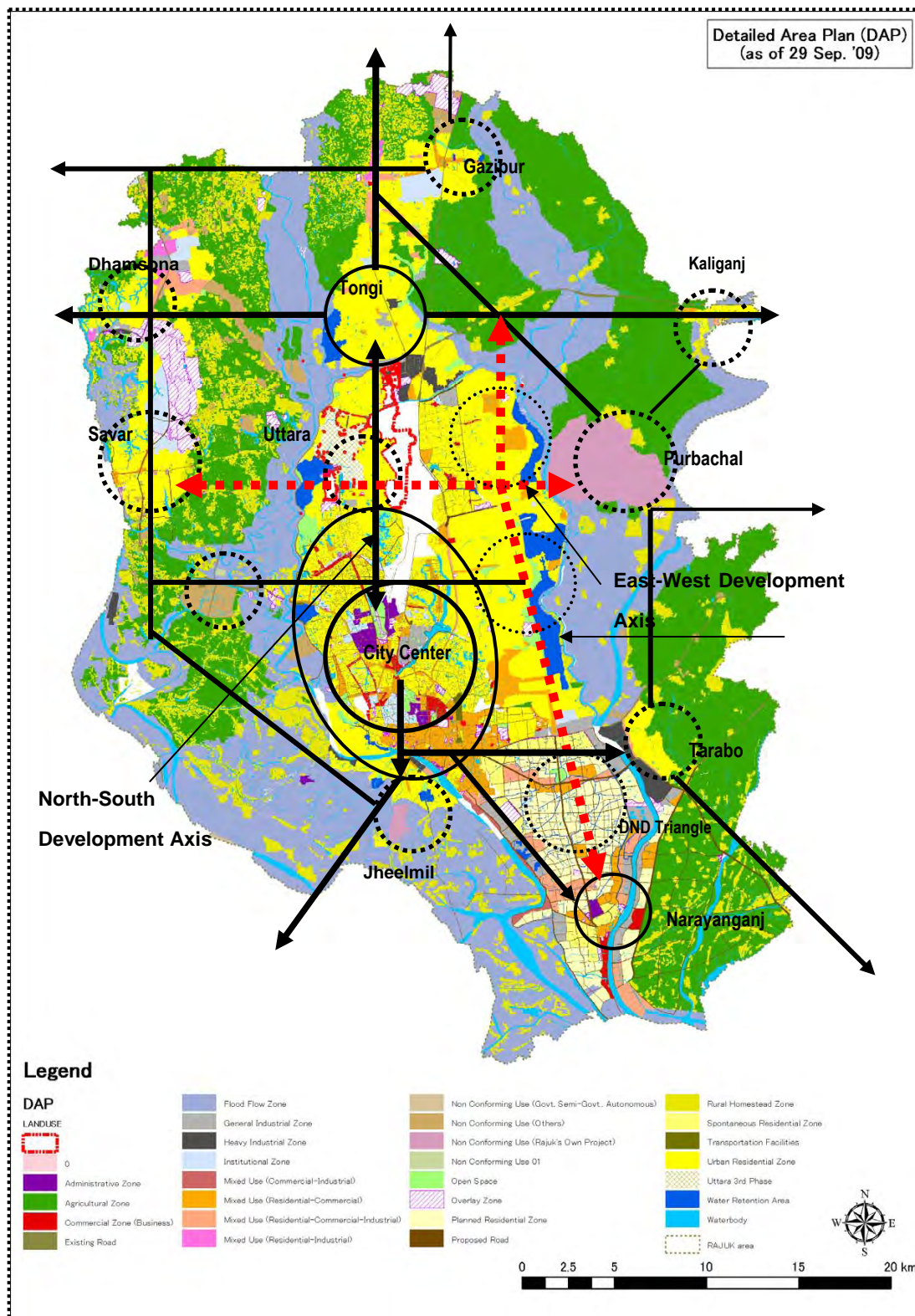**Figure 11.3-5   Urban Development Scenario for Dhaka toward 2050**

Figure 11.3-6   Proposed Future Urban Structure for Dhaka toward 2050