Coordinating Ministry
For Economic Affairs (CMEA)
The Republic of Indonesia

"JABODETABEK MPA STRATEGIC PLAN"

MASTER PLAN FOR ESTABLISHING METROPOLITAN PRIORITY AREA FOR INVESTMENT AND INDUSTRY IN JABODETABEK AREA IN THE REPUBLIC OF INDONESIA

FINAL REPORT

NOVEMBER 2012

Japan International Cooperation Agency (JICA)

MPA Master Plan Study Team

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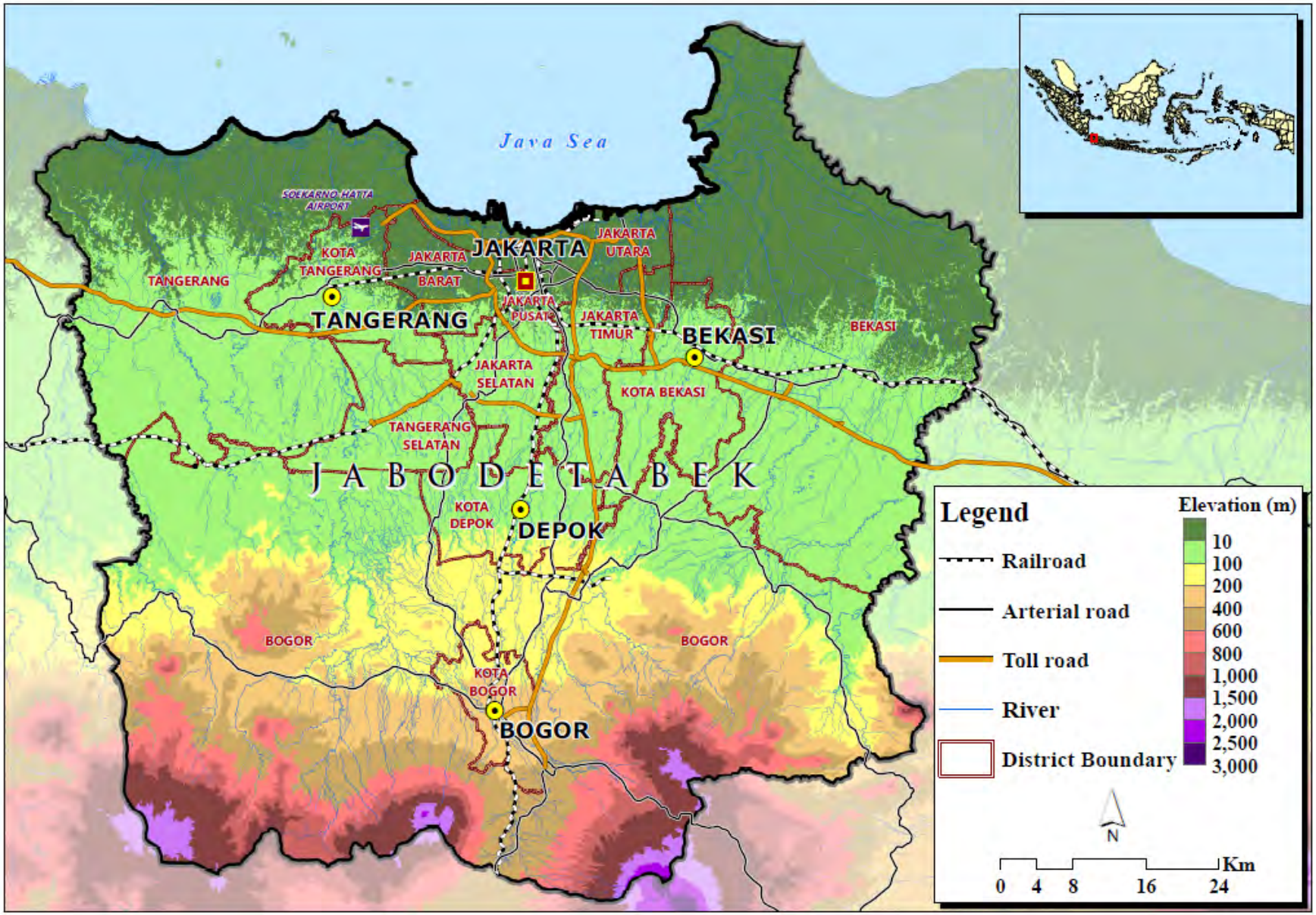
CURRENCY EQUIVALENTS (AS OF SEMPTEMBER 2012)

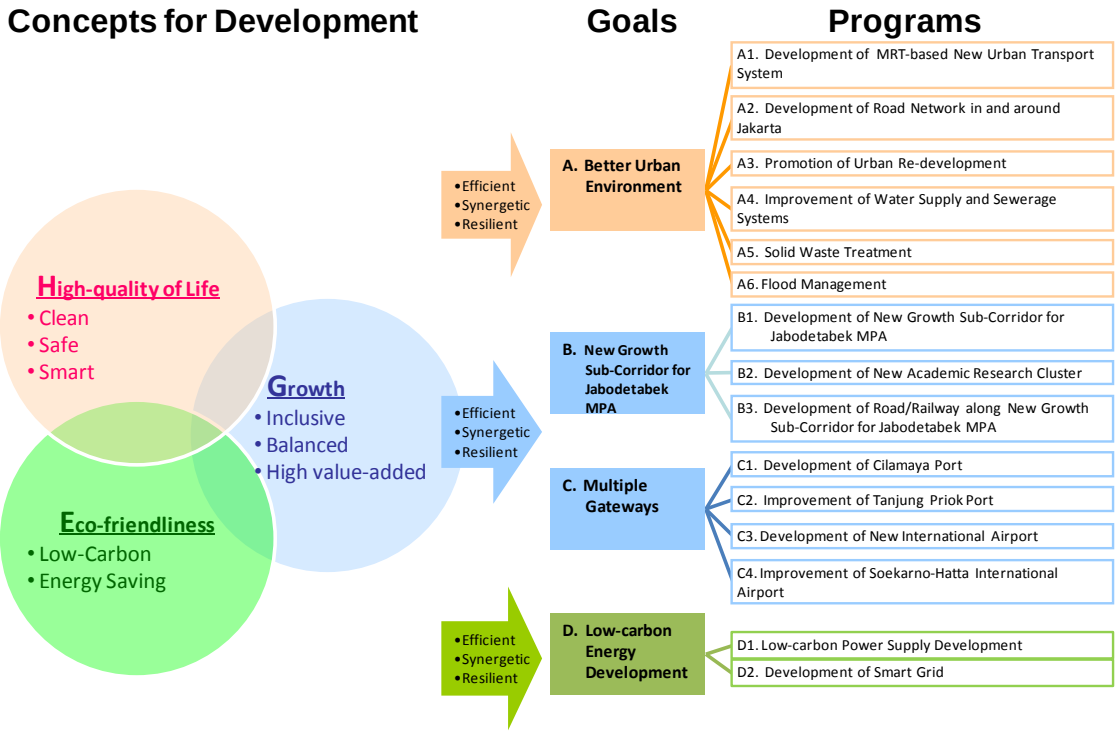
1 USD= 9,285 Indonesia Rupiah (TTB) = 76.6 Japanese Yen (TTB)

INDONESIAN FINANCIAL YEAR

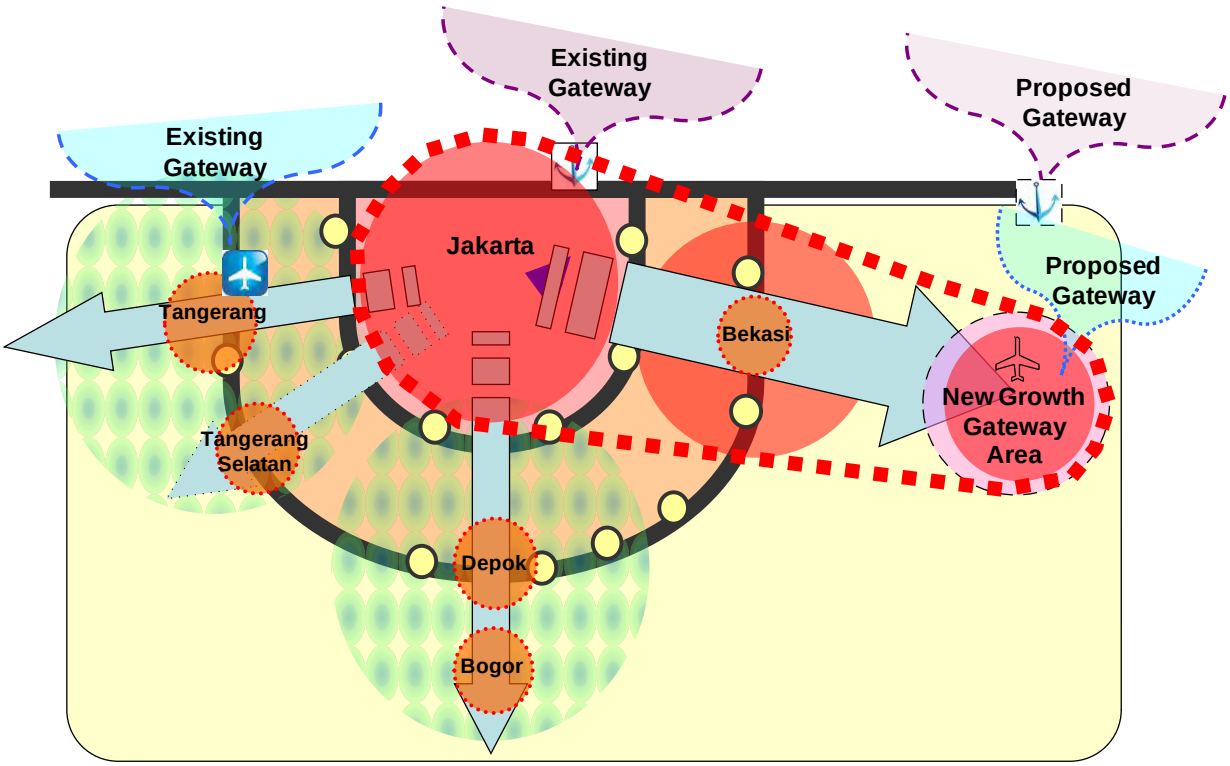
January 1 to December 31



LOCATION MAP (As of October 2012)



VISION 2030 FOR JABODETABEK MPA



CONCEPT OF GREATER JAKARTA MPA

EXECUTIVE SUMMARY

1. BACKGROUND

1.1 The objective of establishing a metropolitan priority area (MPA) is to transform its area to be more attractive and suitable for direct investment and industrial development by accelerating infrastructure development and creating a top-level investment climate in the ASEAN region. However, both the infrastructure development and business environment did not catch up with the rapid economic growth in Indonesia. This has turned out to be a hindrance for further development of the area.

1.2 Among the MPAs in Indonesia, the MPA in JABODETABEK, which consists of the cities of *J*akarta, *B*ogor, *D*epok, *T*angerang and *B*ekasi, is leading the economic growth of the entire country, while low quality and lack of infrastructure are becoming serious issues. In addition, the following have been reported as issues to be resolved mostly by the private sector in Indonesia: i. unsecured public safety and social conditions, ii. undeveloped infrastructure, iii. the opacity of law applications, and iv. insufficient staff resources.

1.3 For the improvement of infrastructure and investment environment in JABODETABEK, the Government of Indonesia (GOI) and funding agencies, such as the Japan International Cooperation Agency (JICA), proposed various infrastructure development plans and projects for various sectors.

1.4 However, there are issues to be resolved before the projects are realized. It was reported that the main issues are as follows: i. aims by sector vary every year, ii. the review and discussions mainly remained inside a sector with lack of comprehensive viewpoints, iii. stakeholders were not adjusted for the commercialization of projects, and iv. there are difficulties for ensuring funds and budget in the stage of commercialization. Furthermore, the most suitable business environment could not be achieved considering the lifespan of the business.

1.5 With this situation, the Memorandum of Cooperation (MOC) for Establishing MPAs for Investment and Industry was signed on December 10, 2010 between the Coordinating Ministry for Economic Affairs, the Ministry of Foreign Affairs and the Ministry of National Development Planning Agency of the Government of the Republic of Indonesia, and the Ministry of Foreign Affairs, the Ministry of Economy, Trade and Industry and the Ministry of Land, Infrastructure, Transport and Tourism of the Government of Japan (GOJ) .

1.6 Under the situation, the Study on Master Plan for Establishing Metropolitan Priority Area for Investment and Industry in JABODETABEK AREA (the Study) was conducted. Among the MPAs in Indonesia, JABODETABEK was adopted as the study area to create a new metropolis with attractive investment environment suitable for industrial development, which will be beneficial to its people and the environment.

2. THE STUDY

2.1 The objective of the Study is to formulate a master plan for establishing an MPA in the area of JABODETABEK by setting guidelines for key issues which include the following:

- Future vision and concept of the MPA;
- Concrete image and infrastructure development plan for the MPA (including identification of priority projects, quality standards, implementation schedule, and financing scheme); and
- Framework for private sector participation, with due considerations to the basic principles of the MPA, and investment climate, in order to achieve the objectives of MPAs

2.2 The Study mainly covers the JABODETABEK area. However, the Study may include the surrounding areas depending on the necessity of establishing an optimal JABODETABEK MPA as shown in frontispiece.

2.3 The Study covers the physical infrastructure development in terms of improvement of the investment climate in the MPA. The physical infrastructure is categorized into the following nine sectors: i. Ports, ii. Industrial Areas, iii. Mass Transportation Networks, iv. Road Networks, v. Airports, vi. Water Supply and Sewage System, vii. Waste Management System, viii. Flood Management System, and ix. Electric Power Infrastructure.

2.4 In accordance with the schedule set out in the MOC, the Study was carried out over 15 months from May 2011 to August 2012.

3. COORDINATION AMONG STAKEHOLDERS

3.1 To have close cooperation between the stakeholders of Indonesia and Japan in implementing the projects, the Study Team has supported the secretariats of the MPA Steering Committee, MPA Technical Committee, and the High-Level Consultation for Investment Promotion in successfully holding regular meetings. Furthermore, closer relationships have been established through frequent meetings at the working level.

3.2 The MPA committee held three Steering Committee meetings and six Technical Committee meetings as of October 2012, as follows:

Chronology of MPA Master Plan (1/2)

Date	MPA Committee	Contents of Discussion
March 17, 2011	1st Steering Committee	• The committee concluded that the establishment of JABODETABEK MPA is crucial for the acceleration and expansion of Indonesia's economic development for the period from 2011 to 2025, which is currently being intensely discussed with the private sector and regional governments.
June 11, 2011	1st Technical Committee	• The Committee meeting was jointly chaired by Mr. Luky Eko Wuryanto (Deputy for Infrastructure and Regional Development of the Coordinating Ministry of Economic Affairs of the GOI), and Mr. Toru Maeda (Minister of the Embassy of Japan to Indonesia) on the subject of the Inception Report for the Study. • The meeting was attended by the officials from the Ministries as well as the Steering Committee members from related ministries, provincial governments and others. • The Technical Committee approved the draft Inception Report with additional viewpoints to be considered in the course of the upcoming study.
July 11, 2011	2nd Technical Committee	• The MPA Development Vision 2030 (refer to Chapter 5), which is organized into (1) three concepts of development, (2) four goals and (3) 15 programs, were basically agreed by the members of technical committee.
September 12, 2011	3rd Technical Committee	• The potential priority projects and the monitoring results of potential fast-track projects were discussed. • The members of Technical Committee approved "the MPA Development Vision toward the year of 2030", "the list of Potential Priority Projects" (refer to Chapter 8), and "the Progress Report of the Fast Track Projects as of September 2011".
September 22, 2011	2nd Steering Committee	• The Committee was co-chaired by H.E. Ir. M. Hatta Rajasa, Coordinating Minister for Economic Affairs of Indonesia, and H.E. Mr. Yukio Edano, Minister of Economy, Trade and Industry of Japan (METI). • The members of the Steering Committee confirmed and welcomed the work progress of "the MPA Development Vision" as a draft of the comprehensive master plan for the JABODETABEK MPA, and instructed the Technical Committee to complete the JABODETABEK MPA Master Plan by the end of the second quarter of 2012. • The members of the Steering Committee also expressed their general supports to "the list of Potential Priority Projects", while they mentioned the need for further discussions before they fully approve the list.
January 17, 2012	4th Technical Committee	• The Committee meeting was jointly chaired by Mr. Luky Eko Wuryanto and Mr. Shigeru Ushio (Minister of the Embassy of Japan to Indonesia). • The Master Plan was basically approved by the Technical Committee with the comments on the further elaboration for (1) the maximum capacity of Tanjung Priok international seaport and (2) the piped-water supply capacity taking into account the industrial development in 2020. • During the discussion, the member of Technical Committee paid the special attention to "the Progress Report of the First Track Projects as of January 2012" whether these projects should be included in the Bluebook.

Source: MPA Study Team

Chronology of MPA Master Plan (2/2)

Date	MPA Committee	Contents of Discussion
April 24, 2012	5th Technical Committee	• The Committee meeting was jointly chaired by Mr. Luky Eko Wuryanto and Mr. Shigeru Ushio (Minister of the Embassy of Japan to Indonesia). • The list of Potential Priority Project was basically approved by the Technical Committee with the comments on some revisions including the deletions of "Development of Urban Center for Administrative Functions", etc.
July 5, 2012	6th Technical Committee	• The Committee meeting was jointly chaired by Mr. Luky Eko Wuryanto (Deputy for Infrastructure and Regional Development of the Coordinating Ministry of Economic Affairs of the GOI) and Mr. Shigeru Ushio (Minister of the Embassy of Japan to Indonesia). • The progress report of the Fast Track Projects was confirmed by the Technical Committee through the discussions on "Development of Cilamaya Port", "Expansion of the Soekarano-Hatta International Airport", etc. • The list of Priority Projects was also confirmed by the Committee through the discussions on "Development of New International Airport", "Improvement and Expansion of Container Terminal at North Kalibaru" with inclusion of development of container terminal at Marunda • Tentative agenda and schedule of the 3rd Steering Committee meeting in Tokyo and follow up mechanism after this MPA Study were also agreed.
October 9, 2012	3rd Steering Committee	• The Committee was co-chaired by H.E. Mr. Koichiro Gemba, Minister for Foreign Affairs of Japan, and H.E. Ir. M. Hatta Rajasa, Coordinating Minister for Economic Affairs of Indonesia. • The co-chairs welcomed and endorsed the conclusion of MPA Master Plan, which identifies 45 Priority Projects aimed to be completed by 2020 including 18 Fast Track Projects to be commenced by the end of 2013 in accordance with MPA Development Vision. The co-chairs shared the view to identify 5 projects as MPA Flagship Projects, which are, Construction of Jakarta Mass Rapid Transit (MRT), Development of Cilamaya New International Port, Expansion and Improvement of Soekarno-Hatta International Airport, Development of New Academic Research Cluster, and Development of Sewerage System in DKI Jakarta among the MPA projects. • The co-chairs appreciated the progress made in the meetings of MPA High Level Consultation for Investment Promotion, which has discussed six issues: i) Enhancing Socialization of the New Regulation on Investment Area, ii) Promoting Dialogues between Japanese Investors and the Key Indonesian Agencies, iii) Improving the Import and Trade Procedures, iv) Improving Labor-related Practices and Regulations, v) Promoting Investment in the Energy Sector, vi) Promoting Incentive for Direct Investment in Indonesia. The co-chairs approved the Report of MPA High Level Consultation for Investment Promotion. Based on the Report, the co-chairs shared the view to continue the framework of MPA High Level Consultation for Investment Promotion. • With regard to a follow-up system, the co-chairs shared the view to continue the cooperative framework of MPA and to confirm the implementation progress of Master Plan by holding an MPA Steering Committee Meeting at least once a year, as well as an MPA Technical Committee Meeting at least once each half year.

Source: MPA Study Team

4. CURRENT SITUATION OF JABODETABEK MPA

4.1 About 22% of JABODETABEK MPA is located at an elevation below 10 m above sea level, while 73% is below 200 m above sea level. Around 7% of elevated areas of more than 1,000 m above sea level are situated at the southern part of the study area. The location of most major cities, including DKI Jakarta, within flat low-lying areas makes them vulnerable to flood, or in other words, flood-prone areas.

4.2 About 70% of land use within JABODETABEK MPA is dominated by agricultural lands. Rice fields are the main crop lands, which represent about 30%, and are located within Bekasi, Tangerang, and Bogor regencies. Forest lands represent 5.6% of the study area, which are located in the southern part of Bogor Regency. Settlements, which represent 24%, are located in the central part of the study area, mainly in DKI Jakarta, while industrial areas, representing only about 1% of land use, are centralized in Jakarta Timur, Jakarta, Utara and Jakarta Barat.

4.3 The total population of the JABODETABEK MPA area in 2010 was approximately 28 million, which makes it one of the largest urban agglomerations in the world. The population share of DKI Jakarta is the highest at about 34%, followed by the population share of MPA South, which comprises about 27% as of 2010. MPA South consists of Kota Depok, Kota Bogor, and Kabupaten Bogor.

4.4 The population growth rate between 2000 and 2010 is fairly high in MPA East and MPA West. MPA East comprises Kota Bekasi and Kabupaten Bekasi. MPA West comprises Kota Tangerang, Kota Tangerang Selatan, and Kabupaten. Tangerang. On the other hand, the population growth rate in DKI Jakarta remains at a relatively lower level compared with other areas.

4.5 The gross regional domestic product (GRDP) of JABODETABEK MPA amounts to IDR 804 trillion (in 2007), which is approximately USD 89 billion. Among this total production figure, 71% is attributed to production in DKI Jakarta, followed by 12% from MPA East, and 9% from MPA West. The high composition of economic production of DKI Jakarta despite a limited share of population implied that the production per capita in DKI Jakarta is significantly higher than the rest or the area.

4.6 The breakdown of GRDP by industrial activities of JABODETABEK MPA and its comprising cities/regencies showed that the production of both MPA East and MPA South are heavily dependent on the manufacturing sector. This also shows that activities of factories located in these regencies are contributing significantly to the regional economy. The characteristics of DKI Jakarta from its industrial structure is that the service sector, notably financial, properties, business support, and other services, strongly

contribute to the metropolis' economy.

4.7 The population of the middle class in Indonesia is estimated to increase from about 82 million people in 2009 to 204 million people in 2020. It is high compared with other Asian countries. Accordingly, with the decrease of the lower class, most of population constitutes the middle class in Indonesia.

4.8 JABODETABEK MPA lags behind in urban living infrastructure as seen from liveability indicators. The area is currently way below those in Singapore, Hong Kong and Tokyo. Among various urban infrastructures, public transport is one of JABODETABEK MPA's weak points. Commuters in the city are reported to be the least satisfied travellers among major cities in Asia. Another essential urban infrastructure is disaster prevention facilities against flood, earthquakes and other natural disasters. Such disaster prevention infrastructure in JABODETABEK MPA is seen to be insufficient, especially when compared with other Asian cities.

5. CURRENT CONDITION OF INFRASTRUCTURE

5.1 Mass Transportation Networks: The transportation mode in the JABODETABEK area highly depends on road traffic (98%), and the number of registered cars has been increasing (from 3.26 million in 2000 to 7.97 million in 2006, an approximate increase of 2.4 times). Hence, this raises concerns about further traffic congestion. Particularly, most of the motorcycle users used to be bus commuters, which has led to the decline of public transportation. Since most motorcycle users were commuting by bus before switching to their present transportation mode, the increase in motorcycle traffic has caused a decline in the use of public transportation systems.

5.2 Road Networks: Although the length of road infrastructure in JABODETABEK is about 13,720 km to serve its population of 9.6 million (2010) and area of 6,804 km2, 40% of roads are narrow, with less than 4 m width while 80% are with less than 6 m width. Regarding the index of road density (% of city area), DKI Jakarta only has 8.1%, which is an insufficient level of road asset among Southeast Asian countries. Despite insufficient road assets, the commuter trip demand to DKI Jakarta from JABODETABEK keeps growing. The increment of commuter traffic to DKI Jakarta has significantly grown by about ten times in 18 years (1985-2002). During the last eight years (2002-2010), it has been increasing by about 1.5 times. Even the population has increased by 1.1 times. The travel speed situation in the central area is quite severe. There are a lot of links with average speed of less than 20 km/h. Some sections are facing serious congestion problems with speed of less than 10 km/h.

5.3 Ports: The port capacity of international containers was estimated at about 4.9 million TEU by the berthing facilities and 4.0 million TEU by yard storage capacity to be saturated in 2015-2016. The capacity of the domestic container facilities is estimated at about 2.1 million TEU and is expected to be saturated in 2019-2020. Tanjung Priok Port needs additional terminal facilities especially for international containers

5.4 Airports: Both the number of passengers at Soekarno Hatta International Airport and the number of landing and departure of flights are increasing, and it is likely to continue increasing. The annual number of passengers has almost doubled of its designed capacity, and it is also likely to reach the limit of the number of landing and departure of flights in 2013. The supply has not caught up with demand.

5.5 Industrial Areas: Around JABODETABEK MPA and the Karawang area, there are 25 industrial estates including projects that are under construction. About 68% of these (17 places; about 84% in area) are located in the eastern area (Bekasi and Karawang). Recently, the selling rate exhibits the tendency to rapidly increase. More than one million people are working in the area, and products are transported to the port and airport through the Jakarta-Cikampek Highway. The area near DKI Jakarta is already sold out or the selling price is rising. Thus, the development trend has moved more to the east.

5.6 Water Supply: About 50% of the people in DKI Jakarta are served with water by PDAM, while in other areas; only 10%-20% of the people are served with water by PDAM. The people not served with water by PDAM rely on unsafe sources such as shallow wells or streams for the water.

5.7 Sewerage System: Only 2% of the population is using sewerage system (off-site treatment). Approximately 20% of the population is using ITP. All owners of buildings are obliged to equip with ITP by Governor's Decree No. 122/2005. There are approximately 6000 ITPs in DKI Jakarta. The BODs of effluent from sewerage treatment plants and ITPs are required to be less than 20 mg/l. Approximately 68% of the population is using septic tank and 10% of the population is discharging their wastewater directly to rivers.

5.8 Waste Management System: Due to population increase and the expansion of urban areas, there will be less opportunity to acquire new land for SWM facility, especially a large area required for sanitary landfill site. The yearly increase in land values makes it difficult for the city to acquire such site. The sites recently available for landfill are farther away from the city, especially in DKI Jakarta. The community has a negative impression on SWM facilities, especially on landfill sites, since there have been many bad experiences on waste management. This situation will decrease the possibility for new land

acquisition.

5.9 Flood Management System: Flood inundation damages are frequently experienced in DKI Jakarta especially in the months of January and February, and seriously hamper economic activities during the rainy season. The major floods have occurred in 1996, 2002, and 2007 in the last 15 years. The flood inundation areas expanded from 2002 to 2007. The flood that occurred in 2007, inundated about 70% of the land area in DKI Jakarta and 79 people passed away.

5.10 Electric Power Infrastructure: Although the economic depression in 2009 decreased electric power consumption, the peak power demand and consumption recovered in 2010 and are expected to grow at rate in proportion to GDP of Indonesia. A big blackout happened in the DKI Jakarta area in October 2009; PLN had enhanced 500/150 kV substations by November 2011.

6. VISION TOWARD YEAR 2030

6.1 The SWOT analysis on the JABODETABEK MPA is as following. Favourable and unfavourable conditions for JABODETABEK MPA were scrutinized as Strengths and Weaknesses. Favourable and unfavourable conditions outside JABODETABEK MPA, i.e., in surrounding areas such as the whole of Indonesia or Southeast Asia and beyond, were summarized as Opportunities and Threats.

Result of SWOT Analysis

Strengths	Weaknesses
• Importance as to the political and economic capital city of Indonesia • Largest urban center of Indonesia with a population of 28 million • JABODETABEK is a composite of multiple cities/urban centers with characters separated by greenery	• Pertinent traffic jam particularly around Tanjung Priok Port and Central Jakarta • Over-populated at existing urban areas • Shortage of electric power and water supply (in the future) • Water pollution (including saltwater intrusion) and solid waste generation • Vulnerable to disasters (occasional flooding, etc.)
Opportunities	**Threats**
• Large population, strong economy, and abundant natural resources • Huge potential market of ASEAN and beyond (including Japan)	• Low competitiveness of Indonesia for FDI • Insufficient infrastructure • Weak technology and innovation • Acceleration of investment to neighbouring countries, such as Vietnam and India • Risk of global warming

Source: MPA Study Team

6.2 The SWOT analysis for JABODETABEK MPA revealed various issues which require action. The SWOT analysis generated the following four issues to be addressed:

- (Need 1) Switch to multi-core urban structure:

  Enhancing the sub-centers is considered to be an urgent need for Jakarta Metropolis, so that the satellite cities of Jakarta Metropolis should be enlarged and more activated.

- (Need 2) Resilient capital with multiple gateways:

  As the capital city of Indonesia, Jakarta Metropolis needs to be resilient against flooding and other possible natural disasters. Even in the event of such disaster, the capital function has to be maintained without interruption.

- (Need 3) Promote high-tech and high-value industry:

  The third need found in the SWOT analysis is to promote the location of innovative industry in JABODETABEK and to facilitate human resources development necessary for such innovation. The keys for this issue include innovation and higher level of technology.

- (Need 4) Need to adapt to a low-carbon society:

  The risk of global warming is conceived widely throughout the world. As Indonesia is an island nation, the possible effects of global warming may be serious in the future. Thus there is a need to shift to a low-carbon society.

6.3 Based on the above needs, the development concept of JABODETABEK MPA in 2030 is proposed. The development concept has the following three pillars:

- Growth:

  Jakarta Metropolis needs to keep growth as the engine of the entire republic. The growth must be inclusive and balanced, in the sense that all segments of people and all regions of the area will take an active part in the growth.

- High Quality of Life:

  The primary aspect of the high quality of life rests in the cleanliness of the environment so that the life in Jakarta Metropolis is comfortable. Also, the safety of life is crucial for the people of Jakarta Metropolis – safety against natural disasters. In addition, *smart* meaning intelligent in terms of systems and information technology, will be a key word for the future.

- Eco-friendliness:

  Since global warming is considered a risk for the world community, the island-nation of Indonesia shares the concern for the future and eco-friendliness becomes a pillar in its vision. The path towards a low carbon and energy-saving society will be pursued for sustainable future of the Jakarta Metropolis.

6.4 The three development concepts, i.e. i. growth, ii. high quality of life, and iii. eco-friendliness, are translated into four goals to be achieved, namely: a) better urban environment, b) new growth sub-corridor for JABODETABEK MPA, c) multiple gateways, and d) low-carbon energy development.

- Better Urban Environment:

  Better urban environment is the living environment for all citizens of JABODETABEK MPA, embracing more comfortable, cleaner, safer, and smarter urban spaces.

- New Growth Sub-Corridor for JABODETABEK MPA:

  New growth sub-corridor is one of the newly shaped belt-like areas to encourage economic growth and to realize multi-core urban structure. The sub-corridor for JABODETABEK MPA is closely linked with the development of *multiple gateways* such as a new airport and a new seaport.

- Multiple Gateways:

  Gateways are places such as airports and seaports that people and commodities can go through in order to reach other areas of the republic and other countries. Opening new gateways in addition to the existing gateways, which aimed at realizing more smooth transport and logistic flow and more resilient capital functions of JABODETABEK MPA, is expected to support growth.

- Low-carbon Energy Development:

  Low-carbon energy development is a development which realizes reduction of carbon dioxide emission by saving energy consumption. The development contributes in creating an eco-friendly society, in which the risk of global warming is minimized.

6.5 Considering densification and overconcentration in DKI Jakarta, there could be essentially two possible options for the future urban structure of JABODETABEK. One is the mono-centric structure with the central city growing towards its fringes. Another option is a multi-core system, which commands a central city and smaller sub-centers in

its suburbs. Considering the size of the JABODETABEK urban areas and chronic traffic causing economic losses, the direction of a mono-centric urban structure is difficult to determine. A multi-core structure is to be adopted as the future spatial structure for JABODETABEK MPA.

6.6 Enhancing the current spatial feature for each JABODETABEK city, conforming to the MPA objectives and vision, and preserving green open spaces are also significant in formulating the spatial structure. Since promoting investment and industry is one of the objectives of the MPA master plan, encouraging developments in and around Bekasi, and creating a new growth pole of the MPA in a new township near Bekasi are emphasized in the future spatial structure. These relate to the existing industrial concentration in the area together with ongoing discussions about the new airport and seaport as new gateway functions for the metropolis.

7. STRATEGIES FOR THE MASTER PLAN TOWARD THE YEAR 2020

7.1 The master plan for establishing JABODETABEK MPA (MPA master plan) is in line with MP3EI as well as other existing superior plans in Indonesia. The preparation of the MPA master plan is aimed at following the orientation of MP3EI, which is positioned to encourage the realization of the long- and medium-term national development plans. The objectives of the MPA master plan include realization of the ideas in the plans by providing support to the development of government work plans and draft budgetary schemes, at the national, provincial and regional levels. Furthermore, the MPA master plan is also found to be consistent with the spatial planning system (RTRW). Latest versions of the national, provincial and regional spatial plans were taken into account in the MPA master plan.

7.2 The population density of Jakarta is comparable to other metropolis in Asia, such as Manila, Seoul, and Tokyo, but the modal share of trains in Jakarta is much lower than that of Seoul and Tokyo, etc. This imbalance between the high population density and low modal share of railroad in Jakarta manifests that transport development has not caught up with urbanization. In general, uncontrolled urbanization results to degradation in infrastructure services. To avoid this, infrastructure facilities that will respond to the needs of urbanization should be urgently developed.

7.3 The necessity of infrastructure is also supported from the view point of attracting FDI. Indonesia is merely one of the various investment destinations for foreign investors, so Indonesia needs to be more attractive for investors than other countries to catch more FDI. Since Indonesia is a member of ASEAN, it will compete with other Asian countries over attracting FDI. The situation of infrastructure development is an important indicator of

competitiveness in attracting FDI.

7.4 The levels of urban infrastructure for all sectors in JABODETABEK MPA need to be upgraded. The delay in infrastructure development is obvious, and the shortage of investments for infrastructure development will cause a bottleneck concern for further economic growth.

7.5 The need for Japanese companies that have factories located at industrial estates in Asian countries are reviewed. There are four target industrial sectors: i. automobile industry, ii. electric and electronic industry, iii. chemical industry, and iv. machine industry. The importance of road is higher than that of any other infrastructure.

7.6 Needs to improve the infrastructure have been raised by the National Road Transport Operators Association (ORGANDA) and Indonesia Chamber of Commerce Industries (KADIN). ORGANDA has pointed out that the major problems in infrastructure in Jakarta are traffic jam between industrial areas and Tanjung Priok Port, and large-scale flooding in Jakarta. KADIN has seen that the major problem is the frequent planned electric power outage. As such, major needs in infrastructure by Indonesian industrial communities could be the mitigation of traffic jam, reduction of flood risks, and stable supply of electric power.

7.7 The proposal pointed out that improvement of essential infrastructure in particular for logistics and distributions of goods such as ports, roads, railways, toll roads in Java, public transportation system especially in Jakarta (including Mass Rapid Transportation system) should be enforced in the early stages.

7.8 Infrastructure needs for urban transport, including road and seaport, and for electric power in the industrial sector, are fairly high as described in the previous sections. Although such needs are to be addressed, all development partners have to meet the needs by promoting infrastructure development which can bring about efficiency, synergy, and resiliency as illustrated in MPA Vision 2030. Efficiency, synergy, and resilience are enhanced through coordination among sectors in line with the positioning of each infrastructure sector in the vision, rather than implementing the development of each sector independently.

8. MPA MASTER PLAN BY SECTOR

8.1 To formulate the MPA master plan, the Study Team set the preconditions as planning framework for formulating master plans by sector. The preconditions include population growth, demand of land area, person-trip demand, and cargo demand in 2020 as the target year.

8.2 Based on the framework and the identified development issues, the target effect indicators are formulated.

Target Effect Indicators

SECTOR	TARGET EFFECT INDICATOR (Narrative)	TARGET EFFECT INDICATOR (Quantitative)		DESCRIPTION
		2010 (Base)	2020 (Target)	
Urban Transport				
Mass Transportation Networks	Increase passenger movement by Railway/Bus	**27 %**	**45 %**	Share of railway/bus in urbanized area is expanded from 27% (2010) to 45% (2020).
Road Networks	Average vehicle speed during the morning peak hour	**7 km/hour**	**15 km/hour**	Average vehicle travel speed will be doubled from 7 km/h (2010) to 15 km/h (2020).
Ports	International /domestic container cargo capacity	**7.2 million TEU**	**11.6 million TEU**	Unload 35% of the container handling volume from DKI Jakarta (Tanjung Priok Port) to new Cilamaya Port.
Airports	Annual passenger capacity	**22 million passengers**	**90 million passengers**	Actual annual passengers have already reached 42 million at SHIA in 2010.
Urban Environment				
Urban Development	Accelerate multi-core urban development	-	**4 million people in new urban areas at suburban areas**	Reduce 3% of population density of DKI Jakarta, and increase by 5% in suburban area
Industrial Areas	Expedite new industrial estates development	-	**6,800 ha at suburban areas**	High-value-added industries are introduced to suburban areas.
Water Supply	Improve piped water service coverage (DKI Jakarta)	**54 %**	**77%**	Piped-water supply will be improved from 40.8 m^3/s (2010) to 68.3 m^3/s (2020).
Sewerage System	Improve sewerage coverage ratio	**2%**	**20%**	Population using sewerage system will be expanded from 0.1 million (2010) to 2 million (2020) people.
Waste Management System	Treated/disposed volume	**4,500 tons/day**	**9,000 tons/day**	Treated/disposed rate will be enhanced from 40% (2010) to 60% (2020).
Flood Management System	Capacity of discharging flood water to the sea	**pumping capacity of 60 m3/s**	**pumping capacity of 126 m3/s**	Reduce the risk of flooding in line with the Master Plan by PU/DKI Jakarta. Polder and retention pond are provided to secure pumping capacity.
Electric Power Infrastructure	Secure reserve margin for peak demand	**More than 30%**	**More than 30%**	Secure 30% of reserve margin (Peak Demand/ System Capacity) in Java-Bali System.

Source: MPA Study Team; refers to sections 7.2 and 7.3.

8.3 Mass Transportation Networks: Chronic traffic congestion is the key issue for public transportation. The target effect indicator for the sector is to increase passenger by railway/bus. Share of railway/bus in urbanized area will be expanded from 27% in 2010 to 45% in 2020 through development of new MRT-based urban transport systems, development of railway along the new growth sub-corridor, and railway access to Soekarno-Hatta International Airport.

8.4 Road Networks: Chronic traffic congestion is also a key issue for the road sector. The causes of the traffic congestion are the surge in the number of cars and motorcycles as well as insufficient road network. The target effect indicator for the sector is the average vehicle speed during the morning peak hour. Average vehicle travel speed will be doubled from 7 km/hour in 2010 to 15 km/hour in 2020 through the development of road network in and around Jakarta, traffic flow improvement and transportation demand management, development of access road to the seaport and airport, etc.

8.5 Ports: As the economy grows in the Jakarta Metropolitan Area, the container volume handled at Tanjung Priok Port has been increasing. It is forecasted that the international container cargo for Jakarta Metropolitan Area will surpass the capacity of existing Tanjung Priok Port by 2014. The target effect indicator for the seaport sector is the international and domestic container cargo capacity. The capacity will be increased from 7.2 million TEUs in 2010 to 11.6 million TEUs in 2020 through improvement and expansion of the existing facilities in Tanjung Priok Port and the development of a new international port.

8.6 Airports: Soekarno-Hatta International Airport cannot accommodate air passenger demand, the gap between demand and supply will constantly increase as economy grows. It is expected to have capacity of 90 million passengers per year considering the demand, through expansion of the facilities at the existing airport and development of new airport.

8.7 Urban Development: Densification at DKI Jakarta has progressed rapidly. Continuation of the densification in the future leads to more serious urban problems such as traffic congestion, environmental pollution, etc. To avoid this situation and attract investment and industry, urban development in suburban areas needs to be more encouraged. The target effect indicator for the urban development sector is the acceleration of multi-core urban development. In 2020, four million people will be living in new urban of suburban areas, mainly through new township development.

8.6 Industrial Areas: To keep economic growth, more employment opportunities should be created. In this sense, promoting industry is very important in the study of MPA master plan. The target effect indicator for the industrial estate sector is to expedite development

of new industrial estates. New industrial estates, attracting high value-added industries, are to be developed by taking the advantages of the agglomeration of the existing industrial estates and future developments such as new airport and new seaport.

8.8 Water Supply: To sustain people's lives and economic activities, access to safe water is vital. As economy and population grows in JABODETABEK, meeting the increased water demand is getting difficult. The target effect indication for water supply is to improve piped-water service coverage (DKI Jakarta). The service coverage ratio will be increased from 54% in 2010 to 77% in 2020 mainly through the Jatiluhur Project.

8.9 Sewerage System: Sewerage coverage ratio in 2010 was only 2% in Jakarta. Most of the waste- water in the city is not treated. Since the population and economy in the area is expected to grow, water contamination in rivers can deteriorate without proper measures. The target effect indicator for the sewerage sector is to improve sewerage coverage ratio. The ratio will be raised to 20% in 2020 mainly through development of a sewerage system in DKI Jakarta.

8.10 Waste Management System: As population grows, the amount of waste generation is expected to increase. The collection rate of solid waste in DKI Jakarta is nearly 80%, but the rates of other *kota*s are less than 50% and the rate at *kabupaten*s is less than 20%. It is indispensable to keep a clean environment through improvement of solid waste management. The target effect indicator for the solid waste management sector is to increase treated and disposed volume. Treated and disposed volume of 9000 tons/day is to be attained in 2020 mainly through the development of a new landfill site and intermediate treatment facilities.

8.11 Flood Management: DKI Jakarta has been hit by large-scale floods so far, and the floods have damaged urban functions in the city. To secure its normal function as the national capital of Indonesia, measures to reduce flooding are necessary. The target effect indicator for flood control is to increase the capacity of discharging flood water to the sea. The pumping capacity will be increased from 60 m^3/s in 2010 to 126 m^3/s in 2020 mainly through the development of urban drainage systems, and reconstruction of the East Pump Station at Pluit.

8.12 Electric Power Infrastructure: Stable power supply is crucial for smooth business operations in JABODETABEK MPA. However, power outages have occurred frequently in the area. Stable power supply is the key issue for the power supply sector. The target effect indicator is to secure a reserve margin for peak demand. Securing more than 30% of the reserve margin to meet peak demand in 2020 is targeted. Development of coal-fired plants, improvement of voltage qualities, and other supply measures, are to be implemented to attain the target.

9. RISKS AND CONSIDERATIONS FOR THE MASTER PLAN

9.1 To implement the MPA master plan, identifying risks in advance and mitigating the risks are important. As far as finance is concerned, GOI has serious budgetary constraints and is not able to fund all MPA projects. In order to fill the gap between the necessary investment amount and government's affordable fund, effective mobilization of private funds is indispensable. For this purpose, it is important that GOI secure a sound investment environment and properly address the risks which private entities cannot manage by their own efforts. The risks in financial aspects are a) inter-ministerial coordination risk, b) demand risk, c) construction delay risk (land acquisition and permits), d) inter-project schedule coordination risks, and e) contracting agency's default risk.

9.2 To mitigate the risks and accelerate private investment for MPA projects, actions such as the amendment of land acquisition laws and regulations for speeding up the process, providing VGF (direct grants to private entities), formalization of the PPP F/S procedure, and appropriate inter-ministerial coordination are necessary.

9.3 To ensure sustainable growth, addressing environmental value is important. Developments should be properly assessed, based on Law No. 32/2009 on environmental protection and management enacted in October 2009 and the revised version of Law No. 23/1997 concerning environmental management enacted in 1997. The revised law is characterized by strong emphasis placed upon transparency, wider participation, accountability, and fairness in environmental protection and management. Further, the revised law provides that environmental assessment (AMDAL) be implemented for any business project or activity potentially having material impact on the environment and requires the implementation of an environmental management initiative (Upaya Pengelolaan Lingkungan/UKL） and an environmental monitoring initiative (Upaya Pemantauan Lingkungan /UPL) for any business project or activity potentially having little impact on the environment.

10. POTENTIAL PRIORITY PROJECTS AND POTENTIAL PROJECTS

10.1 The master plan for infrastructure development towards year 2020 is organized into major projects, which are expected to contribute to the establishment of JABODETABEK MPA. Among the major projects, priority projects for investment by the government and private sectors are nominated in the Study. Priority projects are defined as the projects to be completed before the year 2020. The Study Team has formulated 25 priority projects and considered implementation plans.

10.2 A Fast Track Project (FTP) is defined as an urgent project for infrastructure development which should commence its construction work by end of 2013. One of the major objectives of the Study is to facilitate the FTPs for smooth implementation. There are 18 potential FTPs for nine sectors endorsed by the First Steering Committee held on March 17, 2011. These have been reviewed from the viewpoint of consistency and relevance with the overall infrastructure development plan and implementation schedule.

10.3 Potential investors, who are members of the study team, have identified risks to hamper the implementation of potential priority and fast-track project. They analyzed 28 projects, which they are interested in, among the all proposed potential priority and fast-track projects. They classified and analyzed the risks by development stage and by type. Development stages are divided into three i.e., planning stage, construction stage, and operation stage. The types of risks are classified into five areas i.e., financial risks, legal risks, engineering risks, institutional risks, and political risks. Acceleration of land acquisition, clarification of the demarcation of the risks between public and private sectors, provision of government performance guarantee, etc. were raised as significant issues to be overcome.

10.4 The required total amount of funds in implementing the MPA projects is IDR 411,300 billion. Approximately 52% of this total amount of funds will be provided for FTP and 48% will be for priority projects. The share of private fund in fund sources is 55%, and the share of public fund is 45%. Approximately 31% of the fund to implement the MPA projects is covered by foreign assistance. Required total amount of funds to implement MPA projects will reach IDR 72,435 billion in 2016. This amount is approximately seven times as high as that in 2011.

11. CONCLUSION AND RECOMMENDATION

11.1 The Master Plan for Establishing Metropolitan Priority Area for Investment and Industry in JABODETABEK Area was prepared by incorporating the professional views of the Study Team, fully considering the current setting and situation of infrastructure in the area, and taking into account the future directions of the area specified in MP3EI.

11.2 The Study Team therefore recommends that GOI implements the master plan. The Study Team views that implementation of this master plan will ensure the promotion of investment and industry in JABODETABEK MPA. Development issues such as mitigation of traffic jam, ensuring smooth logistic flow, prevention of environmental pollution, avoiding water shortage, mitigation of flood risks, and saving energy will be solved through the implementation of the proposed FTP and priority projects. The Study Team therefore recommends that monitoring mechanism for facilitating the proposed FTP

and priority projects should be established.

11.3 It is recommended that the following actions will be taken by GOI:

Recommendations

Recommendation	Necessary Action
1. Promotion of Investment to Infrastructure Development	The government keeps promoting the development by applying PPP schemes.
2. Transformation from Single-core Urban Structure to Multi-core Urban Structure	The development in the east should be promoted by transforming to a multi-core urban structure and addressing the balance between development and protection.
3. Necessity of Urban Transport Improvement	Development of mass transit network such as railway should be promoted.
4. Necessity of Logistic Network Improvement	The development of new international gateways in addition to the existing airport and seaport as well as highway network such as toll roads and access roads at freight transport hub should be promoted.
5. Necessity of Urban Environment Improvement	To avoid the negative environmental impacts as much as possible, urban environment should be improved.
6. Necessity of Analysis on Project Modality and Financial Source	The government should adopt the most appropriate funding scheme by conducting feasibility study including project modality analysis.
7. Solution of Issues to Promote PPP Projects	The government should immediately address the issues such as a) acceleration of land acquisitions, b) development of *implementation* skills of the contracting agencies, c) securing budget on appropriate timings, d) clarifying demarcation of risks on private sector, and e) allowance of providing direct subsidies to private entities
8. Monitoring of Fast Track Project	Monitoring and reporting system should be established for fast track projects.
9. Conduct of Feasibility Study for Priority Projects	Feasibility study should be conducted to realize the implementation of the proposed priority projects.
10. Implementation of Priority Projects and Fast Track Projects	Schedule and cost should be periodically monitored during implementation.

Source: MPA Study Team

11.4 The proposed priority and fast-track projects should be implemented by raising funds for the projects as shown in the next table.

Cost of Priority and Fast-track Projects

GOALS AND PROGRAM		POTENTIAL PROJECTS	COST (Billion IDR)
A. BETTER URBAN ENVIRONMENT			
A.1	Development of MRT-based New Urban Transport System	(1) Jakarta Mass Rapid Transit (MRT): N-S I, N-S II, E-W as FTP 3.1	33,300
		(2) JABODETABEK Railways Capacity Enhancement Project (Phase I) as FTP 3.2 and Further Improvement as Phase II	8,300
		(3) Development of Jakarta Monorail	
		(4) Station Plaza Development and Park & Ride System Enhancement	4,400
		(5) Introduction of Common Ticketing System (Smart Card)	500
A.2	Development of Road Network in and around Jakarta	(1) Improvement of Road Network in JABODETABEK-Enhancement of Road Network Capacity in JABODETABEK as FTP 4.1	1,900
		(2) Development of Jakarta Outer Outer Ring Road	25,400
		(3) Introduction of Intelligent Transport System (ITS) in JABODETABEK	1,000
A.3	Promotion of Urban Re-development	(1) Pilot Project of Urban Development/ Re-development	2,100
A.4	Improvement of Water Supply and Sewerage Systems	(1) DKI Jakarta – Bekasi – Karawang Water Supply (Jatiluhur) as FTP 6.1	4,400
		(2) Rehabilitation of Water Distribution Facilities in DKI Jakarta, Bekasi and Karawang, with the integration of DKI Jakarta – Bekasi – Karawang Water Supply (Jatiluhur)	1,000
		(3) Development of Sewerage System in DKI Jakarta	14,300
		(4) Development of Water Supply Systems for Large-scale Infrastructure Development	4,300
A.5	Solid Waste Treatment	(1) Construction of the West Java Regional Solid Waste Treatment as FTP 7.1	1,000
		(2) Development of New Landfill Site at Tangerang	600
A.6	Flood Management	(1) Reconstruction of East Pump Station at Pluit as FTP 8.1	200
		(2) Development of Urban Drainage System in DKI Jakarta	5,500
		(3) Normalization of the Rivers in JABODETABEK	3,000
B. NEW GROWTH SUB-CORRIDOR FOR JABODETABEK MPA			
B.1	Development of New Growth Sub-Corridor for Jabodetabek MPA	(1) Development of New Township	5,600
		(2) Development of New Industrial Estate in the Vicinity of the New Airport	1,700
B.2	Development of New Academic Research Cluster	(1) Development of New Academic Research Cluster	2,800
B.3	Development of Road/Railway along New Growth Sub-Corridor for Jabodetabek MPA	(1) Construction of Second Jakarta-Cikampek Toll Road	4,800
		(2) Improvement of Road Network in JABODETABEK-Improvement of Road Network within the Industrial Area to the East of Jakarta as FTP 2.2	200
		(3) Construction of Access Road to New Cilamaya Seaport as FTP 1.2	5,900
		(4) Construction of Freight Railway to New Cilamaya Seaport	3,400
		(5) Construction of Access Road to the New International Airport	2,200
		(6) Construction of Jakarta-Bandung High Speed Railway via the New International Airport	39,800
C. MULTIPLE GATEWAYS			
<SEAPORT>			
C.1	Development of Cilamaya Port	(1) Development of a New International Port as FTP 1.2	14,900
		(2) Development of New Car Terminal at Cilamaya Port	400
		(3) Development of Logistics Park (Supporting Facilities for the New Port)	5,800
C.2	Improvement of Tanjung Priok Port	(1) Improvement and Expansion of Container Terminal at North Kalibaru as FTP 1.1	24,000
		(2) Expansion of Car Terminal at Kalibaru	200
<AIRPORT>			
C.3	Development of New International Airport	(1) Development of New International Airport	35,300
C.4	Improvement of Soekarno-Hatta International Airport (SHIA)	(1) Construction of Soekarno-Hatta International Airport as FTP 5.2	17,400
		(2) Construction of Access Railway to Soekarno-Hatta International Airport as FTP 5.1	12,500
D. LOW-CARBON ENERGY DEVELOPMENT			
D.1	Low-Carbon Power Supply Development	(1) Development of Central Java Coal-fired Power Plant as FTP 9.6	30,100
		(2) Construction of Indramayu Coal-fired Power Plant as FTP 9.2	20,400
		(3) Development of Banten Coal-fired Power Plant as FTP 9.3	8,600
		(4) Development of Gas-fired Power Plant and FSRU (Floating Storage Regasification Unit) as FTP 9.4	10,700
		(5) Development of Rajamandala Hydroelectric Power Plant as FTP 9.5	1,300
		(6) Construction of Java-Sumatra Interconnection Transmission Line as FTP 9.1	19,700
		(7) Other Renewable and Low-Carbon Emission Power Projects connecting to Java-Bali-Sumatra Power Network	7,100
		(8) Development of West Java Coal-fired Power Plant with Clean Coal Technology	20,300
D.2	Development of Smart Grid	(1) Smart Community (including a pilot project for the Smart Grid) as FTP 2.1	300
		(2) Improvement of JABODETABEK Power Supply Quality	4,700
Total			**411,300**

Source: MPA Study Team

MASTER PLAN
FOR
ESTABLISHING A METOROPOLITAN PRIORITY AREA
FOR INVESTMENT AND INDUSTRY IN THE JABODETABEK AREA

FINAL REPORT

LOCATION MAP
VISION 2030 FOR JABODETABEK MPA/ CONCEPT OF GREATER JAKARTA MPA
EXECUTIVE SUMMARY
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ABBREVIATIONS

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
BAPPENAS	Badan Perencanaan Pembangunan Nasional (National Development Planning Agency)
BKPM	Badan Koordinasi Penanaman Modal (Investment Coordinating Board)
BOT	Build-Operate-Transfer
BPS	Badan Pusat Statistik (Statistics Indonesia)
BUMN	Ministry of State Owned Enterprises
DDI	Domestic Direct Investment
DGCA	Directorate General of Civil Aviation
DGLT	Directorate General of Land Transportation
DGRT	Directorate General of Railways
DGST	Directorate General of Sea Transportation
DKI Jakarta	Daerah Khusus Ibukota Jakarta
DWT	Dead Weight Tonnage
EOJ	Embassy of Japan
FDI	Foreign Direct Investment
FSRU	Floating Storage Regasification Unit
GDP	Gross Domestic Product
GNI	Gross National Income
GOI	Government of Indonesia
GOJ	Government of Japan
GRDP	Gross Regional Domestic Product
HKI	Himpunan Kawasan Industri Indonesia (Indonesian Industrial Estate Association)
ICT	Information Communication Technology
IEDC	Indonesian Economic Development Corridors
IIGF	Indonesia Infrastructure Guarantee Fund
IMF	International Monetary Fund
IPP	Independent Power Producer
ITF	Intermediate Treatment Facility
JABODETABEK	Jakarta, Bogor, Depok, Tangerang, and Bekasi
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JICT-II	Jakarta International Container Terminal II
JJC	Jakarta Japan Club
JUTPI	JABODETABEK Urban Transportation Policy Integration
MEMR	Ministry of Energy & Mineral Resources
MOA	Ministry of Agriculture
MOE	Ministry of the Environment
MOT	Ministry of Transportation

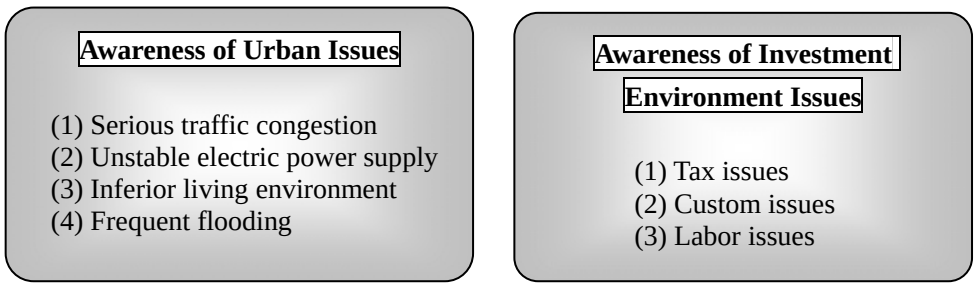
MP3EI	Masterplan Percepatan dan Perluasan Pembangunan Ekonomi Indonesia (Acceleration and Expansion of Indonesia Economic Development)
MPA	Metropolitan Priority Area
O&M	Operation and Maintenance
OOF	Other Official Flow
P3CU	PPP Center Unit (of BAPPENAS)
PDAM	Perusahaan Daerah Air Minum (Drinking Water Regional Company)
PEZA	Philippine Economic Zone Authority
PGN	Perusahaan Gas Negara (State Gas Company)
PLN	PT. PLN (Persero): Perusahaan Listrik Negara (State Electricity Company)
PPA	Purchase Price Agreement
PPP	Public Private Partnership
PPP	Purchasing Power Parity
PT SMI	PT. Sarana Multi Infrastruktur
PQ	Pre-Qualification
PU	Ministry of Public Works
RPJMN	Rencana Pembangunan Jangka Menengah Nasional (National Medium Term Development Plan)
RPJPN	Rencana Pembangunan Jangka Panjang Nasional (National Long Term Development Plan)
RTRWN	Rencana Tata Ruang Wilayah Nasional (National Spatial Plan)
RT/RW	Neighbourhood Unit/Community Unit
RUPTL	Rencana Usaha Penyediaan Tenaga Listrik (Electricity Power Supply Business Plan)
SAIDI	System Average Interruption Duration Index (hour/year/subscriber)
SAIFI	System Average Interruption Frequency Index (time/year/subscriber)
SAPROF	Special Assistance for Project Formulation
SEZ	Special Economic Zones
SOE	State-Owned Enterprise
SPA	Transfer Station
SWM	Solid Waste Management
SWOT Analysis	Strength Weakness Opportunity Threat Analysis
TEU	Twenty feet Equivalent Unit
TPA	Tempat Pembuangan Akhir (Landfill Site)
TPS	Tempat Pembuangan Sementara (Temporary Disposal Site)
TPST	Tempat Pengolahan Sampah Terpadu (Integrated Solid Waste Treatment Facility)
USC	Ultra Super Critical
USD	US Dollars
VGF	Viability Gap Funding
WB	World Bank

CHAPTER 1 MPA MASTER PLAN STUDY

1.1 BACKGROUND

The objective of establishing a Metropolitan Priority Area (MPA) is to transform its area to be more attractive and suitable for direct investment and industrial development through acceleration of infrastructure development and creating a top-level investment climate in the ASEAN region. However, both the infrastructure development and business environment did not catch up with the rapid economic growth in Indonesia. This has turned out to be a hindrance for further development of the area.

Among the MPAs in Indonesia, the MPA in JABODETABEK, which consists of the cities of ***Ja***karta, ***Bo***gor, ***De***pok, ***Ta***ngerang and ***Bek***asi, is leading the economic growth of the entire country, while low quality and lack of infrastructure are becoming serious issues. In addition, the following have been reported as issues to be resolved by most of the private sectors in Indonesia, as shown in Figure 1.1.1: (1) unsecured public safety and social conditions, (2) undeveloped infrastructure, (3) the opacity of law applications, and (4) insufficient staff resources.



Source: MPAStudy Team

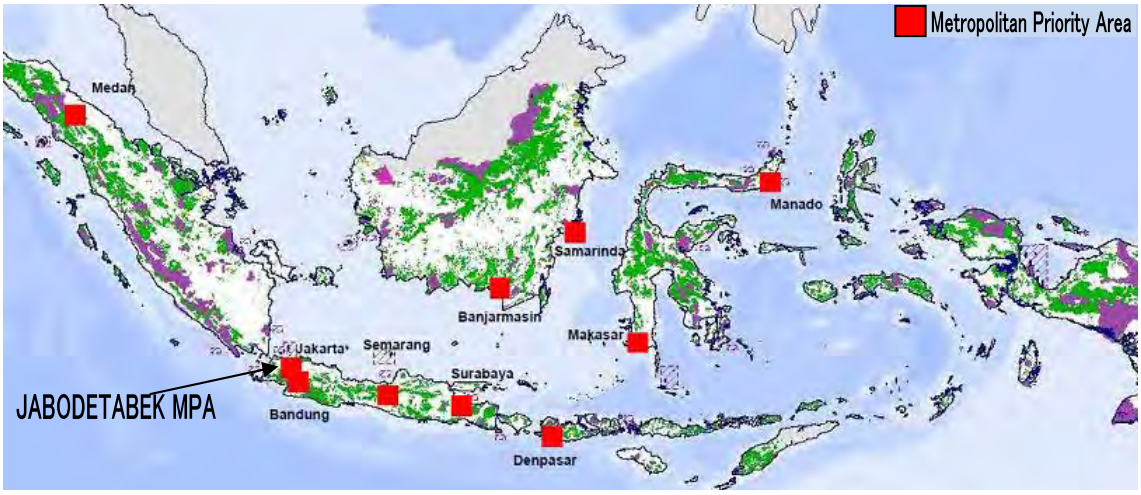
Figure 1.1.1 Urban Issues and Investment Environment Issues

For the improvement of infrastructure and investment environment in JABODETABEK, the Government of Indonesia (GOI) and funding agencies, such as the Japan International Cooperation Agency (JICA), proposed various infrastructure development plans and implemented projects for various sectors.

However, some issues still have to be resolved for the realization of the projects. It was reported that the main reasons are as follows: (1) aims by sector vary every year, (2) the review and discussions mainly remained inside a sector with lack of comprehensive viewpoints, (3) stakeholders have not adjusted for the commercialization of projects, and (4) difficulties for ensuring funds and budget in the stage of commercialization. Furthermore, the most suitable business environment could not be achieved the considering business life.

In this situation, the Memorandum of Cooperation (MOC) for Establishing MPAs for Investment and Industry was signed on December 10, 2010 between the Coordinating Ministry

for Economic Affairs, the Ministry of Foreign Affairs and the Ministry of National Development Planning Agency of the Government of the Republic of Indonesia, and the Ministry of Foreign Affairs, the Ministry of Economy, Trade and Industry and the Ministry of Land, Infrastructure, Transport and Tourism of the Government of Japan (GOJ) on the Cooperation for Establishing MPAs for Investment and Industry(Figure 1.1.2).



Source: National Spatial Plan (RTRWN) 2008

Figure 1.1.2 Location Map of MPAs

Among the MPAs, the JABODETABEK area was adopted as the study area of the MPA Master Plan Study for Investment and Industry for creating a new metropolitan area with an attractive investment environment suitable for industrial development, which will consequently be beneficial to the environment and its people.

To formulate the MPA Master Plan, the GOI, the GOJ, and JICA jointly conducted the study from May 2011 to October 2012. During the study period, JICA entrusted the data collection and analysis to MPA Master Plan Study Team consisting of eight Japanese business firms and three Japanese consulting firms in May 2011. The business firms are Mitsubishi Corporation, Chiyoda Corporation, JGC Corporation, Metropolitan Expressway Company Limited, Tokyo Metro Co., Ltd., Hitachi, Ltd., Nippon Yusen Kabushiki Kaisha, and Taisei Corporation. The consulting firms are Nippon Koei Co., Ltd., Oriental Consultants Co., Ltd., and Mitsubishi Research Institute, Inc.

1.2 OBJECTIVE OF THE STUDY

1.2.1 Principles of MPAs

The following are the basic principles of MPAs:

(1) MPAs will be formulated and implemented under the sovereignty of the Republic of Indonesia in accordance with its relevant laws and regulations.

(2) An integrated approach in developing infrastructure and improving investment climate is imperative for achieving competitiveness and quality of life in MPAs.

(3) The infrastructure and regulatory framework of MPAs should be efficient, effective, and reliable as well as safe, secure, and environmentally friendly.

(4) For the success of MPAs, it is essential that relevant regional governments together with the private sector are actively involved in the planning, financing, and operation of the projects in MPAs.

(5) The master plan on MPAs will be made available to all stakeholders interested in contributing to MPAs.

(6) The precise geographical boundaries of MPAs are not predefined and, if necessary, will be defined on a case-by-case basis when specific policies and measures are implemented in MPAs.

1.2.2 Objective of the MPA Master Plan Study

The objective of the study is to formulate a master plan for establishing an MPA in the area of JABODETABEK by setting guidelines for key issues which include the following: (1) future vision and concept of the MPA, (2) concrete image and an infrastructure development plan of the MPA (including identification of priority projects, quality standards, implementation schedule and financing scheme), and (3) framework for private sector participation, with due considerations to the basic principles of the MPA, and investment climate, in order to achieve the objectives of MPAs.

1.3 STUDY AREA

The Study mainly covers the JABODETABEK area. However, the Study may include the surrounding areas depending on the necessity of establishing an optimal JABODETABEK MPA as shown in frontispiece.

1.4 FRAMEWORK OF THE STUDY

1.4.1 Sectors

The Study covers the physical infrastructure development in terms of improvement of the investment climate in the MPA. The physical infrastructure is categorized into nine sectors namely: (1) Ports, (2) Industrial Areas, (3) Mass Transportation Networks, (4) Road Networks, (5) Airports, (6) Water Supply and Sewage System, (7) Waste Management System, (8) Flood Management System, and (9) Electric Power Infrastructure.

1.4.2 Study Items

The Study will cover the following items:

(1) Review and Analysis of the Present Condition of the MPA

The review and analysis includes the following items:

1) Current socioeconomic condition of Indonesia and the MPA, and its prediction for 2030;
2) Current condition/performance (including international competitiveness) of the target sectors in the MPA, and possible future challenges;
3) Current administrative and legislative framework of the target sectors;
4) Related government plans (Indonesian Economic Development Corridors (IEDC), national development plans, regional development plans, sector development plans, etc.) and their progress including projects under implementation or operation;
5) Past studies (master plans, feasibility studies, related studies, etc.) of JICA, other donor agencies and research institutions (Economic Research Institute for ASEAN and East Asia (ERIA), etc.), and their progress/utilization; and
6) Existing major investment plans and business activities by the private sector in the target sectors.

This review will best utilize the existing master plans, feasibility studies and other related plans/studies that were undertaken by the GOI, JICA, other donor agencies and research institutions. These existing plans/studies are reviewed and modified, if necessary, in order to reflect the most recent conditions and future predictions toward 2030.

(2) Setting a Future Concept of the MPA in 2020

In order to formulate a future concept of the MPA in 2020, the following points were considered:

1) Response to predicted changes of socioeconomic conditions surrounding the MPA in 2030, and its influence to infrastructure development;
2) Benchmarking with (as well as differentiating the MPA from) other major international cities, including those of neighbouring ASEAN countries, in terms of international competitiveness for investment and industrial development; and
3) Requirements for infrastructure development are as follows: (i) safety and security (higher safety standards); (ii) environmental friendliness; (iii) comprehensive and consistent planning with cross-sector, inter-modal and cross-border viewpoints; and (iv) optimal participation of the private sector (for efficient investment, construction and management).

The concept of the MPA in its target year (2020) will be formulated in consideration of the abovementioned points, including the identification of priority projects which are highly expected to materialize in 2020. The possible basic directions of the future concept of the MPA are as follows:

1) Logistical networks (such as seaports, airports, roads, and railways) will be designed in order to enhance the accessibility to industrial zones to be newly developed in suburban areas such as the eastern part of Jakarta, as well as to enhance their intermodal connectivity, in response to the expansion of industrial accumulation in the outskirts of Jakarta and the mitigation of excessive congestion in Central Jakarta.
2) The improvement of living environment in the MPA (such as MRT, roads, water supply and sewage system, waste management system, and flood management system) is a critical part in the improvement of the investment climate.
3) In accordance with the basic directions mentioned above, the development plan of these infrastructure will not be limited to Daerah KhususIbukota Jakarta (hereinafter referred to as DKI Jakarta), but also include the surrounding areas and the cross-border networks between them.
4) The formulation of an infrastructure development plan of the MPA in 2020, and the identification of priority projects including fast-track projects.

The infrastructure development plan of the MPA will be laid out as follows:

1) Designing an overall infrastructure development plan of the MPA in line with the vision, concept, and image of the MPA in item (2) above.
2) Identification of major projects which are expected to contribute to the establishment of the MPA by sector.
3) Identifying the brief concept of priority projects including the outline of the project scope and specifications, project implementation framework, and preliminary cost estimate and implementation schedule.
4) The potential fast-track projects endorsed by the Steering Committee held in March 2011 will be reviewed in terms of consistency and relevance with the overall infrastructure development plan and implementation schedule.

(3) Facilitation of Potential Fast-Track Projects

The Study Team will facilitate the potential fast-track projects by sharing collected and analysed information.

(4) Support for the Secretariat of MPA Steering Committee, MPA Technical Committee and High-Level Consultation for Investment Promotion

The Study Team will assist the MPA Steering Committee as well as the MPA Technical

Committee. The Study Team will also assist secretariat works for the High-Level Consultation for Investment Promotion, which consists of high-level representatives from the government and private sector of Japan and relevant institutions of Indonesia.

1.4.3 Outputs of the Study

(1) City Vision of the MPA in 2030

The future concept of infrastructure development for the MPA in 2020 will be formulated after assuming the predicted changes in socioeconomic conditions according to the city vision of the MPA in 2030.

(2) Formulation of Infrastructure Development Plan of MPA in 2020 and Identification of Priority Projects

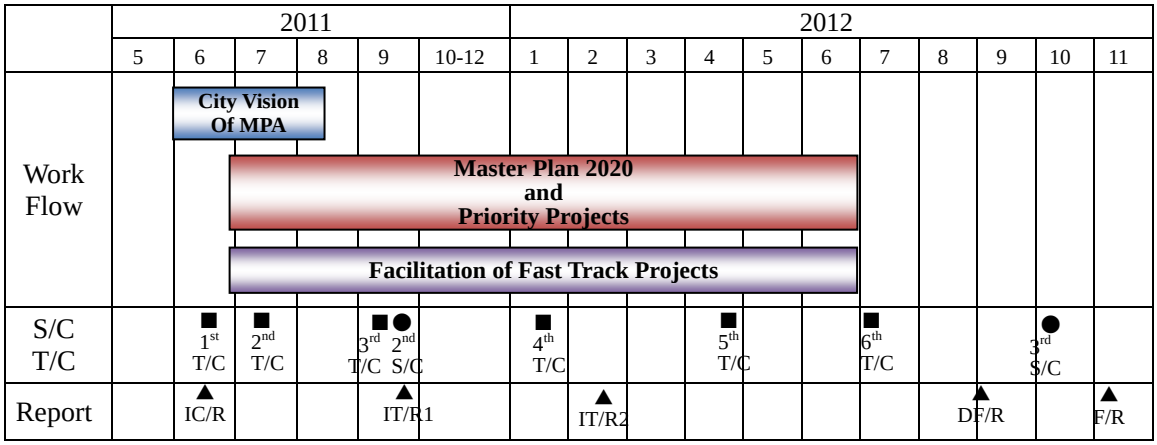
The formulation of an infrastructure development plan and the identification of priority projects by target sector are expected to be completed in 2020.

(3) Facilitation of Fast-Track Projects

The review will be carried out for17 projects which were listed as fast-track projects in the first MPA Steering Committee meeting. The review will mainly focus on the projects which will commence in 2013. Additional fast-track projects may be nominated during the discussions of the MPA Steering Committee meeting.

1.5 STUDY SCHEDULE

The Study is being carried out in accordance with the schedule set out in the MOC as shown in Figure 1.5.1. During the course of the Study, reports are submitted to the GOI. The reports are organized into follows:(i) Inception Report, (ii) First Interim Report, (iii) Second Interim Report, (iv) Draft Final Report, and (v) Final Report.



Source: MPA Study Team

Figure 1.5.1 Schedule of the Study

1.6 COORDINATION AMONG STAKEHOLDERS

It is important to have close cooperation between the stakeholders of Indonesia and Japan in implementing the projects at an early stage. The Study Team will fully support the secretariats of the MPA Steering Committee, the MPA Technical Committee, and the High-Level Consultation for Investment Promotion in successfully holding regular meetings. Furthermore, closer coordination may be required through frequent meetings at the working level.

Source: MPA Study Team

Figure 1.6.1 MPA Committee

(1) Support for the Secretariats of the MPA Steering Committee, MPA Technical Committee, and High-Level Consultation for Investment Promotion

The structure of the MPA Committee is shown in Figure 1.6.1. Meetings among the secretariats of the MPA Steering Committee, the MPA Technical Committee, and the High-Level Consultation for Investment Promotion will be held periodically. As shown in Table 1.6.1, the MPA Committee has held three Steering Committee meetings and six Technical Committee meetings as of October 2012, as shown in Table 1.6.1.

Table 1.6.1 Chronology of MPA Master Plan (1/3)

Date	MPA Committee	Contents of Discussion
March 17, 2011	1st Steering Committee	• The committee concluded that the establishment of JABODETABEK MPA is crucial for the acceleration and expansion of Indonesia's economic development for the period from 2011 to 2025, which is currently being intensely discussed with the private sector and regional governments.
June 11, 2011	1st Technical Committee	• The Committee meeting was jointly chaired by Mr. Luky Eko Wuryanto (Deputy for Infrastructure and Regional Development of the Coordinating Ministry of Economic Affairs of the GOI), and Mr. Toru Maeda (Minister of the Embassy of Japan to Indonesia) on the subject of the Inception Report for the Study. • The meeting was attended by the officials from the Ministries as well as the Steering Committee members from related ministries, provincial governments and others. • The Technical Committee approved the draft Inception Report with additional viewpoints to be considered in the course of the upcoming study.
July 11, 2011	2nd Technical Committee	• The MPA Development Vision 2030 (refer to Chapter 5), which is organized into (1) three concepts of development, (2) four goals and (3) 15 programs, were basically agreed by the members of technical committee.
September 12, 2011	3rd Technical Committee	• The potential priority projects and the monitoring results of potential fast-track projects were discussed. • The members of Technical Committee approved "the MPA Development Vision toward the year of 2030", "the list of Potential Priority Projects" (refer to Chapter 8), and "the Progress Report of the Fast Track Projects as of September 2011".

Source: MPA Study Team

Table 1.6.1 Chronology of MPA Master Plan (2/3)

Date	MPA Committee	Contents of Discussion
September 22, 2011	2nd Steering Committee	• The Committee was co-chaired by H.E. Ir. M. Hatta Rajasa, Coordinating Minister for Economic Affairs of Indonesia, and H.E. Mr. Yukio Edano, Minister of Economy, Trade and Industry of Japan (METI). • The members of the Steering Committee confirmed and welcomed the work progress of "the MPA Development Vision" as a draft of the comprehensive master plan for the JABODETABEK MPA, and instructed the Technical Committee to complete the JABODETABEK MPA Master Plan by the end of the second quarter of 2012. • The members of the Steering Committee also expressed their general supports to "the list of Potential Priority Projects", while they mentioned the need for further discussions before they fully approve the list.
January 17, 2012	4th Technical Committee	• The Committee meeting was jointly chaired by Mr. Luky Eko Wuryanto and Mr. Shigeru Ushio (Minister of the Embassy of Japan to Indonesia). • The Master Plan was basically approved by the Technical Committee with the comments on the further elaboration for (1) the maximum capacity of Tanjung Priok international seaport and (2) the piped-water supply capacity taking into account the industrial development in 2020. • During the discussion, the member of Technical Committee paid the special attention to "the Progress Report of the First Track Projects as of January 2012" whether these projects should be included in the Bluebook.
April 24, 2012	5th Technical Committee	• The Committee meeting was jointly chaired by Mr. Luky Eko Wuryanto and Mr. Shigeru Ushio (Minister of the Embassy of Japan to Indonesia). • The list of Potential Priority Project was basically approved by the Technical Committee with the comments on some revisions including the deletions of "Development of Urban Center for Administrative Functions", etc.
July 5, 2012	6th Technical Committee	• The Committee meeting was jointly chaired by Mr. Luky Eko Wuryanto (Deputy for Infrastructure and Regional Development of the Coordinating Ministry of Economic Affairs of the GOI) and Mr. Shigeru Ushio (Minister of the Embassy of Japan to Indonesia). • The progress report of the Fast Track Projects was confirmed by the Technical Committee through the discussions on "Development of Cilamaya Port", "Expansion of the Soekarano-Hatta International Airport", etc. • The list of Priority Projects was also confirmed by the Committee through the discussions on "Development of New International Airport", "Improvement and Expansion of Container Terminal at North Kalibaru" with inclusion of development of container terminal at Marunda • Tentative agenda and schedule of the 3rd Steering Committee meeting in Tokyo and follow up mechanism after this MPA Study were also agreed.

Source: MPA Study Team

Table 1.6.1 Chronology of MPA Master Plan (3/3)

Date	MPA Committee	Contents of Discussion
October 9, 2012	3rd Steering Committee	• The Committee was co-chaired by H.E. Mr. Koichiro Gemba, Minister for Foreign Affairs of Japan, and H.E. Ir. M. Hatta Rajasa, Coordinating Minister for Economic Affairs of Indonesia. • The co-chairs welcomed and endorsed the conclusion of MPA Master Plan, which identifies 45 Priority Projects aimed to be completed by 2020 including 18 Fast Track Projects to be commenced by the end of 2013 in accordance with MPA Development Vision. The co-chairs shared the view to identify 5 projects as MPA Flagship Projects, which are, Construction of Jakarta Mass Rapid Transit (MRT), Development of Cilamaya New International Port, Expansion and Improvement of Soekarno-Hatta International Airport, Development of New Academic Research Cluster, and Development of Sewerage System in DKI Jakarta among the MPA projects. • The co-chairs appreciated the progress made in the meetings of MPA High Level Consultation for Investment Promotion, which has discussed six issues: i) Enhancing Socialization of the New Regulation on Investment Area, ii) Promoting Dialogues between Japanese Investors and the Key Indonesian Agencies, iii) Improving the Import and Trade Procedures, iv) Improving Labor-related Practices and Regulations, v) Promoting Investment in the Energy Sector, vi) Promoting Incentive for Direct Investment in Indonesia. The co-chairs approved the Report of MPA High Level Consultation for Investment Promotion. Based on the Report, the co-chairs shared the view to continue the framework of MPA High Level Consultation for Investment Promotion. • With regard to a follow-up system, the co-chairs shared the view to continue the cooperative framework of MPA and to confirm the implementation progress of Master Plan by holding an MPA Steering Committee Meeting at least once a year, as well as an MPA Technical Committee Meeting at least once each half year.

Source: MPA Study Team

(2) Cooperation with GOI

The close coordination of the local government and its counterparts is very important for the smooth progress of the Study. The most important thing is to have a place for the regular sharing of results with the members of the MPA Technical Committee from the GOI.

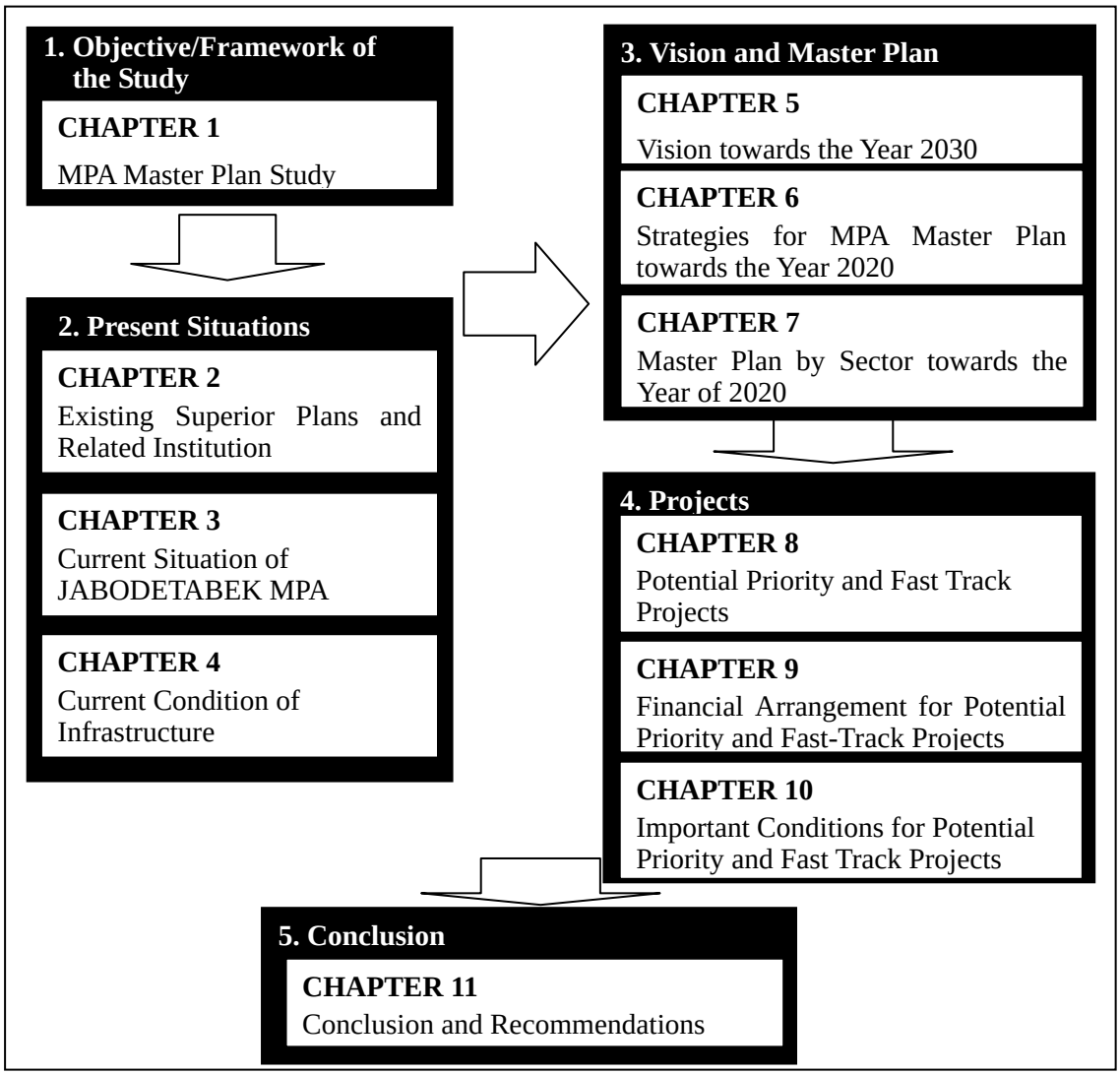
Also, mutual understanding and good relationship will be necessary. It is essential for the Study Team to closely cooperate with the counterparts and other stakeholders, and build a consensus with them to realize the projects identified in the MPA.

Depending on the cooperation of relevant organizations, the process of the Study should be shared with relevant people in relevant organizations. Since the members of the MPA Steering Committee are of the cabinet-level, and the members of the MPA Technical Committee are of the director-level of relative organizations, it might be difficult to meet

with these members in usual affairs. Therefore, it is required to designate in advance their counterparts at the working level from the members of the MPA Technical Committee in advance. Also, the implementation and management of projects need the cooperation of local governments within the MPA.

1.7 COMPOSITION OF REPORT

This report consists of seven chapters, and it is largely divided into five parts: 1) Objective/Framework of the Study, 2) Present Situations, 3) Vision and Master Plan, and 4) Projects, and 5) Conclusion.



Source: MPA Study Team

Figure 1.7.1 Composition of the Report

(1) Objective/Framework of the Study

This chapter (Chapter 1) is the introduction of the study, and states the background, objective and framework, and schedule of the study.

(2) Present Situations

Chapter 2 mentions existing superior plans and related institutions, which the study team needs to address in the planning and project formulation process. Chapter 3 shows the natural and social characteristics of JABODETABEK MPA, related policies, and master plans including MP3EI, legal and financial frameworks. Chapter 4 delineates the present condition of infrastructure of nine sectors including water supply and sewerage systems, and mass transportation network.

(3) Vision and Master Plan

Based on the present situations in Chapters 3 and 4, as well as the objective and framework of the Study in Chapter 1, the vision towards the year of 2030 is formulated through SWOT analysis in Chapter 5. Chapter 6 shows the outline of the MPA master plan, cross-cutting infrastructure issues, and strategy of infrastructure development. Master plan by sector towards the year of 2020 is drawn up in Chapter 7, in accordance with the vision in Chapter 5 and the strategy in Chapter 6. To formulate the master plan, the frameworks necessary for planning including socio-economic framework such as forecast of population and GRDP as of 2020, are also discussed in Chapter 7.

(4) Projects

In line with the vision and master plan, the necessary projects to implement the master plan are identified in Chapter 8. These are potential priority projects to be completed by the year of 2020, and the fast-track projects to be started by 2014. Financial arrangement for the projects is delineated in Chapter 9. Chapter 10 discloses important conditions to plan, implement, and operate the projects smoothly from the view points of the investors.

(5) Recommendation

Finally, Chapter 11 concludes this report with recommendations to make JABODETABEK MPA a more attractive area for all stakeholders, including citizens, investors, and visitors.

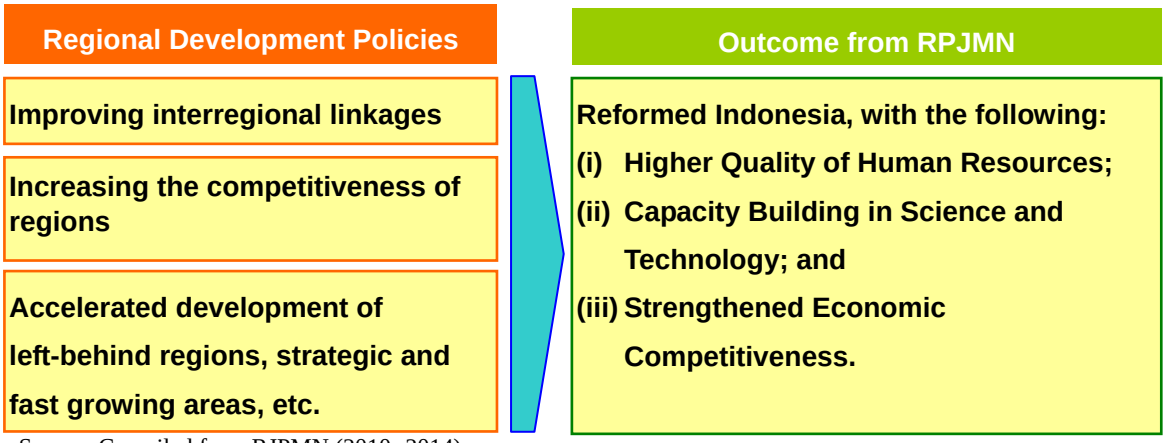
CHAPTER 2 EXISTING SUPERIOR PLANS AND RELATED INSTITUTION

2.1 MASTER PLANS AND STRATEGIES IN THE PAST PROPOSED BY THE GOVERNMENT

2.1.1 National Medium Term Development Plan (RPJMN 2010-2014)

The National Medium Term Development Plan (RPJMN) serves as the guideline for the national, regional and municipal governments in implementing the National Long-Term Development Plan (RPJPN), which is the further superior plan. The current version of RPJMN (2010-2014) is the second phase version of the implementation plan of RPJPN (2005-2025).

Chapter 6 of RPJMN (2010-2014) sets out the national development policy from 2010 until 2014, in which the regional development directions and policies are also stated (Section 6.2). In here, the plan refers to the mission of RPJPN (2005-2025) to realize the development that is more equitable and just throughout Indonesia as shown in Figure 2.1.1. Benefits are to be realized by improving the quality of life and welfare of the people including the reduced disparities among regions in the context of the Unitary State of the Republic of Indonesia.



Source: Compiled from RJPMN (2010 -2014)

Figure 2.1.1 Regional Development Policies in RPJMN and its Outcome

In this regard, the regional development directions and policies are summarized into the following four points: (1) Increasing interregional linkages by improving interisland trade in order to support the domestic economy; (2) Increasing the competitiveness of regions, through the development of selected sectors of each region; (3) Encouraging the accelerated development of left-behind regions, strategic and fast growing areas, border areas, frontier areas, outermost areas, and natural disaster prone areas; and (4) Inducing the development of marine regions and sectors.

The implementation of RPJMN is expected to reform Indonesia in the following three aspects: (i)

Higher quality of human resources, (ii) Capacity building in science and technology, and (iii) Strengthened economic competitiveness.

The Study is relevant especially since three of the policies indicated are mentioned in RPJMN. By developing and reinforcing the function of the MPA, the area is expected to improve interregional linkages, increase competitiveness of the regions and accelerate the development of left-behind regions into a strategic and fast growing areas. The development of the MPA will contribute to the achievement of RPJMN by being able to provide human resources of higher quality, science and technology oriented industrial activities, and higher competitiveness of the economy. Moreover, this MPA Master Plan, which also focuses on the improvement of the living environment, will directly contribute to improving the quality of life of people in the area.

2.1.2 Master Plan - Acceleration and Expansion of Indonesia Economic Development 2011-2025 (MP3EI, 2010)

The Acceleration and Expansion of Indonesia Economic Development 2011-2025 (MP3EI, 2010) is an independent and superior national policy focusing on economic development. Simultaneously, the implementation of MP3EI is expected to fully support and complement with the existing development planning documents produced by the government, including RPJPN and RPJMN. MP3EI's vision is to "Create a Self-Sufficient, Advanced, Just, and Prosperous Indonesia" by 2025.

Source: MP3EI

Figure 2.1.2 22 Main Economic Activities in MP3EI

To support the acceleration and expansion of economic development in Indonesia, the government has set a number of major programs in collaboration with key stakeholders, including government ministries and the private sector in the development of MP3EI.

Based on stakeholders' agreement, the focus of development was classified into eight main programs, i.e.: agriculture, mining, energy, industrial, marine, tourism, telecommunication, and the development of strategic areas. The eight main programs consist of 22 main economic activities as shown in Figure 2.1.2.

In order to achieve rapid economic growth throughout the nation, 22 economic activities in six economic corridors have been identified as the target of eight stimulus programs. The essence of the programs (main strategies) is summarized into the following three points (Figure 2.1.3):

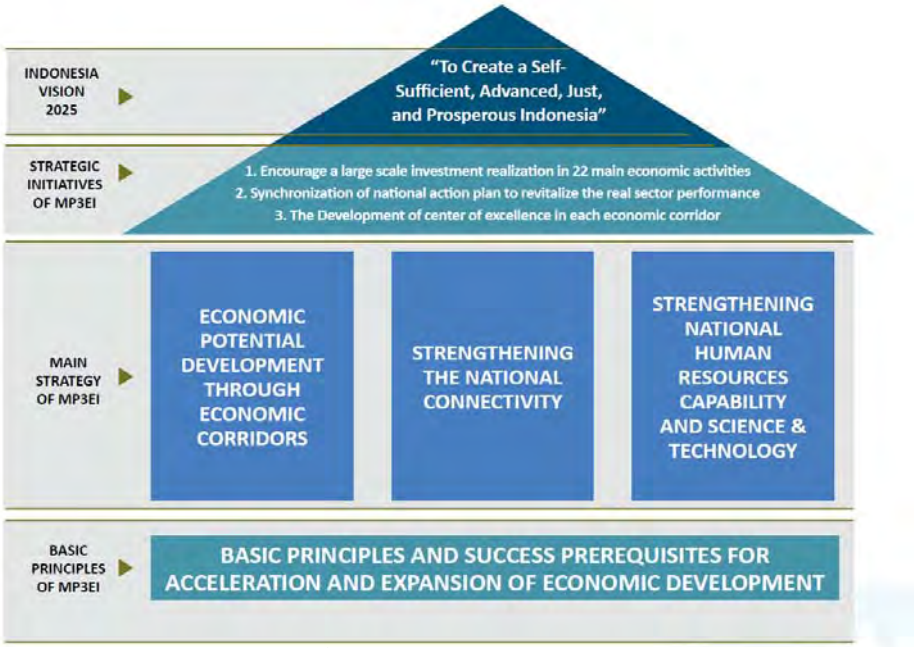


Figure 2.1.3 Framework Design of MP3EI

(1) Developing the regional economic potential in six Indonesia Economic Corridors, namely Sumatra Economic Corridor, Java Economic Corridor, Kalimantan Economic Corridor, Sulawesi Economic Corridor, Bali–Nusa Tenggara Economic Corridor, and Papua–Kepulauan Maluku Economic Corridor;

(2) Strengthening national connectivity locally and internationally; and

(3) Strengthening human resources capacity and national science and technology to support the development of main programs in every economic corridor.

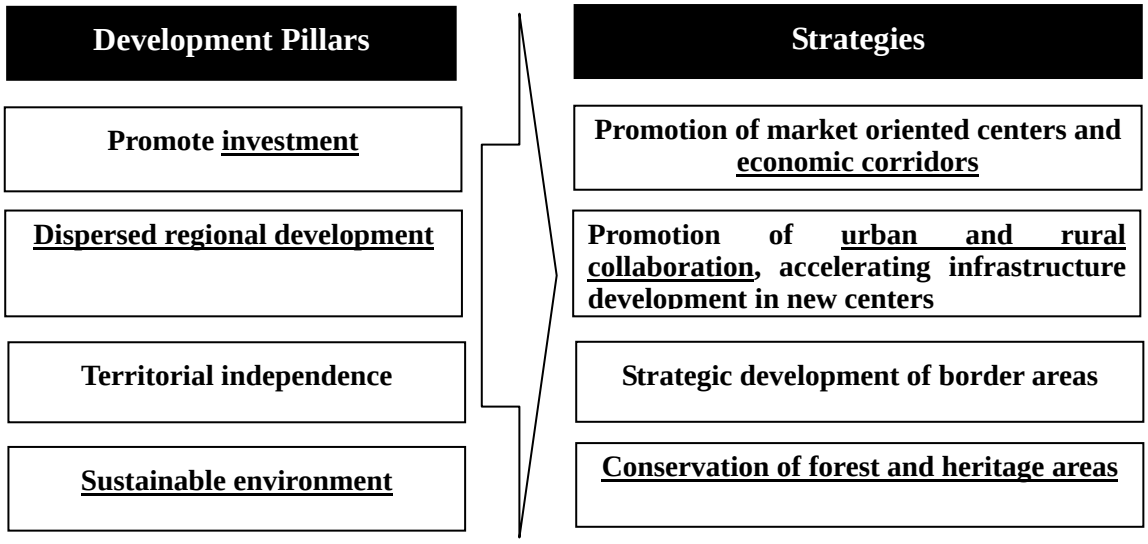
The MPA Master Plan is consistent with the above three essences of the program or main strategies of MP3EI. The MPA development is not only in line with MP3EI but is also in a position to contribute to the achievement of the goals set in MP3EI. This is especially true with the first and second elements when focusing on the infrastructure development of the MPA. On the other hand, the third element, i.e., strengthening national human resources capability and science and technology, is consistent and relevant with another theme of MPA development, which is to promote science and technology-oriented and other knowledge-based industries, as well as to promote human resources development to encourage locating higher value-added industries within the MPA.

2.1.3 National Spatial Plan (RTRWN) 2008

Spatial plans in Indonesia have legal basis with the passing of Law No. 24 of 1992, which is the Spatial Planning Act. The current national spatial plan, enacted with Law No. 26/2008 on spatial planning, covers a 20-year period, and it is to be reviewed every five years. The organization responsible for formulating the plan is the National Spatial Planning Coordination Board, which is chaired by the Coordinating Minister for the Economy. The board's office was set up in the National Development Planning Agency (BAPPENAS) and headed by the BAPPENAS's director. The Directorate General of Spatial Planning of the Ministry of Public Works was supposed to handle the implementation of the board's plan.

The plan includes guidelines for effective and efficient planning processes in order to achieve the stated objectives of the plan. There is a strategic development framework for the purpose of creating a national land strategy. The framework seeks to achieve security, economic viability, and sustainability in the use of land in this archipelagic country, in addition to national cohesiveness and stability. Figure 2.1.4 shows the development pillars and strategies of the National Spatial Plan.

This spatial plan defines ten metropolitan areas in Indonesia, namely, Medan, Jakarta, Bandung, Semarang, Surabaya, Denpasar, Banjarmasin, Samarinda, Makassar, and Menado. The study area of this MPA Master Plan also covers JABODETABEK MPA, so the MPA Master Plan should be consistent with the National Spatial Plan.



Source: MPA Study Team

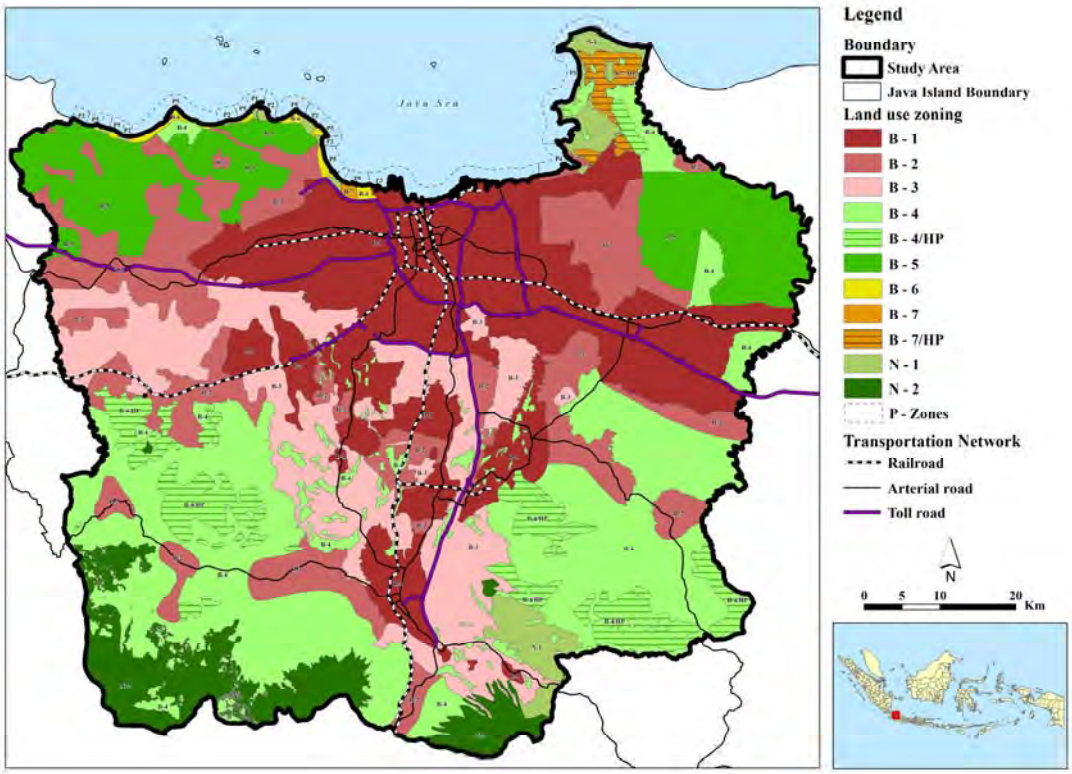
Figure 2.1.4 Development Pillars and Strategies of the National Spatial Plan

2.1.4 Regional Spatial Plan for JABODETABEK (PP No. 54/2008)

All of the local governments in Greater Jakarta Metropolitan Area (called JABODETABEKPUNJUR, a name derived from the constituent areas) came together in 1971 to form a cooperative organ, which eventually became the JABODETABEKPUNJUR Development Cooperation Board. Since then, the board has been engaged in the planning and development of the metropolitan area.

The regional spatial plan for JABODETABEKPUNJUR emphasizes the unity of the metropolitan area, the optimal use of its space, the coordination of the spatial plans of the local governments, the sharing of basic data on spatial use and roadmaps with a view to the future use of spaces, the designation of special economic zones, and the social welfare aspects of spatial plans.

The spatial plan is used as a reference for development implementation related to efforts on water and land conservation, to guarantee available groundwater and surface water, flood control, and economic development for prosperity. The directions of development include transportation, industrial estate development, water supply, wastewater treatment, solid waste system, flood control, power and electricity. The spatial plan in the MPA Master Plan should be consistent with the regional spatial plan for JABODETABEK, as illustrated in Figure 2.1.5.



Zone code	Management Directive and Control of Space Utilization
B - 1	(a) Housing high density (urban area), (b) Trade and Services, and (c) Light Industry non pollutant and market orientation
B - 2	(a) Housing middle density (rural area), (b) Agriculture/field, and (c) Industry labor orientation
B - 3	(a) Housing low density (low intensity with technical engineering), and (b) Agriculture/field
B - 4	(a) Housing with low density, (b) Agriculture wet/dry land (with technology), and (c) Crop, fisheries, poultry agro-industry, production forest.
B - 4/HP	Zone B4 which has been decided as fixed production forest or limited production forest area based on law regulation.
B - 5	Agriculture wet land (irrigated)
B - 6	(a) Housing low density with KZB max.50%, (b) Environment capacity is low, and (c) Utilization of space must be approved by Coordination Board of National Spatial Planning
B - 7	(a) Housing low density with KZB max.40%, (b) Environment capacity is low, production forest, and (c) Utilization of space must be approved by Coordination Board of National Spatial Planning
B - 7/HP	Zone B7 which has been decided as fixed production forest or limited production forest area based on law regulation.

Zone code	Zoning Name	Management Directive and Control of Space Utilization
N - 1	Protected	(a) Not allowed for cultivation activities (b) Cultivation activities are prescribed in a long term should be excluded from this zone, (c) Protected forest, (d) Research, (e) Forest boundary ,river, lake, sea and steep slopes, (f) Forest protection of water stream, and (g) Mangrove forest
N - 2	Conservation Forest / Wild Life / National Park / Tourism Park / Wildlife Park / Culture / Heritage	(a) Not allowed for cultivation activities, (b) Natural tourism, (c) Preservation and conservation area for culture, flora and fauna, and (d) Research

Zone code	Utilization Directive
P1 Zone	Zone with characteristics as an area which has the function to prevent abrasion, sea water intrusion, pollution and damage from the sea. Utilization directed for maintaining function of zone N1.
P2 Zone	Zone with characteristics as an area which has the function to reference flood, prevent abrasion, sea water intrusion, pollution and damage from the sea. Utilization directed for maintaining function of zones N1 and P5.
P3 Zone	Zone with characteristics as an area which has the function to support high utilization intensity zone and high level of accessibility. Utilization directed for maintaining function of zone B1.
P4 Zone	Zone with characteristics as an area which has low environmental carrying capacity. Utilization directed for maintaining function of zones B2 and B4.
P5 Zone	Zone with characteristic as an area which has the function to prevent abrasion, water retention, sea water intrusion, and mangrove forest conservation with low environmental carrying capacity. Utilization directed for supporting of zones N1 and B1.

Source: Ministry of Public Works

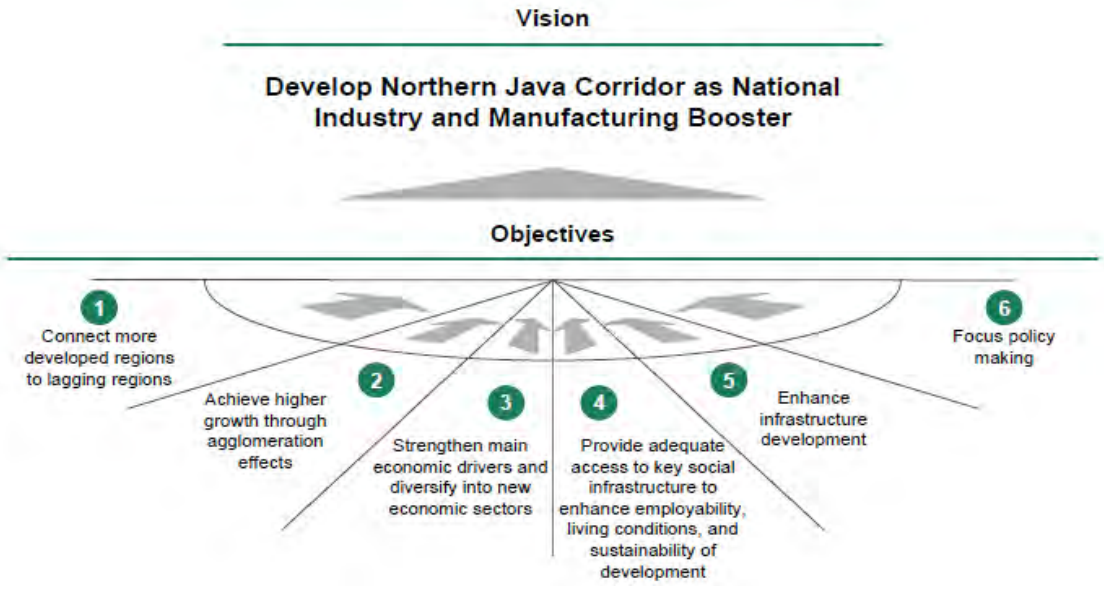
Figure 2.1.5 JABODETABEKPUNJUR Spatial Plan

2.1.5 Indonesia Economic Development Corridors-Northern Java Economic Development Corridor Master Plan (2010)

The Northern Java Economic Development Corridor is a part of the Indonesia Economic Development Corridors. These consist of six economic development corridors, namely,: (1) Eastern Sumatera and North West Java, (2) Northern Java, (3) Kalimantan, (4) Sulawesi, (5) East Java Bali Nusa Tenggara, and (6) Papua. The Northern Java Economic Development Corridor covers four key hubs of North Java, namely Jakarta, Bandung, Semarang and Surabaya, including the Kabupatens along this axis.

Although the Northern Java region is economically strong, there remain several gaps that still need to be addressed. There continues to be high disparities in income levels between the hubs and their surrounding regions as well as between provinces along the corridor. There is a significant potential to develop North Java further along the manufacturing value chain. Investments in North Java can be improved–Indonesia's FDI is low compared to regional peers, and North Java's DDI per capita is low compared to other regions in Indonesia. There are continuing gaps in basic infrastructure (transport, amenities, and social) along the corridor.

Figure 2.1.6 shows the vision and objectives of the Northern Java Economic Development Corridor. Six key objectives were defined to achieve the corridor vision. The Study Team follows the vision and these objectives in the process of planning formulation.



Source: Indonesia Economics Development Corridors Northern Java Economic Development Corridor Master Plan

Figure 2.1.6 Vision and Objectives of the Northern Java Economic Development Corridor Master Plan

2.2 LEGAL FRAMEWORK

2.2.1 List of Major Laws and Regulations Related to MPA

A huge variety of laws and regulations is related to JABODETABEK MPA. The laws and regulations as shown in Table 2.2.1 are major ones from the viewpoint of governing investment promotion, industrial estate or other economic zones development, incentives on income taxes, spatial planning, land acquisition, PPP in general and so on.

The legal framework on PPP mainly from the financial point of view is discussed in Section 2.3.

Table 2.2.1 The List of Major Laws and Regulations which are Related to MPA (1/2)

Category/Section	Laws and Regulations	Remarks
Investment Promotion	(1) Law on Investment: No.25/2007	Law on Investment: is a basis for investment promotion scheme in the country.
	(2) Presidential Regulation regarding the Criteria and Establishment of Closed Business Line and Open Business with Conditions in respect of Capital Investment: No.76/2007	
	(3) Presidential Regulation regarding List of Investment Sectors: No.36/2010	
Industrial Zone/Industrial Estate	(1) Law No. 5 of 1984 (Article 20)	
	(2) Government Regulation No.24/2009 on Industrial Area	
	(3) Ministerial Regulation No.147/M-IND/PER/10/2009	
	(4) Ministerial Regulation No.16/M-IND/PER/2/2010	
Special Economic Zone (SEZ)	(1)SEZ Law: No. 39/2009	Master Plan on SEZ is being developed by the Government.
	(2) Government Regulation Regarding Implementation of SEZ: No. 2/2011	
	(3) Presidential Decree concerning National Council of SEZ: No.8/2010	
	(4) Presidential Regulation concerning National Council and Regional Council for SEZ: No33/2010	
Free trade or Economic Zones such as Free Trade Zone (FTZ), Integrated Economic Development Area (KAPET), Advanced Economic Area (KA) and Bonded Area (KB)	(1) Government Regulation on FTZ: No.1/2000	Various regulations are promulgated for development of free trade or economic zones.
	(2) Law on FTZ: No.36/2000	
	(3) Government Regulation on FTZs: No.46-48/2007	
	(4) Presidential Regulation on KAPET: No.89/1996	
	(5) Government Regulation on KAPET: No. 20/2000	
	(6) Government Regulation on KAPET: No.147/2000	
	(7) Decision of DG of Taxation at MOF on KAPET: No. KEP-229/PJ/2001	
	(8) Government Regulation on Bonded Zone: No.33/1996	
	(9) Government Regulation on Bonded Zone: No. 43/1997	
Income Tax on Investment	(1) Law No.36/2008 on 4th Amendment of Law No.7/1983 on Tax	Several amendments on income tax incentives have been done in terms of investment.
	(2) Government Regulation on Income Tax Incentives for Investment: No.1/2007	
	(3) Government Regulation No.62/2008 on Amendment of the Government Regulation No.1/2007	
	(4) Government Regulation No. 94/2010 on Calculation of Non Taxable Income and Payment of Income Tax in the Current Year	
	(5) Ministerial Regulation by MOF No. 130/ PMK.011/2011	
	(6) Government Regulation No.52/2011 on Income Tax Incentives for Investment	
Customs/Import Tariff	(1) Law on Customs Procedures No. 17/2006	JICA Project for Capacity Development for Trade-related Administration has been conducted.
	(2) Regulation of the Finance Minister, No. 176/ PMK.011/2009	

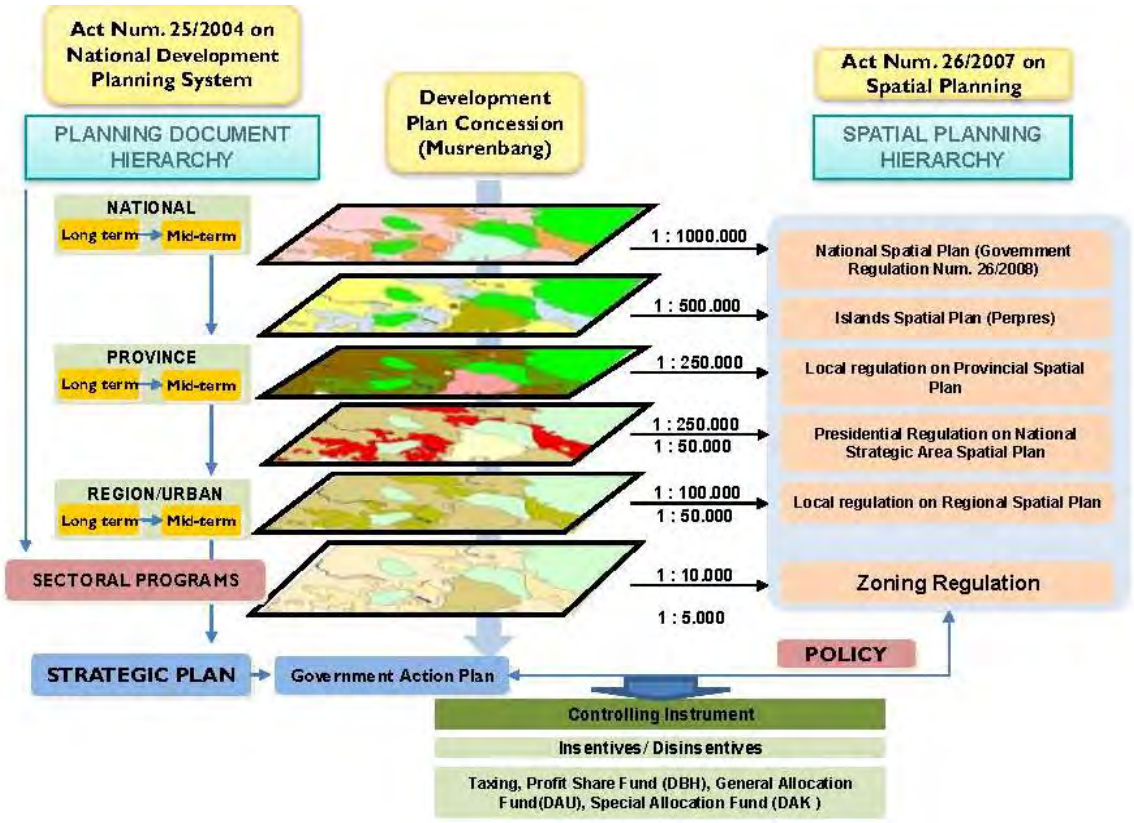
Table 2.2.1 The List of Major Laws and Regulations which are Related to MPA (2/2)

Category/Section	Laws and Regulations	Remarks
Land Administration	(1) Government Regulation regarding Right to Cultivate, Right to Build and Right of Use Over Land: No.40/1996	
	(2) Government Regulation No.24/1997 on Land Administration	
Spatial Planning/ Development Planning	(1) Law on Spatial Planning No.24/1992	
	(2) Law on National Development Planning No.25/2004	
	(3) Law on Spatial Planning No. 26/2007	
	(4) Government Regulation on Spatial Planning: No.26/2008	
	(5) Government Regulation on Implementation of Spatial Planning: No.15/2010	
	(6) Government Regulation on Spatial Planning of JABODETABEKPUNJUR No. 54/2008	
	(7) Provincial Regulation on Spatial Planning of West Java (2009-2029) No. 22/2010	
	(8) Ministerial Regulation by MOHA No.1/2008 on Planning Guidelines for Urban Area	
General Regulations regarding PPP	(1) Presidential Regulation No.42/2005 on Establishment of KKPPI (National Committee for the Acceleration of Infrastructure. Provision)	JICA Technical Cooperation Project for Capacity Development PPP Network Enhancement has been conducted since March 2011 with Bappenas.
	(2) Presidential Regulation No.67/2005 on Cooperation Between Government and Business Entity in Provision of Infrastructure	
	(3) Ministerial Regulation by CMEA No. 4/2006 on Evaluation Methodology for PPP Infrastructure Projects that Require Government Support	
	(4) Ministerial Regulation by MOF No. 38/2006 on Guidance for Controlling and Management of Risks in Provision of Infrastructure	
	(5) Government Regulation No.1/2008 on Government Investment	
	(6) Ministerial Regulation by MOHA No.22/2009	
	(7) Presidential Regulation No.13/2010 on Amendment to Presidential Regulation No. 67/2005 on Cooperation Between Government and Business Entity in Provision of Infrastructure	
Land Acquisition	(1) Presidential Regulation No.36/2005 on Land Procurement for the Implementation of the Development for Public Interest	
	(2) Presidential Regulation No.65/2006 on Amendment on the Presidential RegulationNo.36/2005 regarding Land Procurement for the Implementation of the Development for Public Interest	
	(3) Ministerial Regulation by Head of National Land Agency No.3/2007	
	(4) Law No.2/2012 on Land Procurement for Construction in the Public Interest (or Land Acquisition Law)	

Source: JICA Study Team based on websites in the Government of Indonesia, JETRO and other sources.
Note: The laws and regulations related to the environment aspects are not included in this table.

2.2.2 Spatial Plan and Development Plan

The hierarchy of spatial planning and development planning is shown in Table 2.2.1. The investment plan on infrastructure should be harmonized with the existing spatial and development plans in each level designated by the laws and regulations.



Source: National Land Agency

Figure 2.2.1 Hierarchy of Spatial Planning and Development Planning

2.2.3 Recent Trend of the Laws and Regulations in Terms of Investment and Infrastructure Development

(1) Incentive for Promoting Foreign Investment

In the middle of August 2011, the Ministry of Finance (MOF) has promulgated the new Ministerial Regulation No. 130/PMK.011/2011 on the provision of incentives to pioneer industries through the revision of Government Regulation No. 62/2008 on Income Tax. The new regulation enables tax exemption for a period of five to ten years.

The applicants for the incentives must have a new investment plan that has received approval from the competent authority for at least IDR 1 trillion and belongs to pioneer status-industrial sectors such as (1) basic metal; (2) oil refinery and/or oil and gas-sourced organic chemicals; (3) machinery; (4) alternative energy industries such as geothermal heat, solar energy and wind power; and (5) communications equipment industry such as mobile phone.

Since the government has not provided any exemption from corporate income tax or tax holidays on investment so far except income tax allowance in the certain portions of investment amount, this is an encouraging sign from the MOF for serious promotion of

foreign investment.

In December 2011, moreover, Government Regulation No. 52/2011 on Income Tax Incentives for Investment was released as the amendment to the Government Regulation No.1/2007 and No.62/2008. In accordance with this regulation, the number of business sub-sectors to be entitled to tax allowance has increased from 101 to 129, although the number of subsectors without regional limitation has decreased from 67 to 52 as shown in Table 2.2.2.

Table 2.2.2 The Number of Business Subsectors to be Entitled to Tax Allowance by the Government Regulations

	GR No.1/2007	GR No.62/2008	GR No.52/2011
Certain Business Subsectors (Appendix1)	53	67	52
Certain Regions and Business Subsectors (Appnedix2)	19	34	77
Total	**72**	**101**	**129**

Business sectors, which include subsectors receiving incentives without regional limitations, total 23 as shown below.

- Plantations, livestock, hunting, and related activities;
- Forestry and logging;
- Oil, natural gas and geothermal mining;
- Food industry;
- Textile industry;
- Chemicals industry;
- Rubber industry;
- Cosmetic ingredients industry;
- Pharmaceuticals industry;
- Base metals industry;
- Metal goods industry;
- Electronics industry;
- Electrical equipment industry;
- Machinery industry;
- Vehicle industry;
- Other transport equipment industry;
- Machinery and equipment installation and repair services;
- Water supply;
- Waste treatment and recycling;

- Civil building construction;
- Land transportation and pipeline transportation;
- Computer programming activities; and
- Real estate.

(2) Industrial Zone or Other Economic Zone Development

Government Regulation No. 24/2009 stipulates the definition of industrial zone, the purpose of the development of industrial zone, steps/procedures of licenses for the zone, environmental management of the zone, and so on. According to Article 10 of the regulation, the minimum land area for an industrial zone is 50 ha for one location. The development of the industrial zone should be designated by spatial plans. Moreover, this regulation states that the governor or regent/mayor shall give (a) incentives and other facilities in accordance with the provisions of legislation; and (b) ease in land acquisition in the region in order to optimize the utilization of industrial zones.

Aside from the industrial zone, the government has developed several types of economic zones such as Free Trade Zone (FTZ), Integrated Economic Development Area (KAPET), Advanced Economic Area (KA) and Bonded Area (KB) based on corresponding regulations. As for the Special Economic Zone (SEZ), the government formulated Law No. 39/2009 on SEZ and Government Regulation No. 2/2011 on Implementation of SEZ Development. Currently the Coordinating Ministry of Economic Affairs (CMEA) and Investment Coordinating Board (BKPM) have been preparing jointly the Master Plan on SEZ.

The legal basis, definitions and functions of industrial and other economic zones are summarized in Table 2.2.3.

Table 2.2.3 Legal Basis and Functions of Industrial and Other Economic Zones

	Industrial Zone/ Industrial Estate	Bonded Area (KB)	Integrated Economic Development Zone (KAPET)	Free Trade Zone (FTZ)	Special Economic Zone (SEZ)
Legal Basis	Law No. 5/1984 Article 20 Government Regulation No. 24/ 2009 regarding Industrial Estate	Law No. 17/2006 Article 1	Presidential Decree No. 89/ 1996 Presidential Decree No. 150/ 2000 Government Regulation No. 20/ 2000	Law No. 36/2000 Law No. 44/2007 Government Regulation No. 46-No.48/2007	Law No. 25/2007 Law No. 39/2009 Government Regulation No. 2/ 2011
Definition	Industrial Zone/ Estate: the area where industrial activities are centralized, provided with supporting facilities and infrastructure which are developed and managed by an industrial estate company that has the permit for industrial estate business.	Bonded Area (KB) is the building, place, or area with a certain boundary where the business activities are performed.	Integrated Economic Development Zone (KAPET) is a geographical area with acceptable certain boundaries that have the potential for fast growing and/or have a prominent sector.	Area for custom and therefore free from import duties, sales tax for luxury goods, and levies.	Area with certain boundaries for implementation of economic functions and given certain incentives.
Function	Development of Industrial Zone/ Estate is aimed for: (1) control of spatial utilization, (2) intensification of efforts in industrial development, (3) expedition of industrial growth in the region; and (4) giving location certainty in the infrastructure planning and development.	Bonded Area (KB) is aimed for business activities in processing industrial goods and material, design activity, engineering, sorting, initial inspection, final inspection and packing of imported goods and materials especially for export purposes.	Encourage the establishment of an area to play the role as prime engines for regional development.	As place to develop the business in the field of trading, services, industry, mining and energy, transportation, maritime and fishery, post and telecomm, banking, insurance, tourism and other sectors.	Developed through preparation of an area with prominence in geo-economy and geo-strategy. Has the function to accommodate activities on: industry, energy, R&D, export processing, logistics, tourism, and other economic activities with high economic value and high international competitiveness.

Source: MPA Study Team based on the information from BKPM and other ministries.

(3) Land Acquisition

The lawmakers and government, the National Land Agency in particular, have discussed a new land acquisition law in order to address long problems on land acquisition which have hampered infrastructure projects development.

Although a draft of this new law had already been submitted to parliament in February 2010, the House of Representatives finally passed a Law on Land Procurement for Construction in the Public Interest or Land Acquisition Law in December 2011.

The new law will bring the following changes: (a) the government have the right of way over the land if a piece of land is designated for a public infrastructure project, (b) If landowners are agreeable to the price, they will receive cash compensation within two months. If landowners disagree, they have 14 days to appeal to the court. The court's verdict is the first and final in the land acquisition matter, and (3) During the appeal process, the government has the right over the land for the commencement of the infrastructure project. Also, the law states that the fund for land acquisition for a public infrastructure project or public interest is sourced from the state budget (APBN) and/or regional budget (APBD).

Thus, this law may allow the government to accelerate road, port, airport, and other infrastructure development projects and may ignite an economic boom.

2.3 FINANCIAL FRAMEWORK

2.3.1 General Project Financing Framework

In terms of infrastructure project financing, the following are three ways of financing in Indonesia:

(1) Pure Public Financing (100% financed by GOI, including ODA and other official flow sources);

(2) Pure Private Financing (100% financed by private entities); and

(3) Hybrid (Shared) Financing (Mixture of (a) and (b), or so called PPP).

Especially in recent years, GOI is taking a strong initiative to mobilize private funds for infrastructure investments in order to fill the gap between the needs for infrastructure development and GOI's financing capacities. In this regard, the enhancement of PPP has become one of the important issues for GOI as shown in the emphasis in many of GOI's infrastructure investment plans, such as RPJMN.

2.3.2 Legal Framework for PPP

The president of GOI has launched two important regulations, which function as the backbone of PPP framework in Indonesia. These regulations are as follows:

(1) Presidential Regulation No. 67/2005 concerns the cooperation between the government and business entities for the provision of infrastructure; and

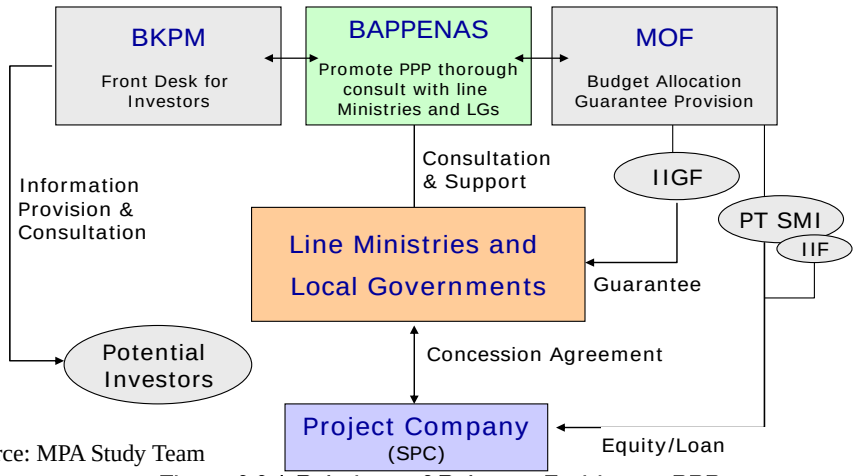
(2) Presidential Regulation No. 13/2010, an amendment to Presidential Regulation No. 67/2005, concerns the cooperation between the government and business entities for the provision of infrastructure.

These regulations stipulate the basic items regarding PPP, including principles, scopes, schemes, financing options, planning and procurement procedures, and the government's supports. Presidential Regulation No. 13/2010 complements and supersedes some articles of Presidential Regulation No. 67/2005. The key points of the amendments are as follows:

- Allowance of 'Unsolicited Proposal' (It is allowed for private entities to submit a proposal of a project which are not authorized in the development plan made by public authorities.);
- Clarification of the types of government support (i.e., direct support and indirect (contingent) support); and
- Higher requirements for land acquisition (the contracting authority has to implement land acquisition).

2.3.3 Organizational Framework for PPP

The demarcation and function of stakeholder organizations regarding PPP are stipulated in the relevant regulations and agreements made by the ministries. The gateway for private investors is the Investment Coordination Board of Indonesia (BKPM), which provides project information and consultations to potential investors. The core of promotion of the PPP policy lies in the PPP Centre Unit of BAPPENAS. It develops basic frameworks and policies on PPP and takes necessary coordination and consultations with relevant ministries and local governments. The Ministry of Finance (MOF) has authorities of budget allocation and guarantee provisions for PPP projects. The relations of relevant entities are shown in Figure 2.3.1.



Source: MPA Study Team

Figure 2.3.1 Relations of Relevant Entities on PPP

2.3.4 Government Supports for PPP

As mentioned above, Presidential Regulation No. 13/2010 stipulates the direct and indirect supports for PPP projects. Direct supports takes the forms of construction of some parts of the infrastructure by the government. Under the current financial act, the provision of direct subsidy to pure private entities is now allowed. In order to do this, each contracting authority needs to secure the budget in the same way as with conventional projects. Indirect supports is provided by the Indonesia Infrastructure Guarantee Fund (IIGF), which is a 100% State-Owned Enterprise (SOE). The IIGF provides guarantees to private entities against contract defaults by contracting authorities. It is expected that this will improve the bankability of projects. Aside from these government supports, PT Sarana Multi Infrastruktur (PT. SMI), another 100% SOE, provides equity and debt to private entities. It is expected that this will help mitigate the risks of projects and provide better access to project financing.

2.3.5 Main Issues in Promoting PPP

According to BAPPENAS' statistics, nearly 100 projects have been realized so far. On the other hand, it is often pointed out in many occasions that PPP projects are not progressing well as expected by the government. The following problems and issues are pointed out as general causes of low performance:

(1) Land acquisitions are often delayed;
(2) "Implementation" skills of the contracting agencies are not sufficient;
(3) Contracting agencies often face difficulties in securing budget on appropriate timings;
(4) Risks on private sectors are often too high and projects are not bankable; and
(5) The government is not allowed to provide direct subsidies to private entities.

These points shall be closely analyzed and concrete solutions shall be proposed in the following study.

CHAPTER 3 CURRENT SITUATION OF JABODETABEK MPA

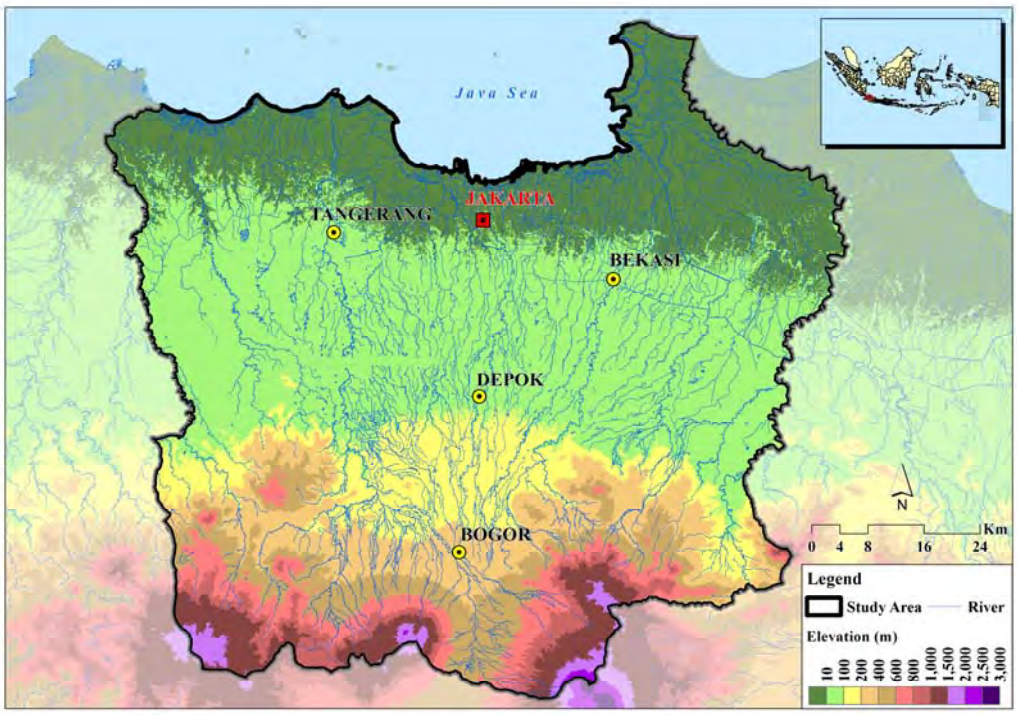
3.1 CURRENT SITUATION OF JABODETABEK MPA

3.1.1 Natural Condition

(1) Topography

Based on topographic information obtained from the Digital Elevation Model (DEM) acquired by the Shuttle Radar Topography Mission (SRTM), about 22% of JABODETABEK is located on elevation below 10 m above sea level, while 73% is below 200 m above sea level. Most elevated areas of more than 1,000 m above sea level are situated at the southern part of the study area, and represent just 7%, as shown in Figure 3.1.1. The average slope in the study area is about 7°, which means it is a generally flat area.

The location of most major cities, including DKI Jakarta, within flat low-lying areas makes them vulnerable to flood, or generally called flood-prone areas.



Source: Digital Elevation Model (DEM) acquired by the Shuttle Radar Topography Mission (SRTM)

Figure 3.1.1 Topography of the JABODEATBEK MPA

(2) Existing Land Use

Table 3.1.1 shows the acreage of existing land use within the JABODETABEK MPA area. Sixty-six percent of the land use within the JABODETABEK MPA is dominated by

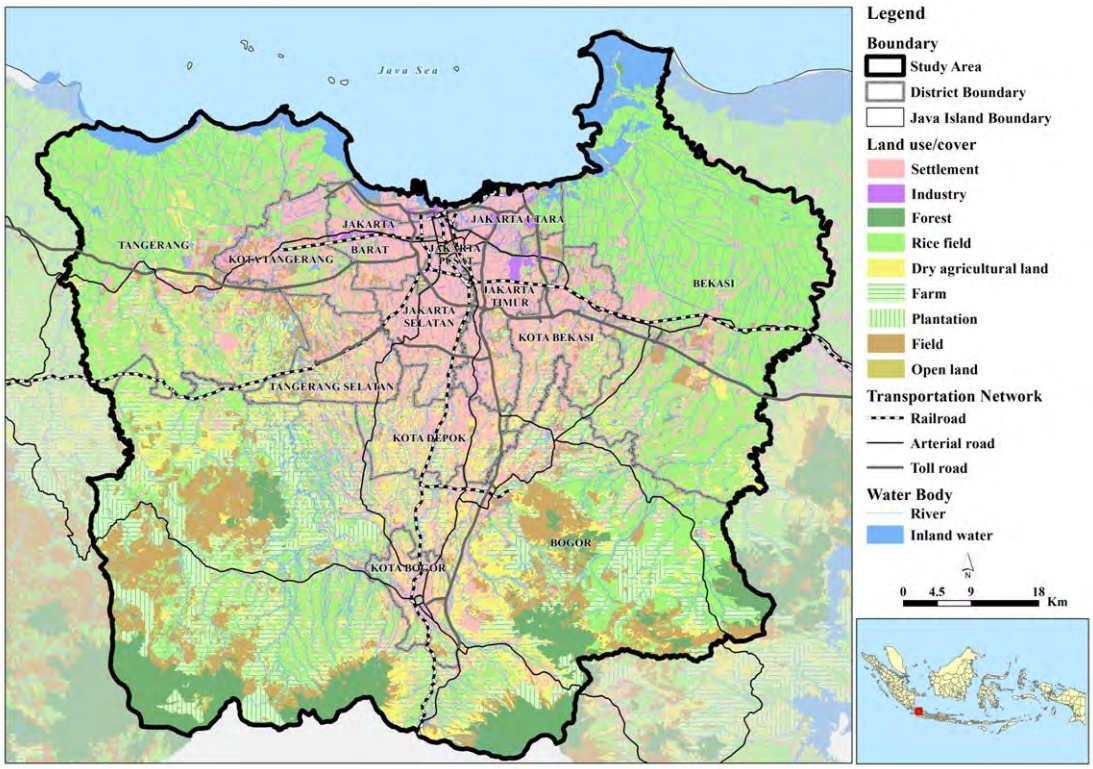
agricultural lands. Rice fields are the main crop lands, which represent about 33% and are located within Bekasi, Tangerang, and Bogor Regencies, as shown in Figure 3.1.2.

Forest lands represent 5.6% of the study area, which are located in the southern part of Bogor Regency. Settlements are located in the central part of the study area, mainly in DKI Jakarta, which represent 24%, while industrial areas are centralized in Jakarta Timur, Jakarta, Utara, and Jakarta Barat, and represent only about 1% of the land use.

Table 3.1.1 Land Use Statistics

Land Use	Area (km^2)	Area (%)
Forest	381	5.6
Industry	62	0.9
Farm	722	10.6
Field	736	10.8
Inland water	222	3.3
Plantation	192	2.8
Settlement	1634	24.0
Rice field	2249	33.1
Dry agricultural land	583	8.6
Open land	20	0.3
Total	6,802	100.0

Source: MPA Study Team based on Peta Rupabumi Digital Indonesia by BAKOSURTANAL



Source: MPA Study Team based on Peta Rupabumi Digital Indonesia by BAKOSURTANAL

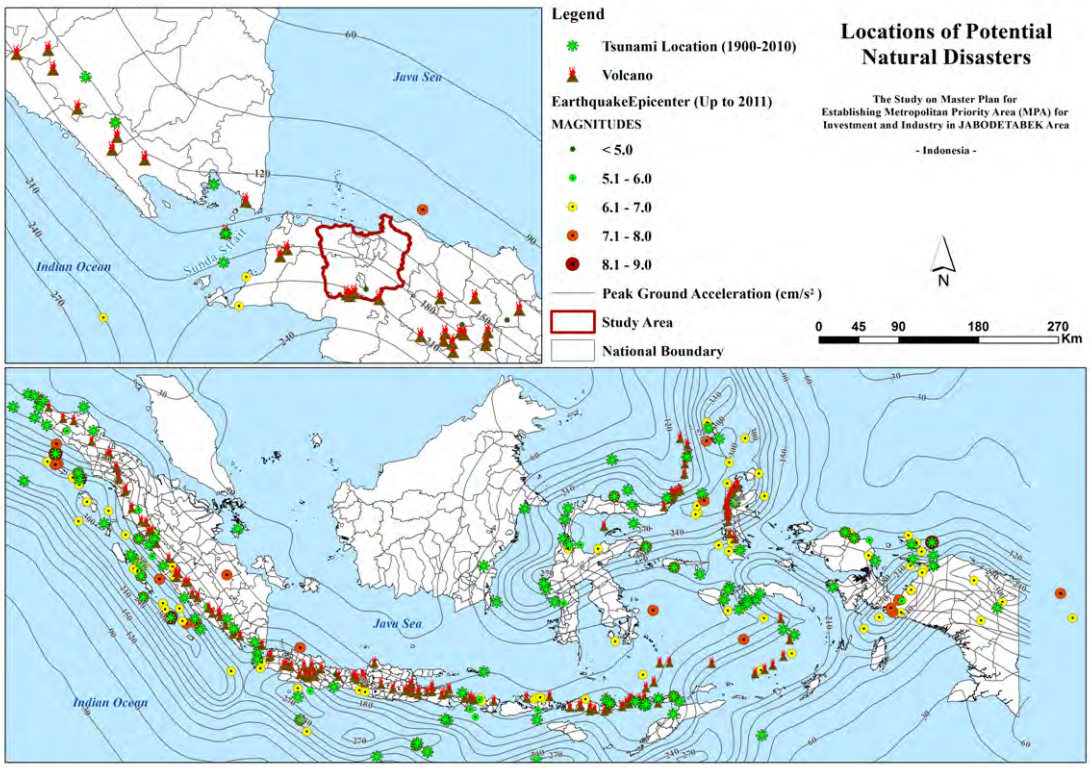
Figure 3.1.2 Land Use Map of the JABODEATBEK MPA

(3) Potential Natural Disaster

The Indonesian region is one of the most seismically active zones of the earth. At the same time it has one of the most numbers of active and potentially active volcanoes. It is a

typical island-arc structure with characteristic physiographic features such as a deep oceanic trench, a geanticlines belt, a volcanic inner arc, and a marginal basin.

Figure 3.1.3 shows a map of potential natural disasters that occur in Indonesia particularly in JABODETABEK. In the map, earthquake epicenters were collected from the United States Geological Survey (USGS) for the period from 1979 to 2011; locations of volcanoes were collected from the Smithsonian Institution, Global Volcanism Program; locations of tsunamis were collected from the National Geophysical Data Center/World Data Center (NGDC/WDC) Historical Tsunami Database for the period of 1900 to 2010; and peak ground acceleration was based on Merati et al. (1996).



Source: MPA Study Team collected from the United States Geological Survey (USGS) (1979 to 2011) and National Geophysical Data Center/World Data Center (NGDC/WDC) Historical Tsunami Database (1900 to 2010)

Figure 3.1.3 Potential Natural Disaster Map of the Indonesia

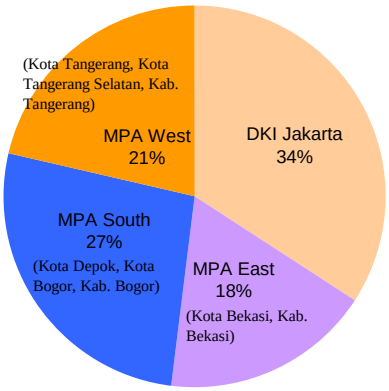
One earthquake occurred in the northeastern part of JABODETABEK MPA, specifically in Java Sea at a depth of 280 m. However, the area located between Java and Sumatra Islands, specifically at the Sunda Strait, is certainly the most complex active tectonic zone on earth, in which frequent volcanic eruptions and earthquakes accompanied by tsunamis occur in the area. The iso-acceleration map shows that peak ground acceleration increases downwards, towards Java Island. From an engineering point of view, the peak ground acceleration is very important in the engineering design of buildings, bridges, and power plants.

3.1.2 Socioeconomic Condition

(1) Social Condition: Demographics

The latest population census was carried out in 2010, from which the latest demographic data of the JABODETABEK MPA is available. The total population of the JABODETABEK MPA in 2010 was approximately 28 million, which makes it one of the largest urban agglomerations in the world.

Figure 3.1.4 shows the share of population of each area of JABODETABEK MPA. The share of DKI Jakarta was the highest at about 34% of the total population of JABODETABEK MPA. The population share of MPA South follows that of DKI Jakarta, and comprised about 27% as of 2010. MPA South consists of Kota Depok, Kota Bogor, and Kabupaten Bogor.



Source: Compiled from BPS documents

Figure 3.1.4 Composition of JABODETABEK MPA Population by Cities/Regencies

The population growth rate between 2000 and 2010 was fairly high in MPA East and MPA West as given in Table 3.1.2. MPA East comprises of Kota Bekasi and Kabupaten Bekasi. MPA West comprises of Kota Tangerang, Kota Tangerang Selatan, and Kabupaten. Tangerang. On the other hand, the population growth rate in DKI Jakarta remained at a relatively lower level compared with other areas.

Table 3.1.2 Demographics of JABODETABEK MPA

City / Regency	Area (km^2)	Population		
		2000	2010	Annual growth rate 2000-2010
JABODETABEK MPA	6,400.71	21,232,069	27,951,404	2.79%
DKI Jakarta	664.01	8,389,443	9,588,198	1.34%
MPA East	1,480.00	3,332,296	4,966,040	4.07%
MPA South	2,981.77	5,403,048	7,456,375	3.27%
MPA West	1,274.93	4,107,282	4,900,771	3.76%

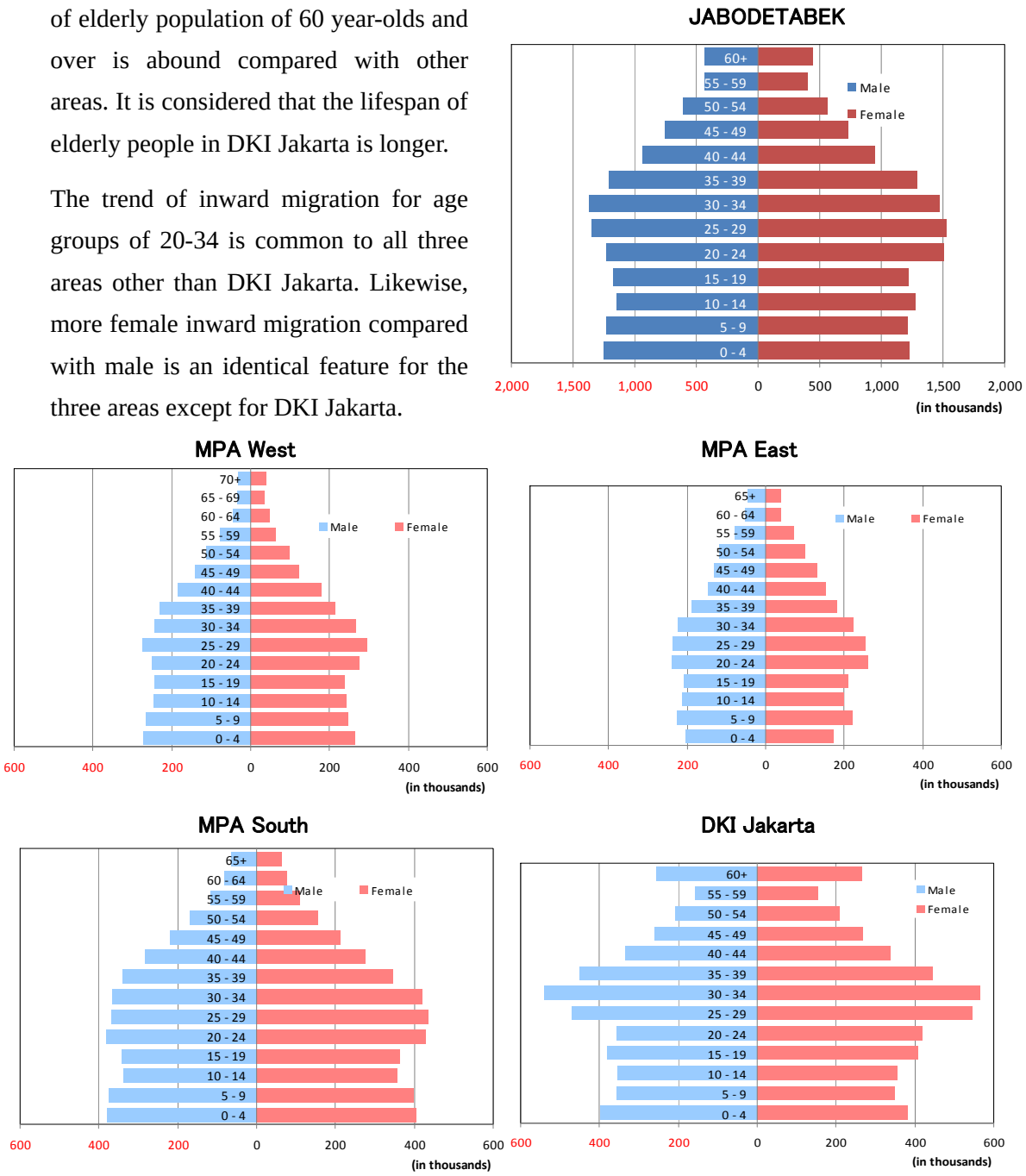
Note: MPA East consists of Kota Bekasi and Kabupaten Bekasi.
MPA South consists of Kota Depok, Kota Bogor, and Kabupaten Bogor.
MPA West consists of Kota Tangerang, Kota Tangerang Selatan, and Kabupaten Tangerang.
Source: Compiled from BPS documents

Breakdown of the population in JABODETABEK MPA by sex and age groups, in the form of population pyramid is shown in Figure 3.1.5. The stationary style pyramid for JABODETABEK MPA implies that both fertility rate and mortality rate are relatively low, making it an urban-style population structure. It also shows that there is an active inward

migration in age groups 20-39, for both male and female.

Pyramids for four areas which comprise JABODETABEK MPA show that the population structure of DKI Jakarta has strikingly different characteristics compared with that of other areas. One is that wider age groups of 15-44 are seen to be expanding with inward migration, and another is that the portion of elderly population of 60 year-olds and over is abound compared with other areas. It is considered that the lifespan of elderly people in DKI Jakarta is longer.

The trend of inward migration for age groups of 20-34 is common to all three areas other than DKI Jakarta. Likewise, more female inward migration compared with male is an identical feature for the three areas except for DKI Jakarta.

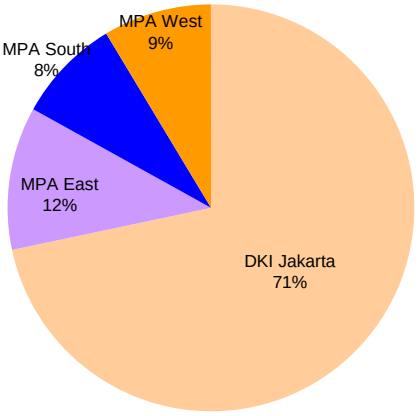


Remark: It has totaled by aged 60 and over at DKI Jakarta. It is considered that elderly people's life is long in DKI Jakarta.
Source: Compiled from BPS documents

Figure 3.1.5 Population Pyramids of the MPA

(2) Economic Condition: Gross Regional Domestic Product

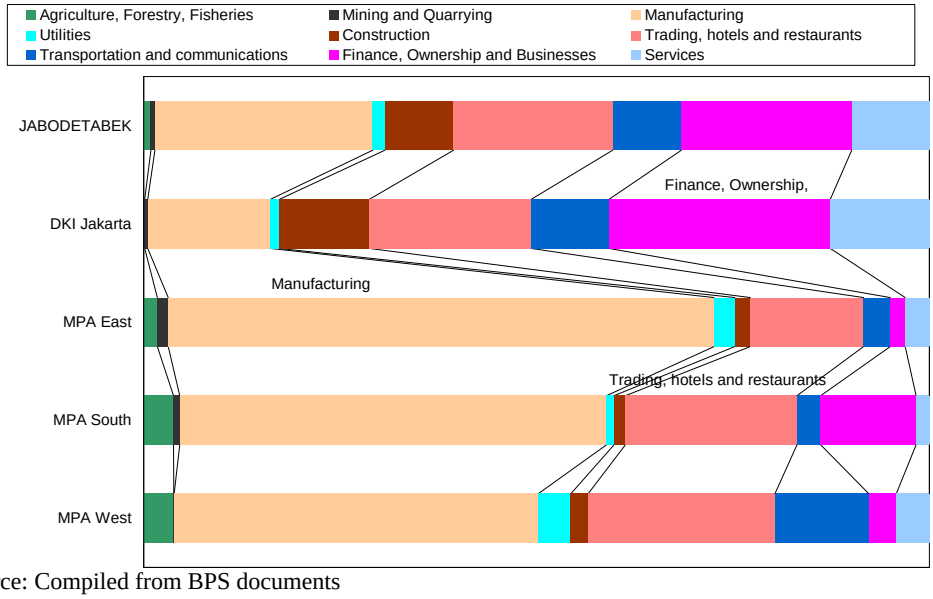
The Gross Regional Domestic Product (GRDP) of JABODETABEK MPA amounted to IDR 804 trillion (in 2007), which is approximately USD 89 billion. Of this total production figure, 71% was attributed to production in DKI Jakarta, followed by 12% from MPA East, and 9% from MPA West. The high composition of economic production of DKI Jakarta despite a limited share of population implies that the production per capita in DKI Jakarta is significantly higher than the rest of the area.



Source: Compiled from BPS documents

Figure 3.1.6 Composition of JABODETABEK MPA GRDP by Cities/Regencies

The breakdown of GRDP by industrial activities of JABODETABEK MPA and its comprising cities/regencies shows that the composition of industries in each of the cities/regencies is diverse. The production of both MPA East and MPA South are heavily dependent on the manufacturing sector, which shows that activities of factories located in these regencies are contributing significantly to the regional economy. The characteristics of DKI Jakarta from its industrial structure is that the service sector, notably the financial, properties, business supporting activities, and other services, strongly contribute to the metropolis' economy. As to the composition of GRDP in cities and regencies, the industrial structure of the JABODETABEK MPA broadly resembles to that of DKI Jakarta as shown in Figure 3.1.7.

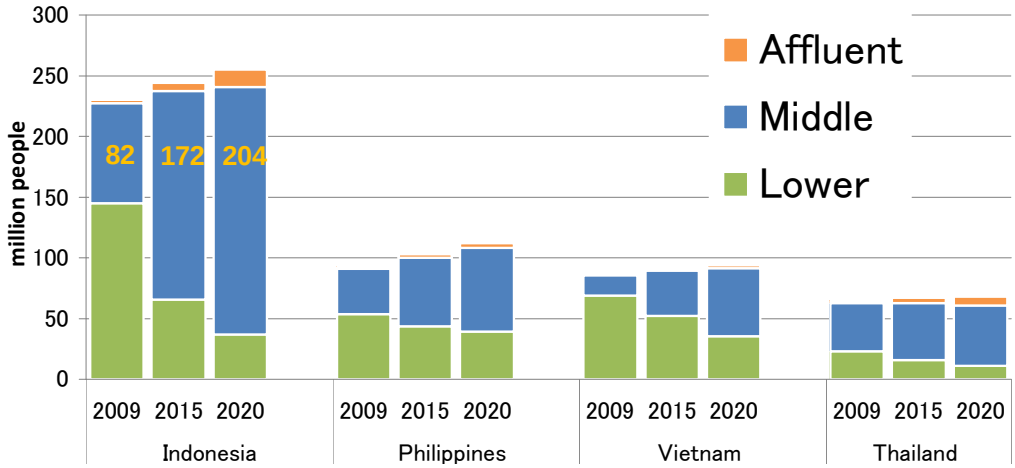


Source: Compiled from BPS documents

Figure 3.1.7 Sectoral Composition of GRDP in the Cities/Regencies of the MPA

(3) Economic Condition: The Rise of the Middle Class

Based on the "Euro monitor International 2010" population share of the middle class in Indonesia was estimated from about 82 million people in 2009 to 204 million people in 2020. Accordingly, reducing the number of the lower class in the social structure will make most of population to be constituted by the middle class. This rise in numbers of the middle class in Indonesia is expected to similarly increase compared with other Asian countries as illustrated in Figure 3.1.8.



Source: Euro monitor International 2010

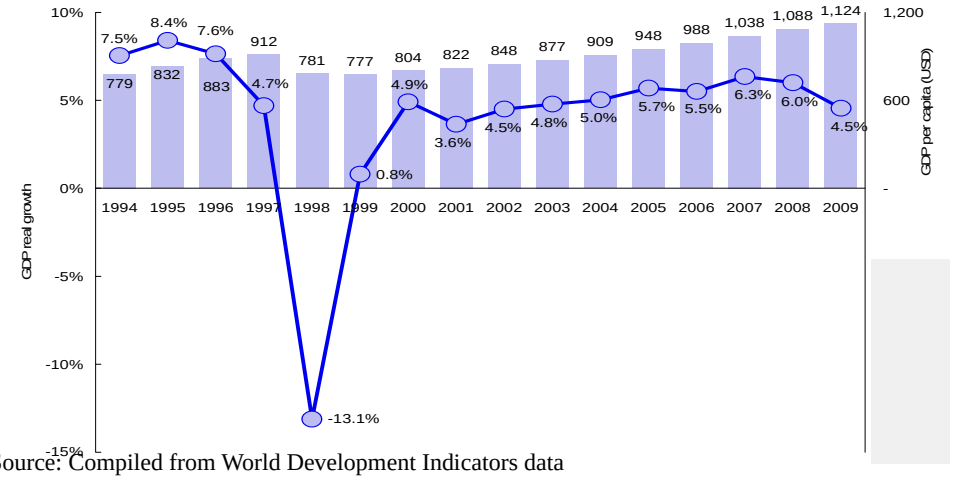
Figure 3.1.8 Size of the Indonesian Middle Class (1999 and 2009, million)

3.1.3 Trend of Economic Development

(1) Real GDP Growth and GDP per Capita

Fourteen years after the economic distress due to the 1997 financial crisis, Indonesia has steadily recovered in maintaining its economic growth rate at 4-6% during the recent years. Due to this steady growth for the past 12 years, Indonesia's per capita GDP has surpassed USD 1,000 in 2007, and remains continuously progressing as shown in Figure 3.1.9.

Indonesia's **g**ross national income **(**GNI**)** per capita was calculated at USD 2,271 in 2008 based on Purchasing Power Parity. The economy is therefore currently classified as among the lower middle income economies under the World Bank criteria (i.e., GNI per capita of USD 996 to USD 3,945 on Purchasing Power Parity basis)



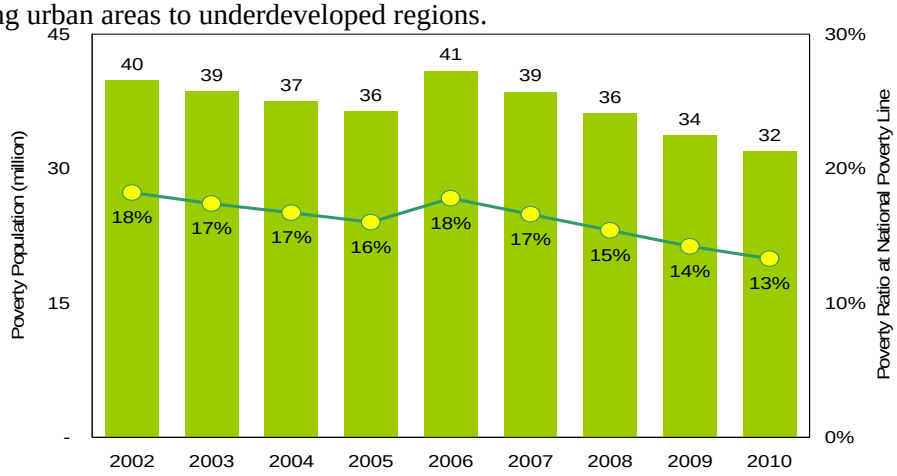
Source: Compiled from World Development Indicators data

Figure 3.1.9 Real GDP Growth and GDP per Capita

According to the International Monetary Fund (IMF) World Economic Outlook, the real GDP growth in 2010 was expected to be 6.1%, which shows that the nation's economy has only been slightly affected by the global economic downturn in 2009. The recovery was seen to be sustainable, enabling the economy to continue growing at 6-7% in the years to follow.

(2) Poverty Reduction

The recent steady economic growth has also contributed to the reduction of poverty rate. Based on the national poverty line, the poverty rate declined from 17% (37 million persons) in 2004 to 13% (32 million persons) in 2010. The significance of this achievement is not only the reduced percentage within the population but also the actual headcount of those below the poverty line, which has been steadily declining as shown in Figure 2.1.10. The GOI attributes this achievement to both economic growth and to pro-poor policies, which have been implemented since 2000. Interventions include support for the sectors of rural agriculture, forestry and fisheries, and also redistribution of wealth from rapidly growing urban areas to underdeveloped regions.



Source: Compiled from World Development Indicators data

Figure 3.1.10 Reduction of Population below the Poverty Line

Indonesia is now ranked as a lower middle-income economy by the UN, reflecting its achievement in slashing poverty population counts. Upgrading of Indonesia's ranking is expected to bring about better perception by the potential investors. This virtuous cycle for economic growth of Indonesia has now been well perceived by IMF. The country's long-term economic growth outlook is forecasted at 6-7%, which makes it one of the fastest growing economies in Asia.

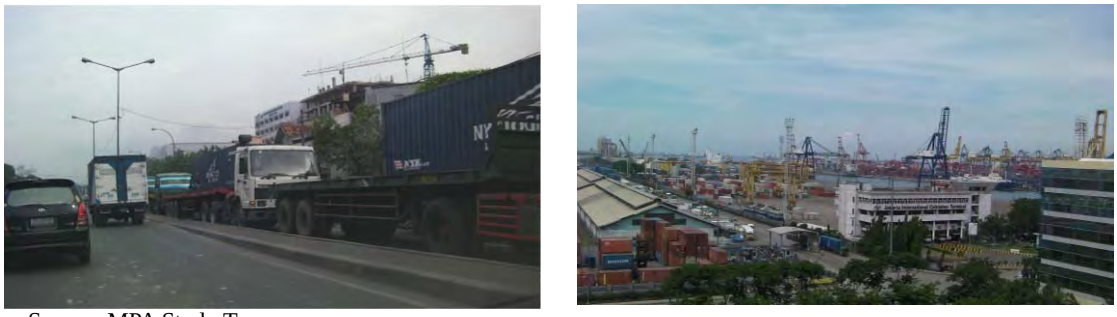
3.1.4 Logistics Condition

(1) Importance of Logistics

The importance of logistics has come to be recognized widely. For instance, the automobile sector has established a highly sophisticated supply chain since they optimized the procurement of automobile parts internationally and domestically. The supply chain management becomes a high priority issue in order to maintain competitiveness in the world, and the success or failure of the supply chain has decided the competitive edge of global companies.

Since the importance of logistics has been recognized, the logistics circumstances around JABODETABEK MPA have become increasingly worst, in particular, traffic congestion in ports and roads due to lack of infrastructure which entails cargo delay, redundancy due to the intense concentration on JABODETABEK MPA, etc., as shown in Figure 3.1.11. This is thought to be one obstruction factor on the economic development of Jakarta.

Furthermore, human life does not work out if distribution does not function either, as experienced in "The 2011 off the Pacific Coast of Tohoku Earthquake". The improvement of the logistics environment around JABOBETABEK MPA is a high priority issue.



Source: MPA Study Team

Figure 3.1.11 Congestion in Ports and Roads

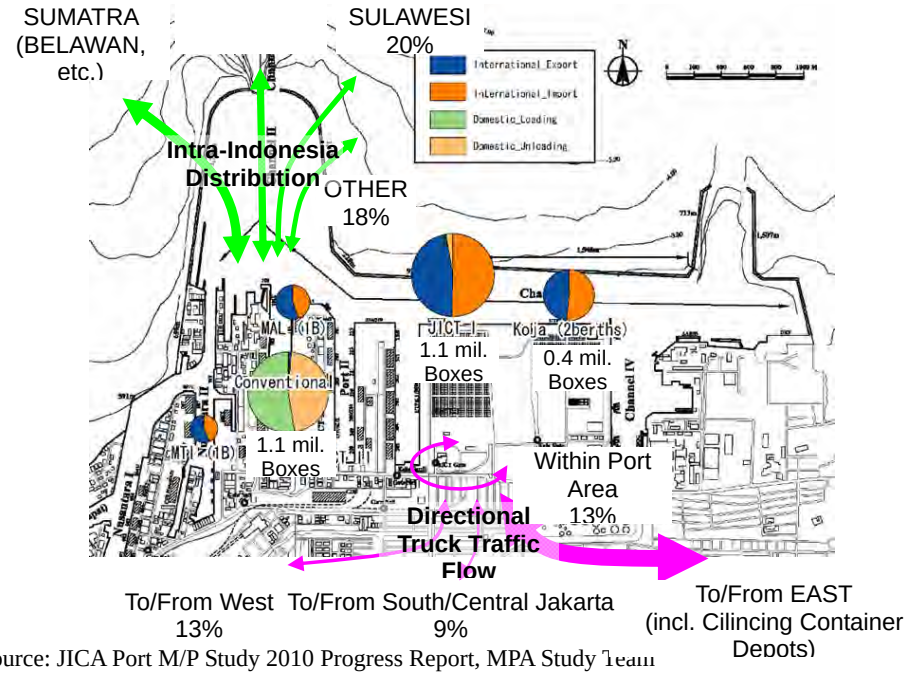
(2) Current Condition

1) Port

The container throughput of Tanjung Priok Port reached about 3.8 million twenty-foot equivalent unit (TEU) for both international and domestic containers in 2009.

International containers are handled mainly at the Jakarta International Container Terminal (JICT) and Koja Container Terminal which are located in the eastern part of the port, while domestic containers are handled mainly at conventional wharves located in the western part. The distribution of container throughput by terminal, domestic cargo's origin/destination, and inland directional truck traffic flow are shown in Figure 3.1.12.

Non-container cargo-handling volume in Tanjung Priok Port reached about 26.6 million metric tons (MT) in 2009. The handling volume by commodity is shown in Table 3.1.3.



Source: JICA Port M/P Study 2010 Progress Report, MPA Study Team

Figure 3.1.12 Container Throughput and Distribution in 2009

Table 3.1.3 Non-Container Cargo Handling Volume by Commodity in 2009

Unit; thousand MT

International						Domestic					
Export			Import			Loading			Unloading		
Clinker	1,358	(47%)	Iron and steel product	2,441	(24%)	Cement	1,441	(57%)	Coal	3,220	(30%)
Cement	542	(19%)	Petroleum products	2,293	(22%)	GC	417	(17%)	Petroleum products	1,959	(18%)
rice bran	226	(8%)	Wheat	1,942	(19%)	GC + CNT	228	(9%)	Sand	1,775	(16%)
Iron and steel product	226	(8%)	LPG	787	(8%)	Iron and steel product	144	(6%)	Vegetable oil	1,584	(15%)
GC + CNT	86	(3%)	Chemical product	611	(6%)	Machinery and equipment	90	(4%)	Cement	823	(8%)
Other	430	(15%)	Other	2,284	(22%)	Other	187	(7%)	Other	1,529	(14%)
Total	**2,867**	**(100%)**	**Total**	**10,359**	**(100%)**	**Total**	**2,507**	**(100%)**	**Total**	**10,890**	**(100%)**
Veicle(units)	62,632		Veicle(units)	90,348		Veicle(units)	102,881		Veicle(units)	14,533	
Cattle(Heads)	-		Cattle(Heads)	370,847		Cattle(Heads)	-		Cattle(Heads)	-	

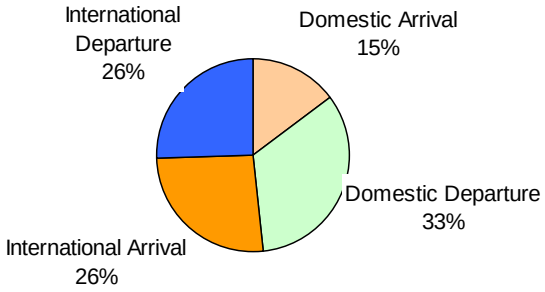
Source: JICA Port M/P Study 2010 Progress Report, MPA Study Team

(3) Airport

The cargo-handling volume of Soekarno-Hatta International Airport in 2010 was 497,000 MT in total, of which almost half was international and the rest was domestic. The annual

total volume of air cargo was much smaller than in other Asian airports. (Figure 3.1.13)

Cargo	Volume (Ton)
Domestic Arrival	73,065
Domestic Departure	167,170
International Arrival	129,680
International Departure	126,962
Total	496,877



Source: JICA Airport M/P Study Progress Report, MPA Study Team

Figure 3.1.13 Air Cargo Volume in 2010

(4) Railway

The existing freight transportation in Java Island is composed of coal, bulk, and container transportations between Banteng, the DKI Jakarta areas, and West Java area as given in Table 3.1.4. According to the government policy of saving fuel consumption, freight railway transport is expected to play a significant role in the nation's logistic growth.

Table 3.1.4 Railway Cargo Volume in 2009

RAIL	COMMODITIES	VOLUME (TON)	RAIL	COMMODITIES	VOLUME (TON)
DAOP-I	COAL (Cgd - Bks)	422,940	DAOP-II	CONTAINER (Gdb - Poo)	49,520
	PK. DLN CNC (Sao -Smg)	15,568		B.H.P	12,091
	PK. ANTABOGA (Jakg -Sbi)	156,753		**DAOP-II TOTAL**	**61,611**
	CONTAINER CENCON (Sao -Kim)	79,134			
	CONTAINER JPT (Poo - Klm)	68,280	DAOP-III	B.H.P	59
	PARCEL (Jakg - Sbi)	56,554		OTHERS	30,830
	PARCEL II (Jakg - Sbi)	2,067		**DAOP-III TOTAL**	**30,889**
	STEEL COIL	16,922			
	STEEL (Jakg - Sbi)	57,480	DAOP-IV	PK DLN (Smg - Sao)	787
	CONTAINER (Poo - Gdb)	62,006		CONTAINER (Smg -Sk)	222
	B.H.P	15,211		CONTAINER (Smg -Klm)	56
	OTHERS	169,380		COARSE SAND	19,338
	DAOP-I TOTAL	**1,122,295**		B.H.P	994
				OTHERS	118,969
				DAOP-IV TOTAL	**140,366**

Source: JICA Port M/P Study 2010 Progress Report, MPA Study Team

(5) Cargo Flow in the Area

There seems to be no comprehensive logistics survey or logistics master plan in Indonesia, thus it is difficult to grasp the precise cargo flow in JABODETABEK MPA and its vicinities. By utilizing the

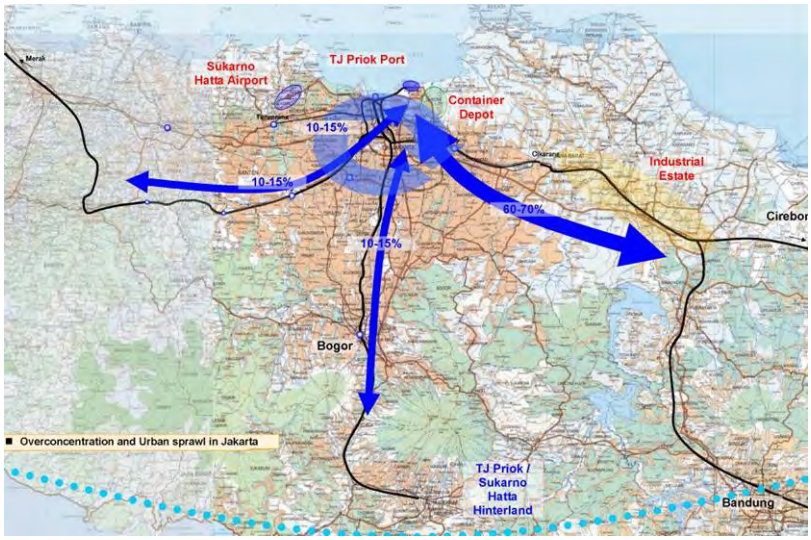


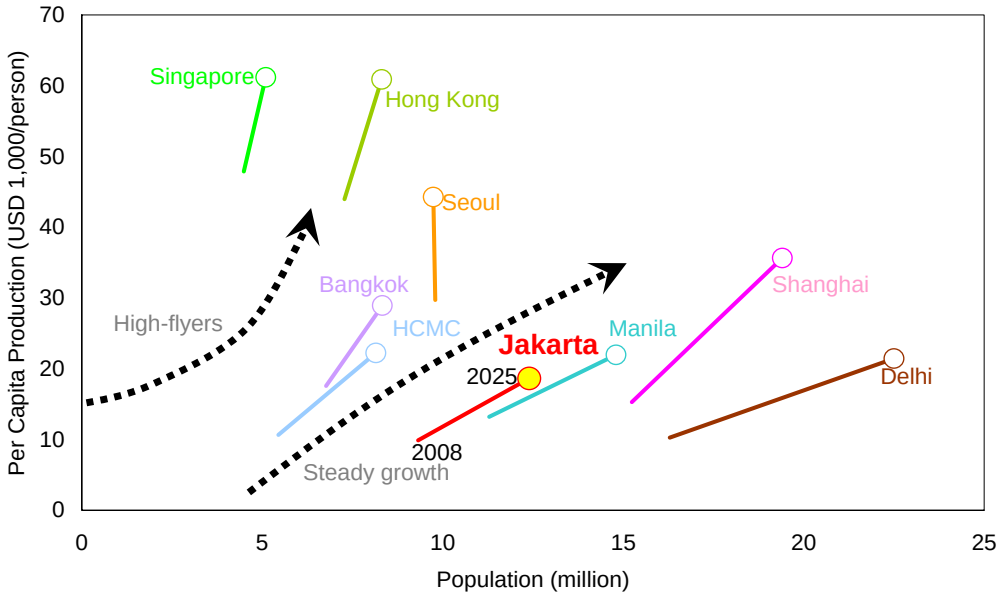
Figure 3.1.14 Cargo Flow around JABODETABEK MPA Area and Vicinities (Estimated)

existing reports and statistics besides the location of industrial estates, the main cargo flow between the port, which is the major node of logistics, and the hinterland was estimated, as shown in Figure 3.1.14. The port and airport in Jakarta have very wide hinterland over JABODETABEK MPA and everything from/to the hinterland is concentrated in Jakarta, as transported mostly by road. It was estimated that around 60-70% of the cargo may come from/to the eastern side of Jakarta considering the traffic survey and the location of the industrial estates as shown in Figure 3.1.14.

3.2 COMPETITIVENESS OF JABODETABEK MPA

3.2.1 Economic Activities and Growth

Economic activities in JABODETABEK MPA, when compared using per capita economic production as an indicator, is approximately at the same level as those of Ho Chi Minh City and Delhi. It slightly lags behind Bangkok, Manila and other Southeast Asian megacities. According to the outlook published by Pricewaterhouse Coopers UK, economic activities of major Asian cities are forecasted to grow, with cities such as Shanghai and Ho Chi Minh City doubling their per capita economic production in 2025 from 2008. During this period, Shanghai, in terms of per capita economic production, will become richer than Bangkok. Ho Chi Minh City is another rapidly growing city, and is expected to surpass Manila. Furthermore, cities that are relatively well-developed, such as Seoul, Singapore, and Hong Kong are forecasted to continue to grow further.



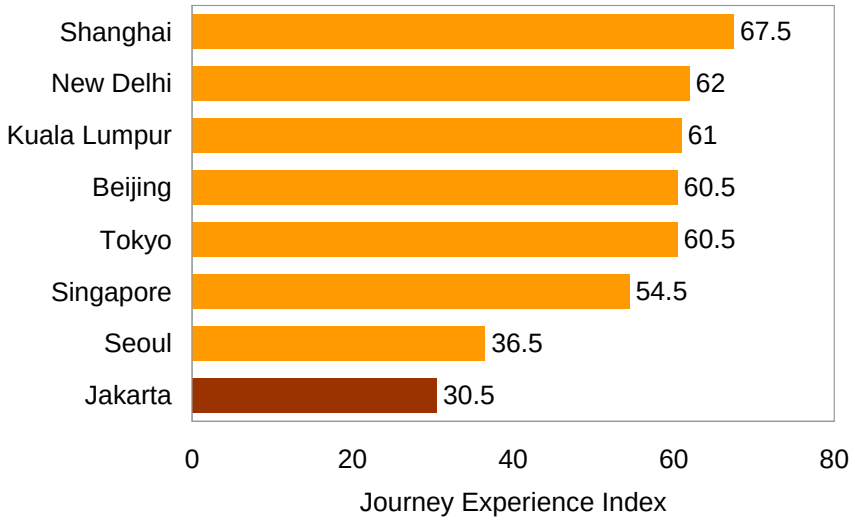
Source: Compiled from Pricewaterhouse Coopers UK, Economic Outlook November 2009

Figure 3.2.1 Comparison of Per Capita GDP of Major Asian Agglomerations

Although economic activities of JABODETABEK MPA is also expected to grow significantly during the same period, the growth is not as robust as to overtake any of other Asian megacities. It is more of the population, rather than per capita economic production, that will increase in JABODETABEK MPA. As a consequence, the growth pattern of JABODETABEK MPA is seen to follow a steady growth pattern, to remain at the bottom of the prosperity list of Asian megacities for the foreseeable future. JABODETABEK MPA will therefore require a scenario to overcome the above mentioned forecasting, to become a more aggressively growing city to better compete with the other Asian cities.

3.2.3 Infrastructure

Infrastructures to support urban life activities varies from physical facilities such as transport, housing, utilities, and communication, to cultural functions such as education, healthcare, entertainment, and recreation opportunities. JABODETABEK MPA lags behind in urban living infrastructure as seen from liveability indicators. Liveability ranking 2011 published by Economist Intelligence Unit shows that liveability of JABODETABEK MPA is currently way below those in Singapore, Hong Kong and Tokyo. Liveability in Infrastructure, Stability and healthcare are evaluated to be especially inferior compared with the other leading Asian cities.



Source: Frost & Sullivan, Journey Experience Index

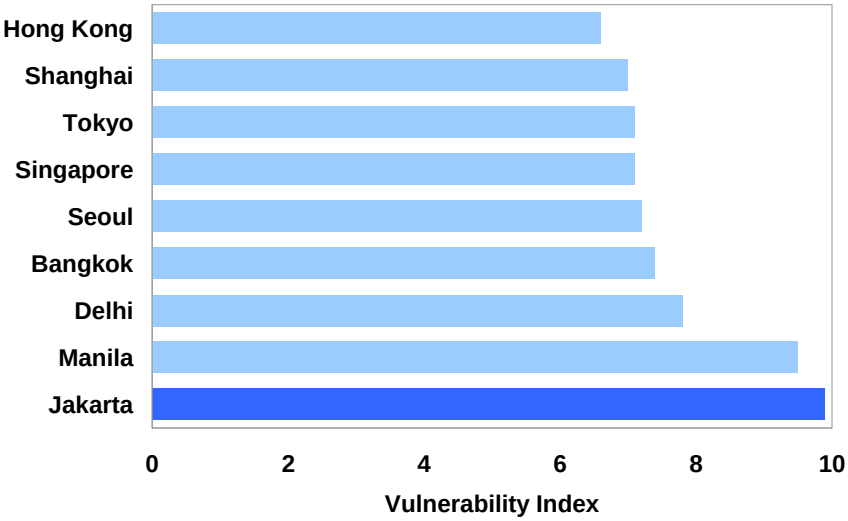
Figure 3.2.2 Commuter Satisfaction of Public Transport in Major Asian Cities

Among various urban infrastructures, public transport is one of JABODETABEK MPA's weak points. Commuters in the city are reported to be least satisfied travellers among major cities in Asia.

Another essential urban infrastructure is disaster prevention facilities against flood, earthquakes and other natural disasters. Such disaster prevention infrastructure in JABODETABEK MPA is seen to be insufficient especially when compared with other Asian cities. Munich RE, a re-insurance company, stated in its publication that Jakarta is one of the most vulnerable megacities in Asia against natural catastrophe. There is also a report from

OECD warning that 2.2 million people will be exposed to sea level rise and storm by 2070.

Whether a city is a pleasant and safe place to dwell in, it is an indispensable factor for the city to claim its competitiveness. Improvement of urban infrastructure, especially in transportation and disaster prevention functions, is essential for realizing a better liveability in JABODETABEK MPA. Improving the weak points in its infrastructure namely, transport and disaster prevention functions, JABODETABEK MPA can become a competitive city that will attract inhabitants as well as businesses.



Source: Munich RE (2005), Megacities–Megarisks Trends and Challenges for Insurance and Risk Management

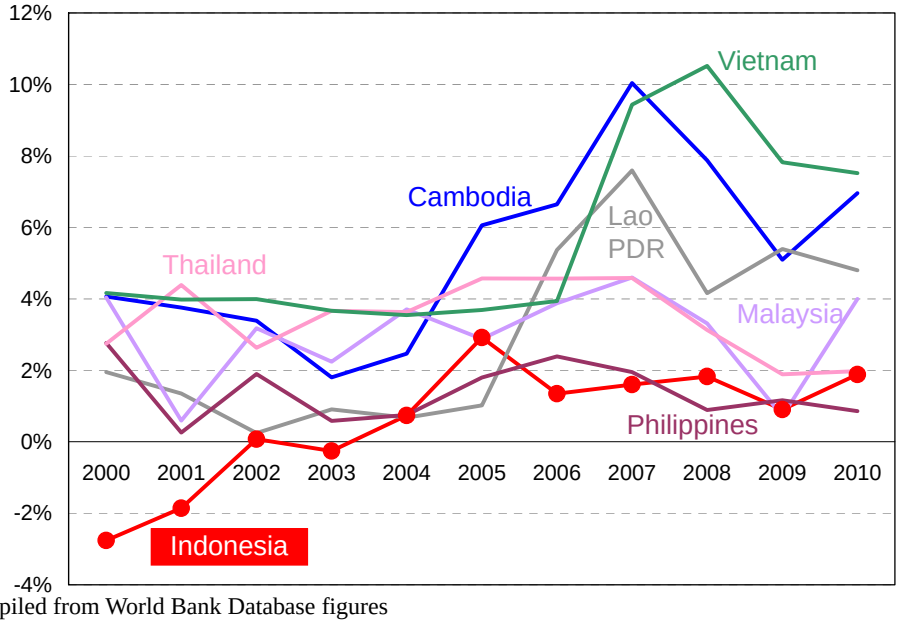
Figure 3.2.3 Vulnerability against Natural Catastrophe: Comparison among Major Asian Cities

3.2.4 Investment Climate

Competitiveness for attracting foreign investments can be measured by indicators representing investment climate. For example, the Global Competitiveness Report published by the World Economic Forum evaluated Indonesia as one of the best performing economies in Asia, and ranked the country 46th among 139 countries worldwide. Although it lags behind some of its neighbouring countries such as Singapore and Malaysia, it can be said that Indonesia is a country offering relatively good investment climate.

Nevertheless, inward investment figures do not necessarily suggest that Indonesia has been attracting as much foreign direct investment (FDI) as it should, when compared with other major ASEAN countries. FDI as the ratio against GDP for the past decade indicates that FDI inflow to Indonesia has been one of the lowest among the ASEAN countries, in proportion to the size of the economy.

The data suggests that Indonesia needs to reinforce its investment promotion activities as well as to create an investor friendly environment by making its business hubs more attractive. Measures to improve urban infrastructure in JABODETABEK MPA can contribute to attract more FDI to Indonesia by providing better living and business environment preferred by investors.



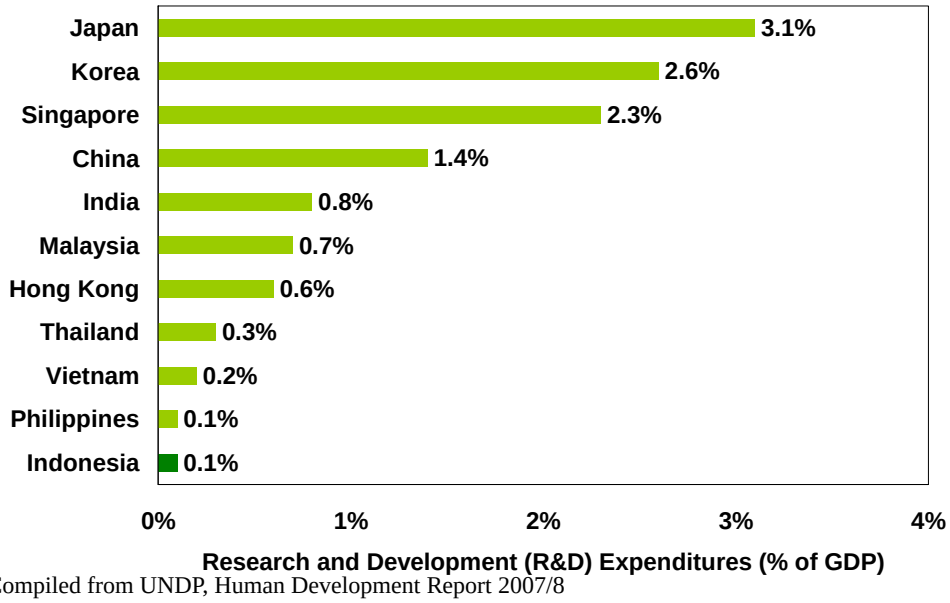
Source: Compiled from World Bank Database figures

Figure 3.2.4 Comparison of Investment Inflow: FDI / GDP Ratio of ASEAN Countries (Excludes Brunei and Myanmar and Singapore)

3.2.5 Technological Strength

Another essential factor as to the competitiveness of a city, especially in attracting foreign investment, is its readiness to support incoming business activities. For example, attracting high-tech/high value-added industries, as favored by many developing economies, requires readiness on the receiving side to support the industry with skilled research staffs. Readily existing scientific activities will be a positive factor for foreign businesses to consider locating their research and development functions to the site.

As for Indonesia, its master plan for acceleration and expansion of economic growth, MP3EI clearly states the importance of nurturing high value-added industries, with linkage to the necessity to further develop human capacity. However, looking at the past data on the country's expenditure on research and development (R&D) activities, Indonesia has one of the smallest proportions to the size of its economic activities. According to the Human Development Report released by the United Nations Development Programme (UNDP) in 2007/2008, the R&D expenditure as a percentage of GDP in Indonesia was 0.1%, which is considerably lower than those of other Asian countries.



Source: Compiled from UNDP, Human Development Report 2007/8

Figure 3.2.5 Research and Development Expenditure (Percentage of Current GDP)

With the relatively low rate of R&D expenditure, Indonesia will require a concrete policy on promoting and attracting high-tech functions as one of high value-added industrial activities. Giving incentives and providing infrastructure necessary for scientific R&D activities, starting from few designated areas in Indonesia, will be a realistic step towards creating a R&D core that will attract high-tech functions from overseas.

CHAPTER 4 CURRENT CONDITION OF INFRASTRUCTURE

4.1 MASS TRANSPORTATION NETWORKS

4.1.1 Current Situation

(1) Overview

The population of JABODETABEK MPA has increased by 1.4 times over the past 15 years, from 17 million in 1990 to 24 million in 2005 (an average of approximately 2% per year). The area, which consists of the special capital territory of DKI Jakarta and the BODETABEK area (Bogor, Depok, Tangerang and Bekasi) , will be one of the world's largest metropolitan areas by 2030. In recent years, the population of the suburban areas has been increasing significantly. Along with this, and economic expansion and increasing car ownership ratio in the area contributed to the traffic volume. Accordingly, further increase in the volume of traffic was predicted. The transportation mode in JABODETABEK area highly depends on road traffic (98%), and the number of registered cars has been increasing in the area from 3.26 million in 2000 to 7.97 million in 2006, an approximate increase of 2.4 times. Hence, this raises concerns on traffic congestion. Particularly, most of the motorcycle users who used to be bus commuters switch to their present transportation mode, thus the increase in motorcycle traffic has contributed to traffic congestion and caused a decline in the use of public transportation systems.

Traffic congestion in the JABODETABEK area causes significant economic loss. In addition, traffic congestion problem and environmental pollution are predicted to get worse along with the increase in traffic demand and number of cars as shown in Figure 4.1.1. Therefore, the Indonesian government is implementing a series of measures such as construction of busways, improvement of the JABODETABEK railway, and implementation of a management system for general buses. However, the share of public transportation is still decreasing.

Source: MPA Study Team

Figure 4.1.1 Current Situation of Traffic Congestion

The railway trips represented only a 2% share in the JABODETABEK area (according to a person trip survey in 2002, SITRAMP). However, railway is the main transportation system in the area; therefore, the improvement of its network and service level in conjunction with

the ongoing mass rapid transport (MRT) project is required. In order to demonstrate the function of the railway as an MRT system, it is not enough to improve only the railway system. A comprehensive approach is required including the improvement of access roads to stations, provision of feeder bus service, and promotion of high density land use.

(2) JABODETABEK Railways

The construction of railway facilities and maintenance are the responsibility of MOT, while railway operation is the responsibility of PT. Kereta Api (KA) Indonesia. Meanwhile, the responsibility of PT. KA Commuter JABODETABEK includes station management and operation only at the moment as shown in Figure 4.1.2

Source: MPA Study Team

Figure 4.1.2 Current Situation of Railway

JABODETABEK railways have a network of 166 km with 400,000 passengers per day for 380 electric rail cars. Long distance trains are also operated on the same track. Passenger volume is rather small due to lack of rail cars, poor maintenance, delay of train operations, dirty facilities, unsafe operation, poor access to stations, and low services for middle-class commuters.

Integration with other transport modes at stations is indispensable for an efficient public transportation network. However, even if there are many players involved, integration of railways with other transportation modes has not been improved. Stations are owned by MOT and operated by PT. KA Commuter JABODETABEK, while the station plaza and access roads are being managed by DKI Jakarta Infrastructure Division. Buses and taxis are controlled by DKI Jakarta Transportation Division and commercial development of nearby stations is done by the private sector. Currently, there are no fruitful discussions among the players. As observed, railway station is located slightly away from the main road, and in some locations, there are no station plazas provided. Thus, access to the station is not smooth at the moment causing inconvenience to passengers in using the railway.

The project to be implemented includes station/station plaza development, track doubling, track elevation, procurement of electric rail cars, construction of airport rail link, improvement of workshop/depot, installation of ATS, improvement of signal/telecom/ power supply, passenger foot path installation, short cut track construction, etc.

(3) MRT

PT. MRT Jakarta is responsible for the construction and operation of the MRT. It was established in February 2008 under DKI Jakarta Transportation Division with approximately 30 staff. They are engaged in facility planning, selection of contractor and coordination with concerned agencies.

The first priority corridor proposed in the master plan is the Lebak Bulus – Bundaran HI – Kampung Bandan as shown in Figure 4.1.3, which is known as the Jakarta Mass Rapid Transit North – South Line, while the second priority corridor is the East–West Line. Moreover, the North–South Line is divided into two sections, i.e., N-S Phase I and N-S Phase II.


Source: MPA Study Team

Figure 4.1.3 Image of the MRT

Busway on the MRT line will be demolished after the completion of its construction. The MRT will provide a high-level commuting service (i.e. safe, comfortable, on time, and clean). Middle-class workers are the main target users of the MRT, and the conversion from car to train is highly expected together with car traffic restraint policy such as electric road pricing.

(4) Monorail

The Government of DKI Jakarta has appointed PT. Jakarta Monorail and its consortium to develop the monorail system. Some piers have been constructed, but due to financial problem, the project was suspended.

The Government of DKI Jakarta decided to terminate the contract with PT. Jakarta Monorail, and announced to convert the monorail system to an elevated busway. However, the conversion to busway is currently under consideration with respect to assets and structural reinforcement of piers, among others.

(5) Busway

The following eleven busway corridors, with 520 buses and 310,000 passengers are operating at the moment as shown in Figure 4.1.4. This started in 2004 with Corridor 1. In addition, four more corridors as presented below are being planned to be open in the near future.

1) Corridor 1 : Blok M–Kota (20 bus stops, 12.9 km)
2) Corridor 2 : Pulo Gadung–Harmoni (23 bus stops, 14 km)

3) Corridor 3 : Kalideres–Harmoni (16 bus stops, 19 km)
4) Corridor 4 : Pulo Gadung–Dukuh Atas (17 bus stops, 11.85 km)
5) Corridor 5 : Ancol–Kampung Melayu (17 bus stops, 13.5 km)
6) Corridor 6 : Ragunan–Kuningan (20 bus stops, 13.3 km)
7) Corridor 7 : Kp. Rambutan–Kp. Melayu (14 bus stops, 12.8 km)
8) Corridor 8 : Lebak Bulus–Harmoni (21 bus stops, 26 km)
9) Corridor 9 : Pluit–Pinang Ranti (29 bus stops, 28.8 km)
10) Corridor 10: PGC Cililitan–Tanjung Priok (22 bus stops, 19.4 km)
11) Corridor 11: Kampung Melayu–Pulo Gebang (16 bus stops, 12 km)
12) Corridor 12: Pluit–Tanjung Priok (Plan)
13) Corridor 13: Block M–Pondok Kelapa (Plan)
14) Corridor 14: Manggarai–University of Indonesia (Plan)
15) Corridor 15: Ciledug–Block M (Plan)

Source: MPA Study Team

Figure 4.1.4 Current Situation of Busway

The PT. Transjakarta established under DKI Jakarta Transportation Division is responsible for busway operations under contract agreements with private bus operators for seven years. The fee is just IDR 3,500 for all sections and parking is provided at suburban bus stops accordingly.

(6) Bus Service

Bus routes were changed due to busway construction. DKI Jakarta Transportation Division manages the coordination of all bus services to avoid inefficient operation as shown in Figure 4.1.5. The fee is only IDR 2,000 for middle size buses and IDR 2,500 for small buses.

Source: MPA Study Team

Figure 4.1.5 Current Situation of Buses

(7) Other Public Transportation

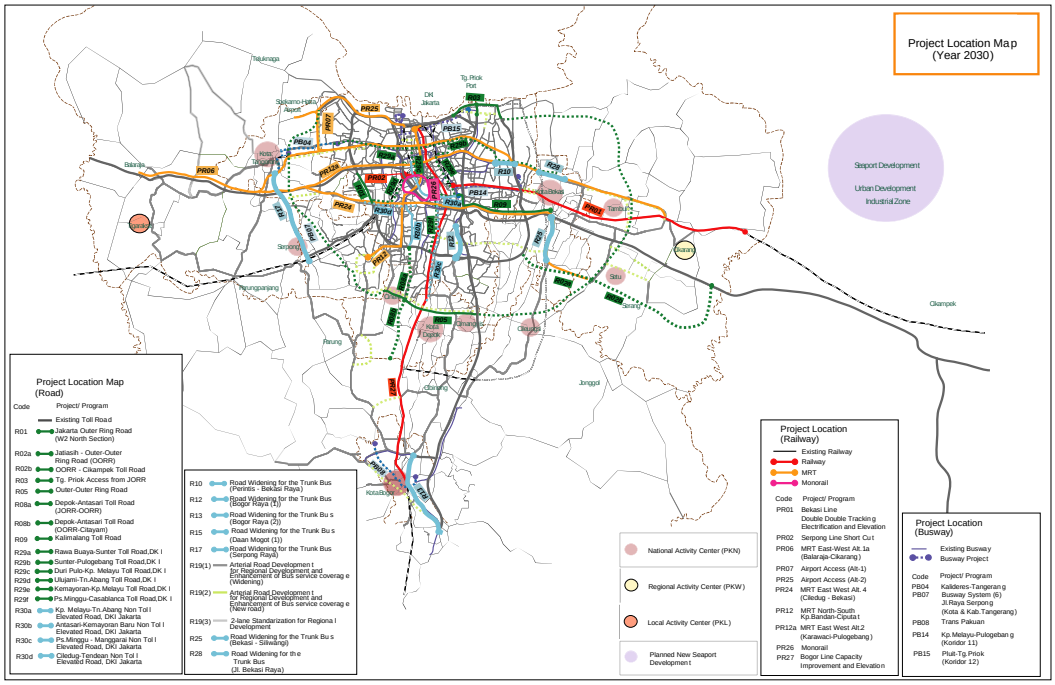
Other public transportation includes taxis, bike taxis, bajai, and becak. Bajai and becak are not allowed to run in the main streets due to traffic congestion as shown in Figure 4.1.6. Recently, the number of bikes has increased dramatically and causes new traffic congestion.

Source: MPA Study Team

Figure 4.1.6 Current Situation of Other Public Transportation

4.1.2 Transportation Issues

Firstly, the Master Plan for Public Transportation Network is absolutely necessary. The JABODETABEK Urban Transportation Policy Integration (JUTPI) is now being prepared by the Coordination Ministry of Economic Affairs as shown in Figure 4.1.7.



Source: JUTPI

Figure 4.1.7 Project Location proposed by JUTPI

Railway transportation network should be provided in order to reduce economic losses caused by traffic jams. The construction of new metro lines, capacity enhancement of JABODETABEK railways, installation of ATS for safety operation, construction of airport rail link, construction of monorail, and station development are urgently required. At present, the railway system of

JABODETABEK carries only 400,000 passengers per day, which is expected to increase by 2013 to 1.2 million. Moreover, the required number of electric rail cars will be around 640 in 2015, and 1800 in 2030. The key issue for implementation is funding. Huge amount of funding is required to ensure an efficient railway network. Therefore, PPP scheme for railway project was studied for a long period, but a concrete plan has not yet been prepared. Feasibility studies on airport rail link and monorail are the first step in implementing PPP projects.

Other issues include traffic management during construction. Good traffic coordination and arrangement shall be helpful to avoid further traffic congestion.

4.2 ROAD NETWORKS

4.2.1 Current Conditions and Forecast for 2030

(1) Assets of Road Infrastructure in JABODETABEK

Although the length of road infrastructure in JABODETABEK is about 13,720 km to serve its population of 9.6 million (2010) and area of 6,804 km^2, 40% of roads are narrow roads with less than 4 m width while 80% of them are with less than 6 m width as given in Table 4.2.1. Regarding the index of road density (% of city area), DKI Jakarta has only 8.1%, which represents an insufficient level of road asset among Southeast Asian countries. This indicator will be planned to slightly improve to 9.2% in 2030 (according to JUTPI).

Table 4.2.1 Road Length of JABODETABEK Area

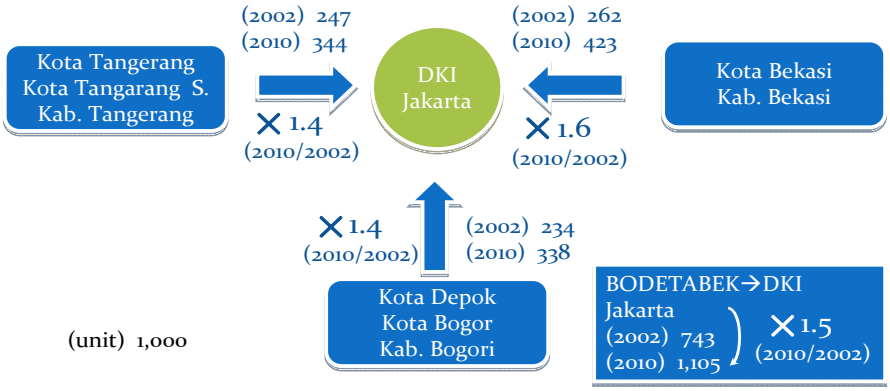
Name of Kota, Kabupaten	Road Length (km)			
	Toll Road	National	Provincial	Municipally
Jakarta Selatan	21.9	50.2	312.1	1,273.6
Jakarta Timur	37.2	31.4	335.4	1,058.0
Jakarta Pusat	6.4	13.6	233.7	628.9
Jakarta Barat	12.9	39.1	254.6	1,206.7
Jakarta Utara	34.5	29.4	194.5	950.0
DKI Jakarta (Subtotal)	***113.0***	***163.8***	***1,330.3***	***5,116.9***
Kota Bogor		***34.2***	***26.8***	***677.1***
Kabupaten Bogor		***121.5***	***130.0***	***1,506.6***
Kota Depok		***14.3***	***19.2***	***469.8***
Kota Tangerang		***16.2***	***22.0***	***1,287.5***
Kota Tangerang Selatan		***9.1***	***45.8***	***137.8***
Kabupaten Tangerang		***27.9***	***114.4***	***990.6***
Kota Bekasi	***23.7***	***13.6***	***13.3***	***312.3***
Kabupaten Bekasi		***29.7***	***26.1***	***927.0***
Total	**136.7**	**430.3**	**1,727.8**	**11,425.5**

Source: Dalam Angka (2009)

(2) Road Traffic Demand / Traffic Congestion

Despite insufficient road assets, the commuter trip demand to DKI Jakarta from JABODETABEK keeps growing. The increment of commuter traffic to DKI Jakarta has significantly grown by about ten times in 18 years (1985-2002). During the last eight years (2002-2010), the commuter traffic demand has increased by about 1.5 times, as shown in Figure 4.2.1 even if the population has only increased by 1.1 times.

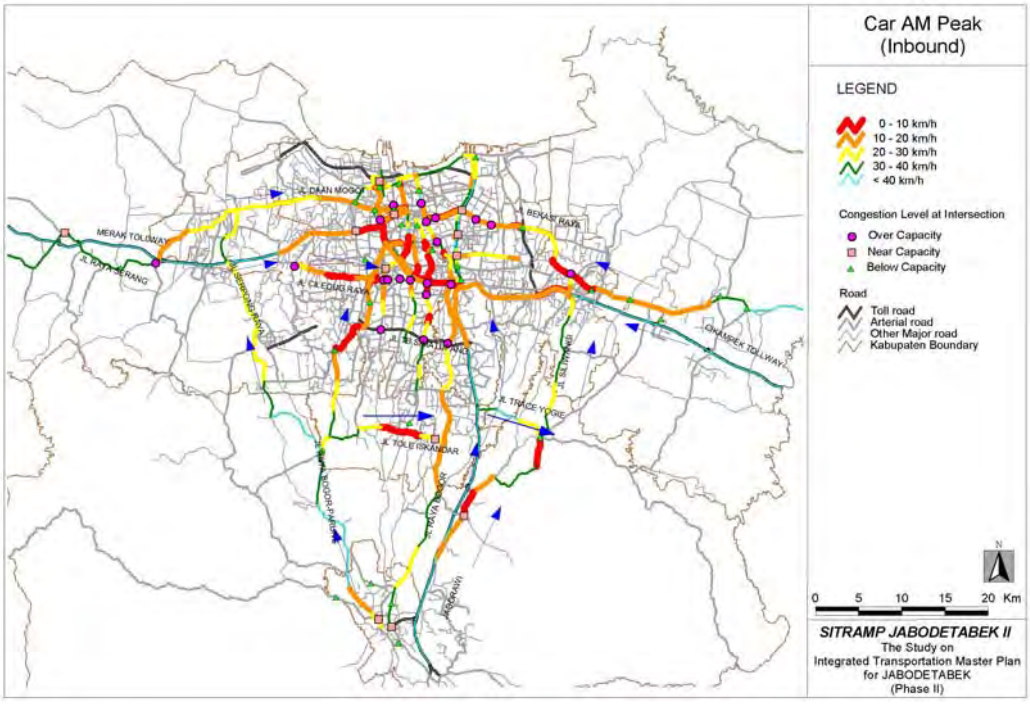
One of the reasons identified was that urbanization has continuously been observed at the outskirts of DKI Jakarta, particularly the surrounding municipalities of Kota Tangerang, Kota Tangerang Selatan, Kota Depok and Kota Bekasi. Moreover, majority of the low density rural Kampung areas have been converted into high density areas, and agricultural lands and open spaces were converted and developed into well organized housing areas by housing developers.



Source: JUTPI

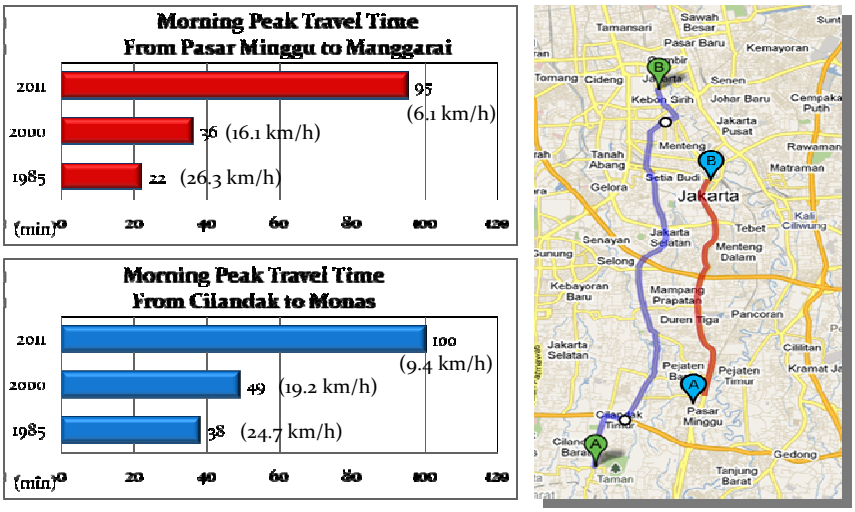
Figure 4.2.1 Increment of Commuter Traffic Demand (2002-2010)

The travel speed situation in the central area is quite severe. There are lots of links with an average speed of less than 20 km/h. Some sections are facing serious congestion problems with a speed of less than 10 km/h. Figure 4.2.2 and Figure 4.2.3 show the 1985, 2002, and 2011 comparison of average speeds by sections and changes in actual travel times.



Source: SITRAMP Phase II (2002)

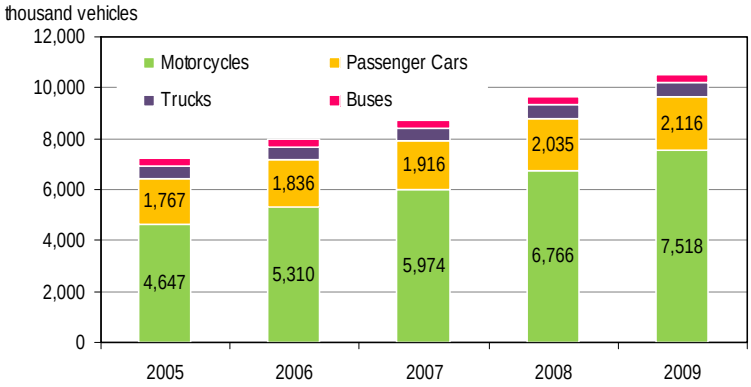
Figure 4.2.2 Average Travel Speed (Morning Peak Hours toward the Central Section, 2002)



Source: ARSDS (1985), SITRAMP Phase 1(2000), JUTPI (2011)

Figure 4.2.3 Time Series Data for Travel Speed (1985, 2002, and 2011)

The number of registered vehicles has reached about 10 million in 2009 including motorcycles, as shown in Figure 4.2.4. In the last five years (2005-2010), the number of passenger cars has increased by 1.2 times. Meanwhile, the number of motorcycles has increased by 1.6 times. The rapid increase of motorcycles over passenger cars started since the beginning of the last decade and will continue in the next decade.



Source: Ditlantas Polda Metro Jaya (Jakarta, Kota and Kabupaten Bekasi, Kota and Kabupaten Tangerang and Kota Depok)

Figure 4.2.4 Number of Registered Vehicles in JABODETABEK MPA Area

In addition, industrial areas with vigorous economic activities have more heavy vehicles which cause traffic congestion. Logistics may be one of the key issues to ease the current traffic congestion.

(3) Road Network Development Plan

Currently, the JABODETABEK Urban Transportation Policy Integration Project (JUTPI) has been conducted in order to prepare the integrated transport master plan, which includes roads (toll, non-toll, and access to railway station), railways (commuter and MRT) and

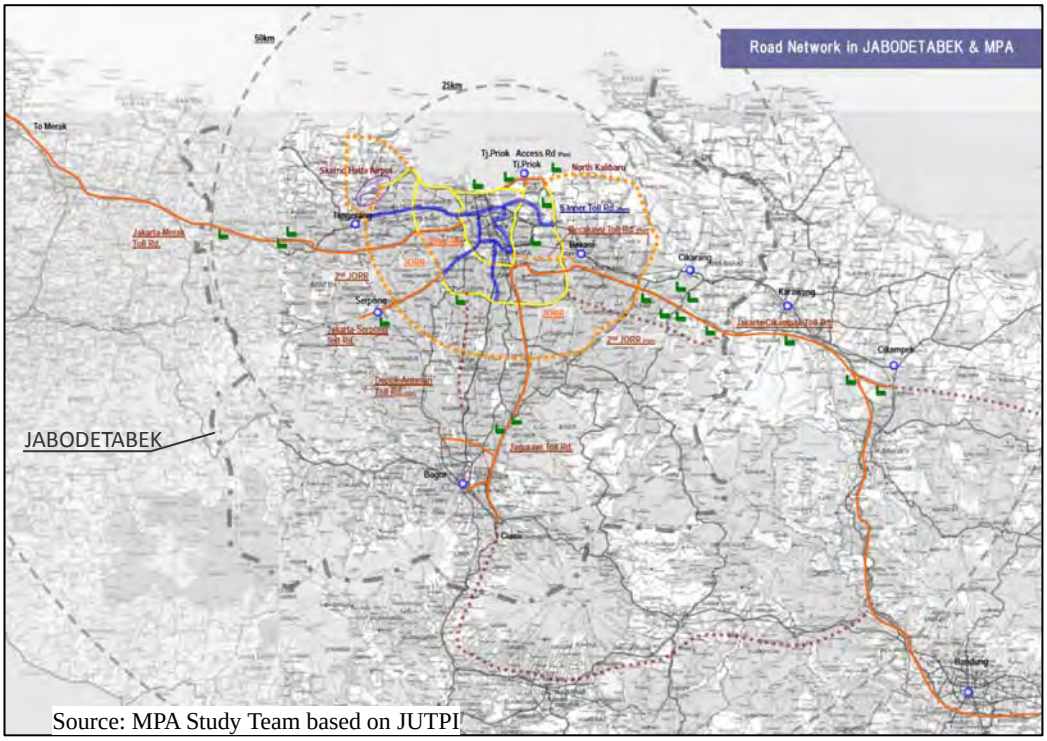
busways.

Another development plan, the spatial plan in JABODETABEKPUNJUR, entitled "PENATAAN RUANG KAWASAN JAKARTA, BOGOR, DEPOK, TANGERANG, BEKASI, PUNCAK, CIANJUR", was formulated through Presidential Decree No. 54 in 2008. This plan regulates land use of controlled areas where road development plans are to be followed.

The General Plan for National Road Network was issued through a ministerial decree in November 2010 (Rencana Umum Jaringan Jalan Nasional: 567/KPTS/M/2010). This describes the future road network plan for national highways and toll roads.

DKI Jakarta developed a plan to install six inner toll roads, which were described in the PPP Book of 2009, and four non-toll roads in the area.

Based on the above, the current and future planned road networks are summarized as shown in Figure 4.2.5. It can be said that the target area of MPA shall be extended from JABODETABEK area because economic/logistics activities in the eastern side outside the JABODETABEK are already ongoing.



Source: MPA Study Team based on JUTPI

Figure 4.2.5 Road Network Plan in JABODETABEK MPA Area

4.2.2 Issues in the Road Sector

Through the review and discussion on the current condition of the road sector, five points of view will be considered in accordance with the MPA vision and policy as follows:

- Establishment of an Area-wide Road Network in the JABODETABEK MPA,
- Mitigation of Traffic Congestion in JABODETABEK MPA,
- Mitigation of Traffic Congestion in East Jakarta Industrial Area,
- Establishment of Road Network for New Regional Development Area with New Port and Airport, and
- Realization of Network Redundancy for Logistics Connected with JABODETABEK MPA and Other Areas.

(1) Establishment of an Area-wide Road Network in the JABODETABEK MPA

The Study Team shall further discuss the road network in order to realize the MPA vision after the submission of the JUTPI master plan. At this moment, the completion of the second outer ring road, especially the connection between Cilincing and Cibitung, and the second Jakarta-Cikampek toll road are recommended in order to ensure smooth logistics.

(2) Mitigation of Traffic Congestion in JABODETABEK MPA

In order to ease traffic congestion in JABODETABEK, especially in DKI Jakarta, well combined hardware and software countermeasures are recommended as follows:

Hardware Countermeasures

- Improvement of intersection/railway crossing to increase traffic capacity;
- Installation of additional road network especially collector road network; and
- Application of compact multi-layer interchange/junction if six inner toll roads will be installed in the central area.

Software Countermeasures

- Traffic Demand Management (TDM) especially Electronic Road Pricing (ERP);
- Area Traffic Management System (ATMS) by improving the traffic signal system; and
- Provision of road traffic congestion information.

(3) Mitigation of Traffic Congestion in East Jakarta Industrial Area

- Improvement of road capacity (widening);
- Improvement of interchange access road and toll gate system; and
- Coordination between different industrial areas in order to connect road networks properly.

(4) Establishment of Road Network for New Regional Development Area with New Port and Airport

- Development of access roads leading to the new airport and seaport; and
- Establishment of other access roads leading to industrial/commercial/residential facilities.

(5) Realization of Network Redundancy for Logistics Connected to JABODETABEK MPA and Other Areas

- Antiseismic countermeasure for elevated road structures and viaducts in the urban area: and
- Ensuring the reliability and redundancy of the network to/from Jakarta-Bandung against landslides and natural disasters.

4.3 PORTS

4.3.1 Current Conditions and Forecast for 2030

"The Project of Master Plan Study on Port Development and Logistics in Greater Jakarta Metropolitan Area" (hereinafter referred to as "JICA Port M/P") was studied under JICA funding in 2010. This Study was aimed to research a potential port out of 9 ports located along the coast of West Jawa region including the enhancement of the capacity of Tanjung Priok Port and development of a new port in the metropolitan. The following data are extracted from the JICA Port M/P:.

(1) Current Conditions of Port and Access Road

The current capacity of access road to the Tanjung Priok port is 20,000 passenger car unit (pcu) per day per lane. The long term ports development in the metropolitan region was planned to implement by phases according to the progress of traffic demands. The forecast container traffic is estimated 1.9 mil TEU in 2015-2016 as Phase 1, 7.26 mil TEU in 2020 as Phase 2 and 13.36 mil TEU in 2030 in Phase 3. The forecast road traffic generated by such growing container cargoes was estimated at 16,304 pcu/day/lane for Phase 1 (2016-2017), 43,780 pcu/day/lane for Phase 2 (2020), and 80,680 pcu/day/lane for Phase 3 (2030). The present road network around the port can no longer accommodate vehicle traffic that will be generated from the development of terminal facilities in Tanjung Priok area.

The port capacity for international containers was estimated at about 4.9 million twenty-foot equivalent unit (TEU) in terms of berthing facilities and 4.0 million TEU in terms of yard storage capacity which will be saturated in 2015-2016. The capacity of the domestic container facilities is estimated at about 2.1 million TEU and is expected to be saturated by 2019-2020. Tanjung Priok Port needs additional terminal facilities especially for

international containers as presented in Table 4.3.1.

Table 4.3.1 Forecast of Traffic Demand until 2030

Commodities	2009	2020	2030
International Container	2,736,000 TEU	7,255,000 TEU	13,356, 000 TEU
Domestic Container	1,068,000 TEU	2,284,000 TEU	4,382,000 TEU
Non Container			
Dry Bulk Cargo	12,158,000 t	19,414,000 t	28,843,000 t
Liquid Bulk Cargo	5,186,000 t	7,965,000 t	7,393,000 t
Car	89,347 units	289,000 units	499,000 units

Source: JICA MP Study 2010

(2) Constraints on Port Development

The recognized major constraints at Tanjung Priok Port are the following:

1) Excessive congestion on port access roads;
2) Congestion within the port area; and
3) Insufficient water depth and space of turning basin to receive larger container ships. (ships draft more than 14.0m, or more than 87,000 DWT class ship)

4.3.2 Issues of the Sector

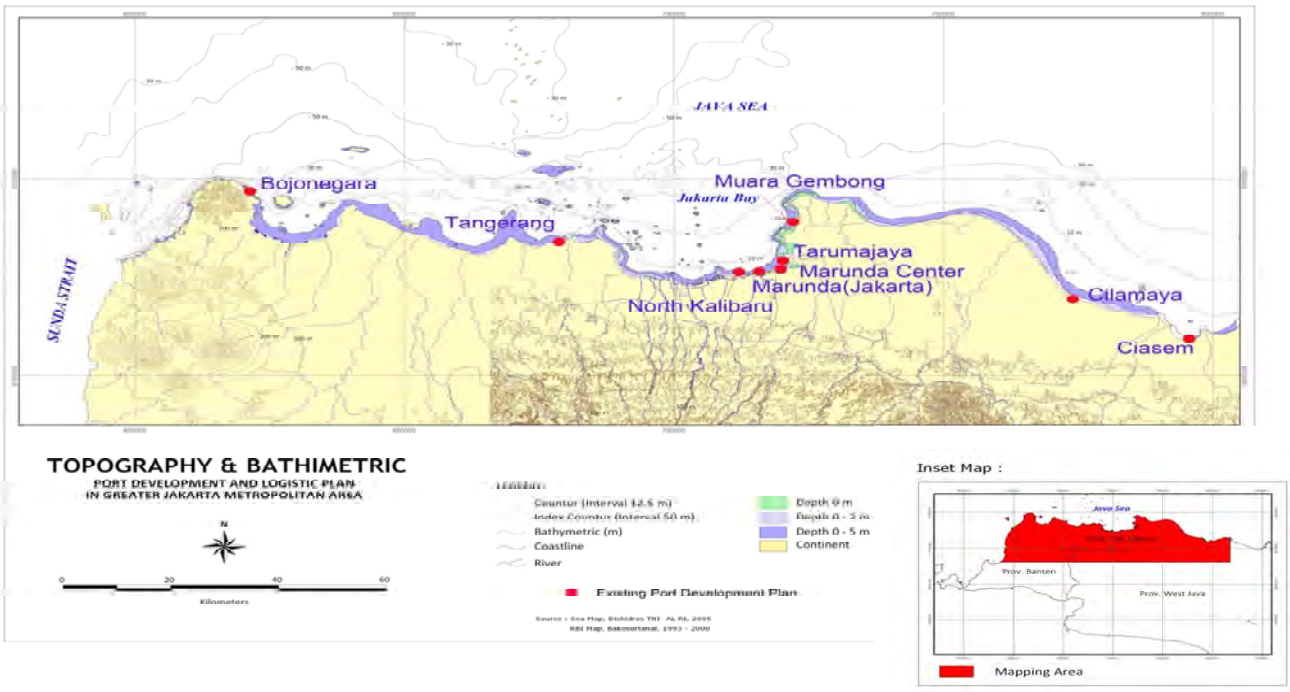
(1) Updated Master Plan Preparation

The existing master plan of the port was updated according to the latest increase in maritime traffic and due to the limited capacity of road networks around the port. The JICA Port M/P was studied according to the following principles:

1) To propose a new terminal that will receive increasing international containers traffic at Tanjung Priok Terminal until the target year of 2030;
2) To optimize utilization of the existing facilities to accommodate both increasing domestic containers and conventional cargoes during the target year;
3) To transfer the location of existing petroleum facilities to a new location to ensure safety in urban areas;
4) To propose a port access road that will provide linkage to road networks exterior of the port area, so as to enable smooth distribution of port cargoes and simultaneously alleviate increasing traffic load between the port and the city within JABODETABEK area;
5) To propose recommendations on the improvement of railway access to Tanjung Priok Terminal for the purpose of transferring the port cargo traffic from the excessively congested roads to railway; and
6) To pay due attention to environmental issues by conducting Strategic Environmental

Assessment (SEA), and by focusing on the harmonization of the spatial plans of the central, provincial, and regent governments and other related activities at the planned port location.

The nine conceptual port development plans proposed by various organizations such as the West Java Provincial Government, DKI Jakarta, Bekasi Regent, Tangerang Regent, Pelindo II and private developers were studied as shown in Figure 4.3.1.



Source: MPA Study Team developed from Chart TNI-Alri, 2005 and RBI Map Bakosurtanal, 1993-2000

Figure 4.3.1 Location of Study Ports

The proposed port location in Cirebon was studied in 2002-2003 as part of the development of Bojonegara. It was found out that the Port of Cirebon is geographically and oceanographically unsuitable for the development as an international port.

The proposed nine potential sites were screened according to the basic concept of new container terminal development and established criteria. These potential sites were narrowed down to three sites, namely; North Kalibaru, Cilamaya, and Tangerang.

(2) Selection of the Optimum Combination of New Terminal Development

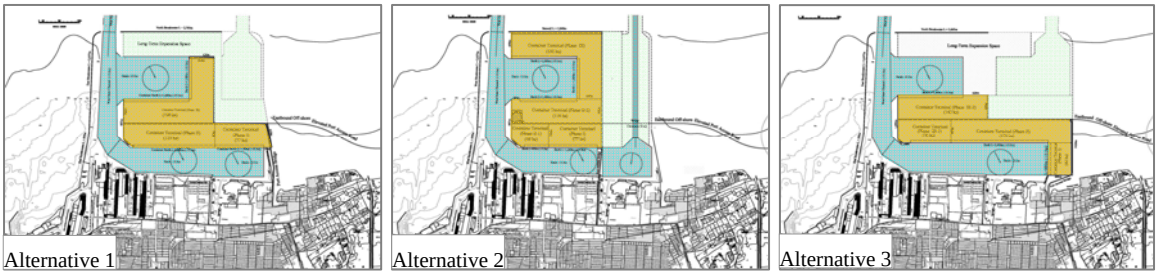
The following three options on the development of international container terminals have been drafted for the three candidate sites, i.e.: North Kalibaru, Cilamaya, and Tangerang:

Option 1:	Full concentration to Tanjung Priok Terminal			
	JCT (estimated capacity with present facilities):		4.0	
	North Kalibaru Phase I as urgent project:		1.9	million TEU
	North Kalibaru Phases II~III:		7.5	million TEU
		Total:	13.4	million TEU
Option 2:	Split to Tanjung Priok Terminal and Cilamaya			
	JCT (estimated capacity with present facilities):		4.0	
	North Kalibaru Phase I as urgent project:		1.9	million TEU
	Cilamaya Phases II~III:		7.5	million TEU
		Total:	13.4	million TEU
Option 3	Split to Tanjung Priok Terminal and Tangerang			
	JCT (estimated capacity with present facilities):		4.0	
	North Kalibaru Phases I~ III:		7.4	
	Tangerang new terminal:		2.0	million TEU
		Total:	13.4	million TEU

The three options are summarized below.

1) Option 1 Development

Option 1 aims to develop all required facilities in North Kalibaru area. Three alternative plans to develop all required container terminal facilities at Tanjung Priok Port area were studied as shown in Figure 4.3.2. The plan of alternative 1 is to develop new container terminal from the boundary of the Tanjung Priok port toward the existing access channel at the west. The plan of alternative 2 is to divide two parts of the port for container terminal area and bulk and non container cargo and the Plan of Alternative 3 is similar to the alternative 1 to develop the container terminal from the boundary of Karibaru port toward the west. In this case, it was predicted that congestion within the JABODETABEK toll road will accelerate due to the insufficient capacity of the access toll way networks, even if JORR2 will be completed.



Source: JICA Port M/P

Figure 4.3.2 Alternative Development Plans at North Kalibaru as Option 1

ii) Option 2 Development

This option aims to distribute the traffic demand in North Kalibaru area and West Java by developing the facilities required for Phase 1 in North Kalibaru, and then the facilities required in Cilamaya in 2030. The project components of Option 2 development plan are shown in Figure 4.3.3

In this case, the smooth distribution of port cargo to/from the port will be possible and increasing port traffic congestion will be alleviated within the JABODETABEK area.

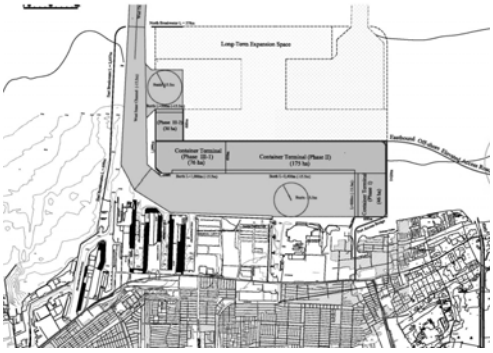
The development plan to meet the demands in Phases 2 and 3 on the proposed international port in Cilamaya was prepared. The development plan of the new international port in Cilamaya is shown in Figure 4.3.3.

(3) Selected Development Plan

The JICA Port M/P proposed to develop new ports under Option 2 along with Alternative 1 of North Kalibaru development. The selected Option 2 is divided into three phase plans, i.e.: Phase I plan in North Kalibaru with three alternatives as shown in Figure 4.3.2. Phase II and Phase III planns in Cilamaya. Hence, the three alternatives of North Kalibaru Phase I of Option 2 were compared among each other from the various viewpoints.

As a result, Alternative 2 has the minimum negative factors, while Alternative 3 has many negative factors. As to the project cost, Alternative 3 indicated the highest project cost. Thus, Option 2 has been selected as the optimum plan since it has the least construction cost.

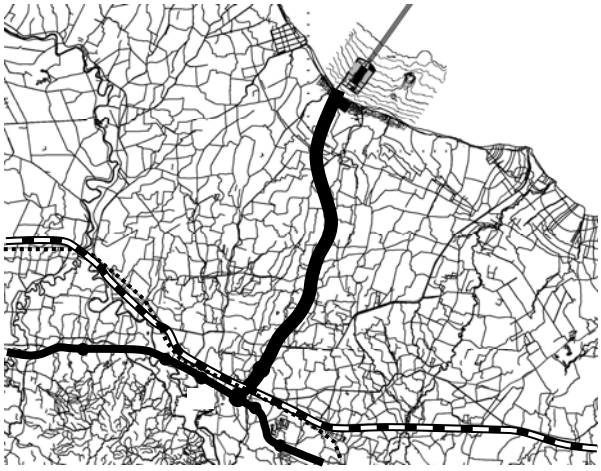
The JICA Port M/P eventually selected Option 2 with Alternative 1 as the optimum combination as summarized below in Figure 4.3.3



Source: Pelind II authorized by the Ministry of Transportation of the GOI

Container Terminal in North Kalibaru

Container Terminal in Cilamaya



Source: JICA Port M/P

Access Road to Cilamaya Terminal

Figure 4.3.3 Composition of Project Components of Option 2 with Alternative 1

4.4 AIRPORTS

4.4.1 Current Conditions and Forecast for 2030

(1) Outline of Scope of Work by MPA

The current scope of works of the airport sector in the MPA is considered to cover the following:

- Development of Current Soekarno-Hatta International Airport; and
- Construction of a New Airport.

A study on these works is being implemented through the "Master Plan study on multiple-airport development for Greater Jakarta Metropolitan area in the Republic of Indonesia" (hereinafter referred to as "JICA Airport MP").

Accordingly, data and information analysis on the JICA Airport M/P used in the Study was done by the Study Team

(2) Current and Future Demands in the Development Plan by the JICA Airport M/P Study Team
The current and future demands are shown in Table 4.4.1.

Table 4.4.1 Current and Long-Term Target Demands

	Current in 2010			Long-Term in 2030		
	Inter-national	Domestic	Total	Inter-national	Domestic	Total
Passenger (1000 passenger/year)	9,648	32,396	42,044	26,380	76,974	103,354
Cargo (1000 t/year)	257	240	497	429	547	976
Aircraft movement (1000/year)	62	245	307	149	549	698

Source: Final Progress Report by JICA Airport M/P

(3) Current Difficulties and Problems

The following difficulties and problems on the current airport were reported by the JICA Airport M/P Study Team:

1) Runway Capacity

The capacity of the two existing operational runways was estimated at roughly 350,000-400,000 movements/year. The actual movement in 2010 has reached more than 307,000 and is estimated to reach its capacity by around 2014.

2) Passenger Terminal Building (PTB)

The design capacity of PTB was estimated at about 22 million passengers/year. The actual number of handled passengers in 2010 has reached to 42 million per year. This means that the existing PTB is handling about twice its capacity at present. Particularly, Terminal 1 of the domestic facility is heavily congested and in serious condition. Also,

the countermeasure being set is not enough to cope with the increasing demand of low cost carriers (LCC), that escalate the passenger demand in many airports around the world.

3) Cargo Handling Facility and System

The cargo handling process and supporting facility do not function effectively due to space constraints as well as the current facility layout plan for bonded and un-bonded areas, etc.

4) Operation of Air Traffic Control System

Currently, the airport traffic control could possibly serve simultaneous operation for departing and arriving aircrafts due to its 2,400 m clearance between two runways. However, the current operation is not functioning effectively due to the lack of air traffic controller and superannuated facilities and systems.

(4) Items to be Considered for Further Development

1) Improvement and development of the current passenger terminal building and ancillary facilities and systems;

2) Countermeasures against the increasing demand of LCCs;

3) Checking and review of the cargo handling process, facility layout and supporting facility, and system for domestic and international cargo handling in order to ensure smooth and effective operations

4) Evaluation of the results of an implemented study for an improved air traffic control system and process to enhance its operation;

5) Establishment of an updated airport operation and management system for an effective and reliable operation, and development of airport business; and

6) Construction of a third runway for the enhancement of current runway capacity.

4.4.2 Current Status of New Airport Construction Plan

(1) Selection of New Site

The site of the new airport shall be finalized urgently based on the results of the JICA Airport M/P in order to realize the requirement of GOI for the opening of the new airport by around 2019.

(2) Function of the New Airport and Demarcation with the Soekarno-Hatta International Airport

The existing runway capacity of Soekarno-Hatta International Airport with two (2) runways is expected to exceed its handling capacity by around 2017 according to the demand estimation of the JICA Airport M/P. If the third runway will be constructed, the runway capacity of Soekarno Hatta International Airport will exceed from 2020 to 2025. The study stated the necessity and urgency of new airport construction for shifting the overflowing demand in Soekarno-Hatta International Airport. The function and demarcation between the existing and new airport were proposed in the study of the JICA Airport M/P where both airports have in principle domestic and international functions. The new airport site is expected to be located close to the planned industrial area at the east of JABODETABEK MPA. This is supposed to be located in the North Java Corridor of IEDC Plan. This means that there will be a high potential for this site to be the strategic foothold of the IEDC Plan as well as the center of international logistics activity and its related business activity.

(3) Outline of the New Airport

The outline of the planned new airport in the JICA Airport M/P is as follows:

- The airport is expected to be operational two runways by around 2019 with a capacity of 30 million passengers/year for Phase I.
- It is planned to expand to three runways by around 2030 with capacity of 70 million passengers/year for Phase II.
- It is planned to expand to four runways by around 2035 with capacity 90 million passengers/year for Ultimate Phase.

(4) Items to be Considered for Further Implementation

1) Authorization of the New Airport Project in Accordance with the institutions and laws of Indonesia

- The Government of Indonesia should make formal decision that new airport will be developed at Karawang.
- The Government of Indonesia include the new airport project in Karawang to the list of priority project in the Metropolitan Priority Area (MPA) Master Plan.
- Ministry of Transportation incorporate the new airport at Karawang in the National Airport System Plan.
- New airport Project at Karawang should be incorporated into the Spatial Plan of National and Regional Governments.

2) Coordination and Agreement of the New Airport Project between DGCA and Other

Organizations

- West Java Province has processed the new Kertajati Airport at around 160km west from Jakarta Metropolis. According to the JICA Airport MP Study, the air traffic demand of new Kertajati Airport will not influenced by the new airport at the east of JABODETABEK MPA area.

3) Actions to Expedite the Project to Complete by 2019

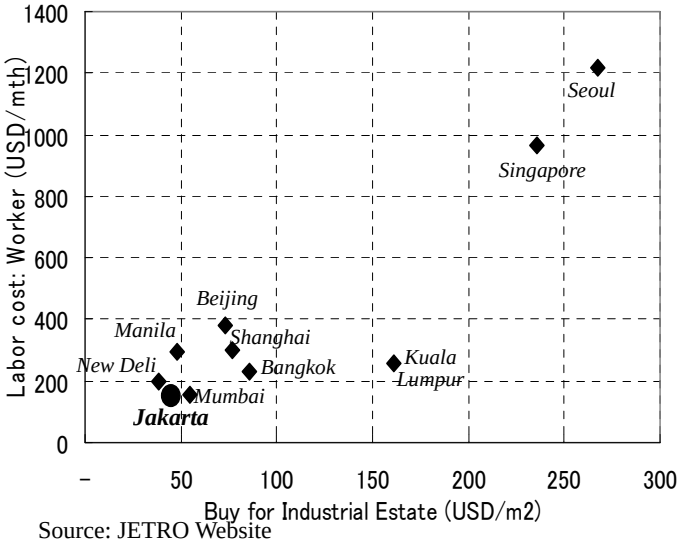
- It is necessary to commence an environmental impact assessment (EIA) on the site for smooth and expeditious project authorization.
- It will require advice and strong leadership support from the Indonesian side to accelerate the implementation of the project in order to meet the target opening year in 2019, under a tight schedule.
- Special consideration for the process shall be taken into account for the preparation of project financing and selection of the contractor to accelerate the implementation. It will be considered as a priority project for ODA and private sector funding.

4.5 INDUSTRIAL AREAS

4.5.1 Current Conditions

In order to promote industrialization, GOI accepted the development of industrial estates by the private sector in 1989. In the same period, regulations on industrial construction limited to the industrial estate were issued to restrict new foreign investment. After 1990, industrial estates were developed by foreign investors including Japanese companies. However, land rights ownership is unclear in Indonesia, and it takes a long time to acquire land. Therefore, Japanese companies preferred to invest mainly on industrial estates where infrastructure (road, electricity, and water supply, etc.) is provided and land acquisition is not a problem.

Investment cost in Indonesia is lower compared with other Asian cities, as shown in Figure 4.5.1. Considering its economic growth and location in Asia, the forecast



Source: JETRO Website

Figure 4.5.1 Comparison of Investment Costs in 2010

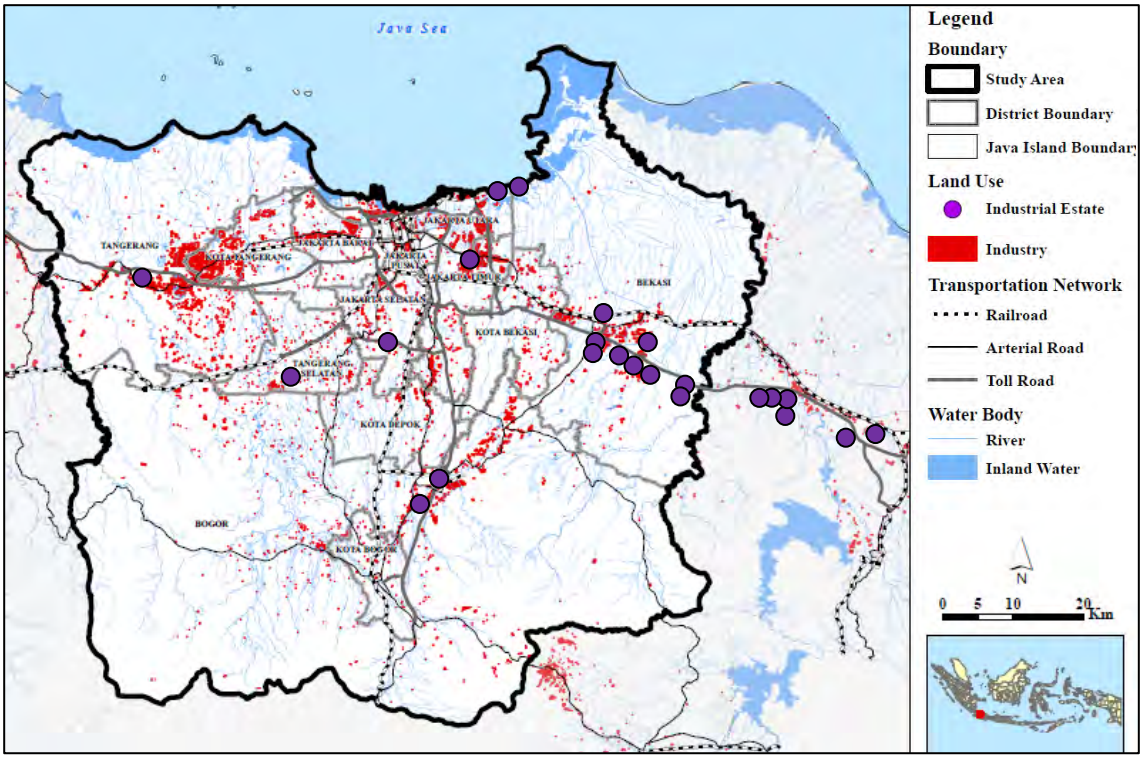
showed more manufacturers will invest in JABODETABEK MPA as the economy of Indonesia grows. Demands on locating to industrial areas have increased rapidly, and supply on available industrial areas could not catch up with the needs of the present situation, as report in 2009. For this reason, prices of land increased in 2010 and were recorded as the world's highest with more than 120%. It seems that demand will continue to increase since the price is still at a low level.

Table 4.5.1 Number of Industrial Estates by Area

Area	No. of Industrial Estates	No. of Tenants		Total Size	
		No	%	ha	%
DKI Jakarta	3	518	11.1%	1,089	8.4%
Banten - Tangerang	3	839	18.0%	850	6.6%
West Java - Bogor	2	72	1.5%	240	1.9%
West Java - Bekasi	11	2,992	64.0%	6,693	51.6%
West Java - Karawang	6	252	5.4%	4,090	31.6%
Total	25	4,673	100.0%	12,962	100.0%

Source: Indonesia Industrial Estate Directory 2011-2012, HKI

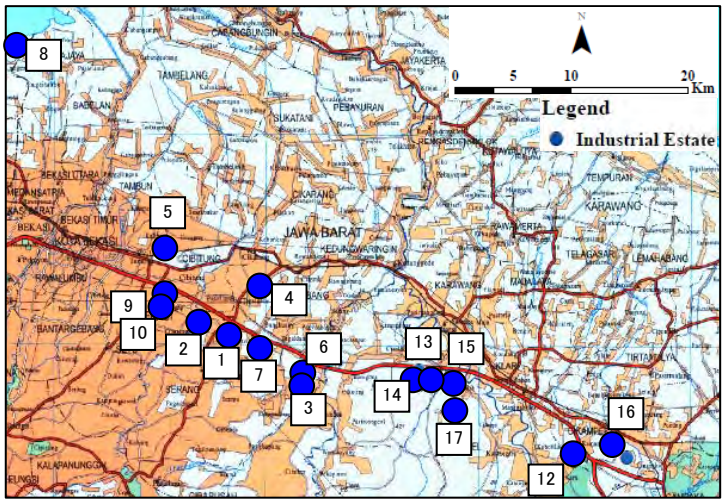
The number and location of industrial estates by area are shown in Figure 4.5.1 and Figure 4.5.2, respectively. Around JABODETABEK MPA and Karawang area, there are 25 industrial estates including projects that are under construction. About 68% of them (17 places; about 84% in the area) are located in the eastern area (Bekasi and Karawang). Recently, the selling rate exhibits a tendency to increase rapidly. The independent factories, which are not within the industrial estate, have gathered around the Soekarno-Hatta International Airport.



Source: MPA Study Team based on Peta Rupabumi Digital Indonesia by BAKOSURTANAL

Figure 4.5.2 Location of Industrial Estates in JABODETABEK MPA Area

The distances from Soekarno-Hatta International Airport and Tanjung Priok Port to major industrial estates and tenants in the eastern area are presented in Table 4.5.2, and their locations are shown in Figure 4.5.3. There are about 3,200 companies located in major industrial estates in the eastern area, and more than 20% of them are Japanese companies. More than one million people are working in the area, and products are transported to the port and airport through the Jakarta-Cikampek Highway.



Source: MPA Study Team

Figure 4.5.3 Location of Industrial Estates in Eastern Area

The area near DKI Jakarta is already sold out or the selling price is rising. Then, the development has moved to the east side.

Table 4.5.2 Major Industrial Estates in the Eastern Area

	Industrial Estate Name		Location	Distance (km)		Total Area (ha)	Tenants
				From Airport	From Port		
1	Bekasi International Industrial Estate	BIIE	Cikarang	70	45	200	105
2	**East Jakarta Industrial Park**	**EJIP**	**Lemahabang, Bekasi**	**70**	**45**	**320**	**102**
3	**Greenland International Industrial Center**	**GIIC(Deltamas)**	Bekasi	**60**	**50**	**1,000**	**Under**
4	Jababeka Industrial Estate- Cikarang	JIEC	Cikarang, Bekasi	65	40	1,840	1,500
5	Kawasan Industri Gobel	KIG	Cibitung, Bekasi	60	35	54	14
6	Kawasan Industri Terpadu Indonesia China	KITIC	Bekasi	60	50	200	-
7	Lippo Cikarang	LC	Cikarang, Bekasi	70	45	1,000	650
8	Marunda Center	MC	Murunda, Bekasi	35	9.8	540	100
9	MM2100 Industrial Town	MM2100(BFIE)	Cibitung, Bekasi	60	35	300	125
10	**MM2100 Industrial Town**	**MM2100(MMIDE)**	**Cibitung, Bekasi**	**60**	**35**	**1,200**	**396**
11	Patria Manunggal Industrial Estate	PMIE	Bekasi	-	-	39	**Under**
12	**Bukit Indah Industrial Park**	**BIIP**	**Kalihurip, Karawang**	**95**	**75**	**700**	**29**
13	Daya Kencanasia Industrial Park	DKIP	Teluk Jambe, Karawang	78	62	150	-
14	**Karawang International Industrial City**	**KIIC**	**Karawang Barat**	**70**	**60**	**1,200**	**101**
15	Kawasan Industri Mitrakarawang	KIM	Karawang Timur	90	76	500	31
16	Kujang Industrial Estate	KIE	Kalihurip, Karawang	110	90	140	16
17	Suryacipta City of Industry	SCI	Karawang Timur	80	65	1,400	75
	Total					10,783	3,244

Note: Those in bold letters are industrial estate with Japanese capital. “Under” is a meaning under construction.
Source: MPA Study Team and Indonesia Industrial Estate Directory 2011-2012, HKI

4.5.2 Issues of the Sector

According to the Himpunan Kawasan Industri Indonesia (HKI: Indonesian Industrial Estate Association) report, the current and potential issues on investment in Indonesia are given in

Table 4.5.3. The report pointed out the following issues; low labor skills, power shortages in Java, Bali, and Sumatra, and inadequate infrastructure such as highways and railways, especially for products being transported from the east area to the airport through the highway via the existing connecting road track network, where only one round-trip can be carried out for the whole day. The poor connecting road between the industrial estate and highway contributes to traffic congestion coupled with the number of laborers who commute to work. This is also one of the reasons that cause low transport efficiency. Due to the rapid increase of new companies locating in the industrial estates, it is difficult to attract laborers with high qualified skills. Thus, this will become a problem in the industrial estates.

Table 4.5.3 Current and Potential Issues Affecting the Investment Climate in Indonesia (Extract)

ISSUE	Current and Potential Condition
Labor	• Low skilled labor
Power shortages and tariffs	• Power shortages in Java, Bali and Sumatra • The increase in electricity base tariffs will increase manufacturing costs
Inadequate infrastructure	• Investors believe that certain infrastructure, such as toll roads, highways, railways, etc., must be constructed to improve the distribution of goods and services • Most investors believe that the strategy of improving infrastructure has been ineffective

Source: Industrial Estate Directory 2006, HKI, referred to the report of WB and ADB.

Concerning utilities in existing industrial estates, electricity is being provided by Perusahaan Listrik Negara (PLN) and transformer substation was established inside the industrial estates. Meanwhile, water is being provided by Perusahaan Daerah Air Minum (PDAM). In some industrial estates, water is taken from West Tarum Canal, etc., which is filtered through these companies' own means. There were no serious problems as compared with the status of other Asian nations.

4.6 WATER SUPPLY AND SEWERAGE SYSTEMS

4.6.1 PDAM Water Supply

The study area consists of five areas, namely: DKI Jakarta, Bekasi (Kota Bekasi and Kabupaten Bekasi), Karawang (Kabupaten Karawang), Bogor (Kota Bogor, Kota Depok and Kabupaten Bogor) and Tangerang (Kota Tangerang, Kota Tangerang Selatan and Kabupaten Tangerang), as shown in Figure 4.6.1. Water supply service is the responsibility of respective local governments. The service is being undertaken by the municipal water supply corporation (PDAM) of respective Kabupaten/Kota, while the water supply service in DKI Jakarta is being undertaken by two concessionaires under the concession agreement between the concessionaires and the PDAM (Pam Jaya)

Source: MPA Study team

Figure 4.6.1 Study Area for Water Supply

The current water supply condition of each area is shown in Table 6.4.1.

Table 4.6.1 Current Water Supply Condition

	Population	Installed Capacity (l/s)		Distributed Water (m^3/year)	Revenue Water (m^3/year)	Number of House Connection	Served Population (Estimated)	Service Ratio (%)	NRW Ratio (%)	Per Capita Consumption (l/c/d)
DKI Jakarta	9,588,198	17,875	WTC: 14,600 Cisadane: 3,285	509,468,603	266,827,914	690,329	5,177,468	54.0	47.6	141
Bekasi	4,966,040	2,510	WTC: 2,510	61,118,138	49,817,369	155,396	1,087,772	21.9	18.5	125
Karawang	2,125,234	815	WTC: 100 NTC: 685 ETC: 30	17,161,584	10,465,782	46,152	369,216	17.4	39.0	78
Bogor	7,456,375	3,791	Ciliwung: 500 Other(Spring):3,291	93,999,452	62,346,595	197,323	1,479,923	19.8	33.7	115
Tangerang	5,940,791	2,565	Cisadane:2,565	60,573,474	44,797,791	115,820	810,740	13.6	26.0	151

Source: Kinerja PDAM Tahun 2010, BPP-SPAM
Direktori Perpamsi 2010, PERPAMSI

As shown in the above table, approximately 50 % of the people in DKI Jakarta are being served water by PDAM, while, in other areas, only 10%-20% of the people are being served water by PDAM. The people not served by PDAM rely on unsafe water source such as shallow well or stream.

The water source of DKI Jakarta, Bekasi and Karawang are the West Tarum Canal (WTC), North Tarum Canal (NTC) and East Tarum Canal (ETC), that are being managed by Jasa Tirta II. Jasa Tirta II is a state owned enterprise that undertakes the water resource management of Citarum river basin as well as WTC, NTC and ETC.

The water source of Bogor comes from the spring and Ciliwung River. The water source of Tangerang comes from Cisadane River.

In DKI Jakarta, approximately 30% of total revenue water is for commercial and industrial purpose, while, in other areas, the water for commercial and industrial purpose account for less

than 20% of the total revenue water.

4.6.2 Industrial Use of Surface Water (Non-domestic Water Use not by PDAM)

Non-domestic water users that are not served water from PDAM are taking raw surface water independently and treat it in their own treatment plant. The current water use is shown in Table 4.6.2.

Table 4.6.2 Present Industrial Water Use of Surface Water

Area	Water Use Volume(lit./sec)	Water Source
DKI Jakarta	2,393	Ciliwung River
Bekasi	2,242	WTC
Karawang	3,630	WTC, NTC, ETC
Bogor	3,696	Ciliwung River
Tangerang	5,082	Cisadane River

Source: Balai Besar Wilayah Sungai Ciliwung Cisadane, Jasa Tirta II

4.6.3 Sewerage System

(1) DKI Jakarta

The wastewater disposal method in DKI Jakarta is classified into four types as shown in Table 4.6.3.

Table 4.6.3 Wastewater Disposal Method in DKI Jakarta

Type		Approx. Population	%
Off-site Treatment	Sewerage System	200,000	2
On-site Treatment	Individual Treatment Plant (ITP)	1,900,000	20
	Septic Tank	6,500,000	68
No treatment	Direct disposal	1,000,000	10
		9,600,000	100

Source: The Project for Capacity Development of Wastewater Sector through Reviewing the Wastewater Management Master Plan in DKI Jakarta, 2011

As shown in the above table, only 2% of the population is using sewerage system (off-site treatment). Approximately 20% of the population is using ITP. All owners of the buildings are obliged to equip their buildings with ITP as per Governor's Decree No. 122/2005. There are approximately 6,000 ITPs in DKI Jakarta. The BOD of effluent from sewerage treatment plant and ITP are required to be less than 20 mg/l. Approximately 68% of the population are using septic tank and 10% of the population discharges the wastewater directly to the river.

The SS removal ratio of each type of disposal method is shown in Table 4.6.4.

Table 4.6.4 SS Removal Ratio

Type			Removal Ratio
Off-site Treatment	Sewerage System		75%
On-site Treatment	Individual Treatment Plant (ITP)		75%
	Septic Tank	Black water (treated)	56%
		Grey water (not treated)	0%
No Treatment	Direct Disposal		0%

Source: The Project for Capacity Development of Wastewater Sector through Reviewing the Wastewater Management Master Plan in DKI Jakarta, 2011

Currently, approximately 34% of SS are removed from the wastewater by off-site and on-site treatment systems, while 66% of SS are disposed to the river in DKI Jakarta.

(2) Other Area

There were several small wastewater treatment plants in Kota Tangerang and Kota Bogor that were constructed by foreign donors as part of their pilot projects. However, most of the wastewater disposal was undertaken by on-site system or small scale sewerage system (SANIMAS: Sanitasi untuk Masyarakat) or with no-treatment.

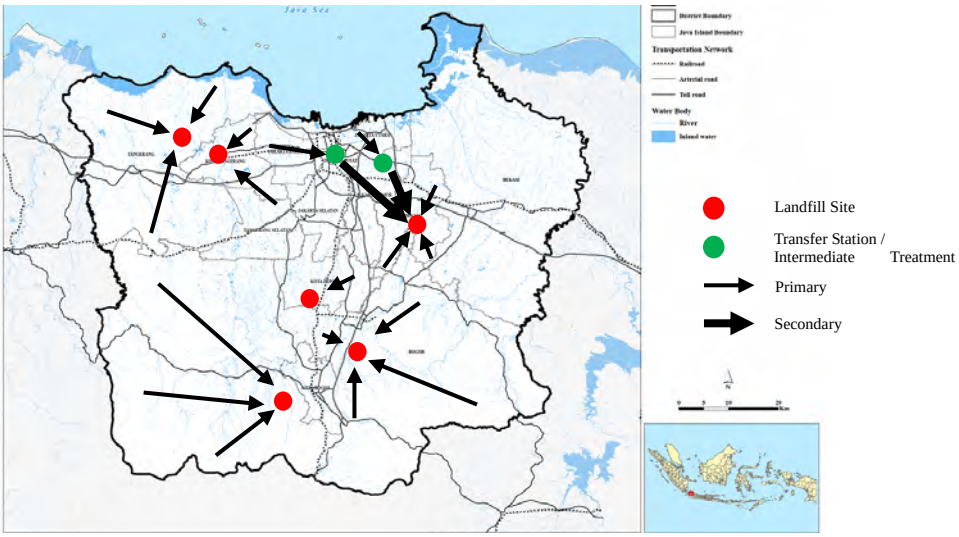
4.7 WASTE MANAGEMENT SYSTEM

4.7.1 Current Conditions and Forecast for 2030

(1) Current Condition

1) Overall Solid Waste Management Condition

The current municipal solid waste management system in JABOTADEBEK mainly consists of collection and transportation (including secondary transportation using transfer stations), and final disposal with some small scale composting plants. The cleansing department in DKI Jakarta, other municipalities and regency governments have the responsibility to implement solid waste management. DKI Jakarta has contracted out some private companies for collection and transportation, but other municipalities have not entered into any contracts or agreements. DKI Jakarta disposes collected solid waste to the Banter Gebang's landfill site in Bekasi City, although other municipalities have their own landfill site. On the other hand, industrial waste disposal is part of the responsibility of each company. The current waste stream in JABODETABEK MPA is shown in Figure 4.7.1.



Source: MPA Study Team

Figure 4.7.1 Current Waste Stream in JABODETABEK MPA

2) Amount and Characterization of Solid Waste

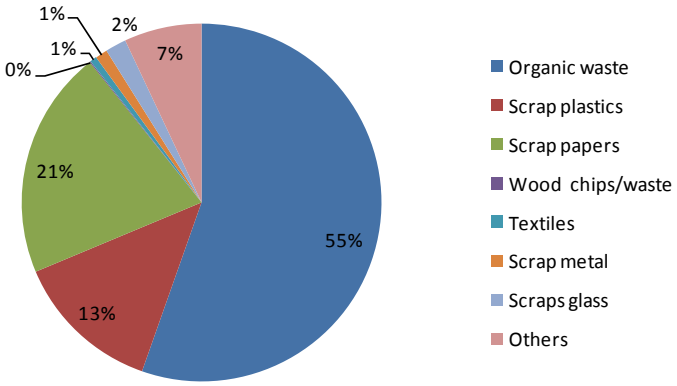
The amount of solid waste in JABODETABEK MPA is shown in Table 4.7.1.

Table 4.7.1 Amount of Generated Waste in JABODETABEK MPA

Item	DKI Jakarta [t/day]	Bekasi [m^3/day]	Tangerang [m^3/day]	Depok [m^3/day]	Bogor [m^3/day]
Amount of generated waste	6,550	7,615	3,618	4,250	3,618
Amount of collected waste	5,575	3,521	2,633	1,866	2,337
Amount of disposed waste	5,575	3,521	2,633	1,296	1,638

Source: Cleansing department in DKI Jakarta and each municipality (2010)

There is no waste characterization survey data in each municipality and regency except in DKI Jakarta where historical waste characterization data is available. The latest data is shown in Figure 4.7.2.



Source: JBIC SAPROF Final Report (2008)

Figure 4.7.2 Waste Characterization in DKI Jakarta

3) Collection and Transportation

Collection and transportation of solid waste in JABODETABEK MPA are divided into

door-to-door collection by handcarts (collection from household and other sources to temporary disposal site or TPS) and also by collection vehicles from TPS or other collection points to landfill sites. As for the collection by handcarts case, the RT/RW (neighborhood unit/community unit) is usually responsible for carrying out garbage using handcart. As for the collection by vehicles case, cleansing departments or their contractors (private company) are responsible for collection and transportation. There are some sorting activities being done in TPS or other collection areas.

4) Final Disposal

Each municipality and regency has its own landfill site (TPA). However, the operating conditions of most TPAs are not good. A brief explanation on the current conditions of main TPAs is shown in Table 4.7.2.

Table 4.7.2 Current Condition of Landfill Sites

Item	DKI Jakarta	Bekasi	Tangerang	Depok	Bogor
Name of main landfill site	Bantar Gebang	Sumur Batu	Rawa Kucing	Cipayung	Galuga
Area	110 ha	10 ha	34 ha	11.6 ha	17.3 ha
Type of landfill site	Sanitary landfill	Controlled landfill	Open dumping	Controlled landfill	Controlled landfill

Source: Cleansing department in DKI Jakarta and each municipality (2010)

4.7.2 Issues of the Sector

(1) Preliminary Identified Main Issues

In JABODETABEK MPA, the natural and socioeconomic conditions related to solid waste management (SWM) are different among DKI Jakarta and other municipalities and regencies. In DKI Jakarta, it is difficult to find a suitable location for solid waste management facilities. On the other hand, there are other municipalities which do not have enough financial capacity to implement sufficient solid waste management. The preliminary identified main issues of the SWM condition in JABODETABEK MPA are summarized in Table 4.7.3.

Table 4.7.3 Preliminary Identified Main Issues (1/2)

Item	Contents
Lack of final disposal due to area limitation	Due to the expansion of urban areas and population increase, there will be less opportunity to acquire new land for SWM facility, especially for large area required to serve as sanitary landfill site. The yearly land price increase is making it difficult for the city government to acquire such site. Recent available site for landfill is located far away from the city, especially in DKI Jakarta.
Community complaints against landfill site	The community has a negative impression on SWM facilities, especially on landfill sites since there have been many bad experiences in waste management. This condition will decrease the possibility of new land acquisition. 

Source: MPA Study Team

Table 4.7.3 Preliminary Identified Main Issues (2/2)

Item	Contents
Insufficient financial mechanism	There is a problem on the collection of service fees from residents or commercial sectors due to the decrease in the level of services and illegal dumping.
Lack of "3R" (reduce, reuse, recycle) activitities	Source separation has been tried but it was not sufficient due to lack of dissemination activities and environmental education especially on current mixed collection system. 
Low community participation in solid waste management	Though awareness raising programs with community participation programs have been implemented in some areas, these were not sustained. In some communities, there were many cases of illegal dumping due to failure in collection. There was no suitable demarcation of roles between the community and cleansing department for each area. 
Lack of awareness on solid waste management	In spite of stipulation of SWM law and regulation of B3 waste, the awareness on solid waste management of industrial companies, especially Indonesian companies is low.

Source: MPA Study Team

(2) Existing Future Plan on Solid Waste Management

In DKI Jakarta, there is a master plan 2010-2030 based on the Special Assistance for Project Formation (SAPROF) for Jakarta Solid Waste Management Project funded by the Japan Bank for International Cooperation (JBIC) in 2008. However,its modification was initiated to adjust the actual conditions of SWM in 2011. In other cities, there were no integrated master plans on SWM although there were an annual plans including arrangement of collection and transportation equipment and construction of intermediate treatment and final disposal. Current plans on SWM in each municipality are shown in Table 4.7.4.

Table 4.7.4 Current Plans on SWM in Each Municipality based on the Preliminary Survey

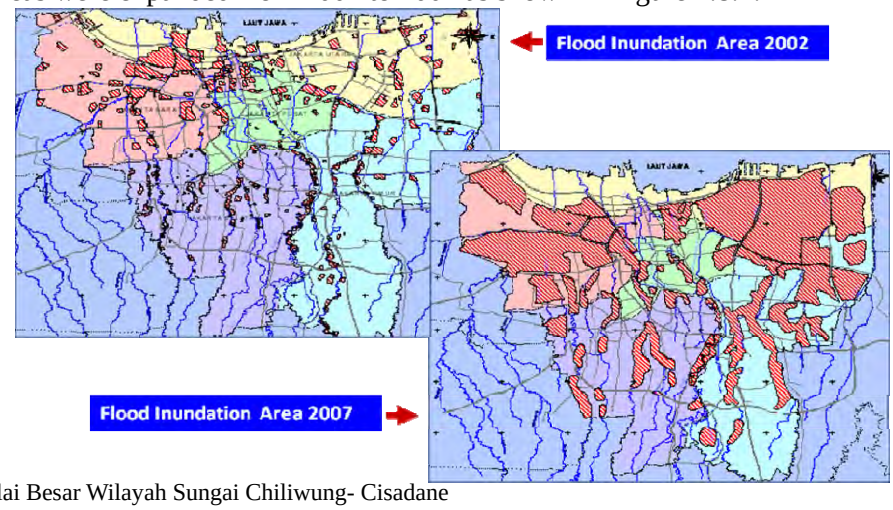
Item	Collection and Transportation	Intermediate Treatment / Three R's	Final Disposal
DKI Jakarta	No specific plan	- Expansion of intermediate treatment facility (ITF) in Cakung Ciling - Construction of ITF in Sunter - Construction of three R's center in north and south Jakarta	- Development of new landfill site (TPA) in western area (Ciangir or Jatiwaringin in Tangerang) - Improvement of Integrated Solid Waste Treatment Facility (TPST) in Bantar Gebang
Bekasi	- Construction of three transfer stations (SPA) - Improvement of the TPSs	- Construction of composting unit at three SPAs	- Expansion of existing TPA Sumur Batu
Tangerang	No specific plan	- Construction of some small TPSTs	- Consideration of TPA Jatiwaringin - Expansion of TPA in Rawa Kucing
Depok	- Construction of SPA - Construction of three TPSs	No specific plan	- Preparation of land acquisition of three sites for new landfill sites - Expansion of TPA Cipayung - New final disposal site (Regional Nambo) in Bogor Regency to treat waste of Bogor Municipality, Bogor Regency and Depok Municipality.
Bogor	No specific plan	- Plan of three R's demonstration plot at ten locations - Plan of land acquisition for waste treatment facility	- Expansion of TPA Galuga - New final disposal site (Regional Nambo) in Bogor Regency to treat waste of Bogor Municipality, Bogor Regency and Depok Municipality.

Source: Summarization by the MPA Study Team based on information from each municipality

4.8 FLOOD MANAGEMENT SYSTEM

4.8.1 Current Situation of Floods in JABODETABEK

The climate in JABODETABEK MPA is tropical rain forest with two dry and rainy seasons. Flood inundation damages were frequently experienced in DKI Jakarta especially in the months of January and February, and these hampered economic activities seriously during the rainy seasons. Major floods occurred in 1996, 2002, and 2007 in the last 15 years. The flood inundation areas were expanded from 2002 to 2007 as shown in Figure 4.8.1.



Source: Balai Besar Wilayah Sungai Chiliwung- Cisadane

Figure 4.8.1 Flood Inundation Area in 2002 and 2007

The floods in 2002 and 2007 caused serious damages as summarized in Table 4.8.1.

Table 4.8.1 Flood Damages in 2002 and 2007 in JABODETABEK

	2002 Flood	2007 Flood[4]
Accumulated Rainfall[1]	460 mm; 27 January to 3 February	523 mm; 31 January to 7 February
Inundated Area	155 km^2 in Jakarta[2] 372 km^2 in BODETABEK[2]	455 km^2 in Jakarta 221 km^2 in Tangerang and vicinity 250 km^2 in Depok, Bogor and Bekasi
Death Toll	60 people[2]	79 people as of 12 February 2007
Evacuees	380,000 people[2]	590,407 people
Damage/Loss	Direct damages: IDRp 5.4 trillion[3] Indirect damages: IDR 4.5 trillion[3]	Direct damages: IDR 5.2 trillion Indirect damages: IDR 3.6 trillion

Sources 1: BMKG Jakarta rainfall station; 2: Basic Design Study report on Project for Improvement of Pump Drainage in Poverty District in Jakarta, March 2004, JICA; 3: the World Bank (2002); 4: BAPPENAS (2007)

4.8.2 Major Issues in Flood Control

This section deals with the issues on flood control such as cases of flood, low implementation capacity, basic strategy, alternative structural measures, and improvement of legal system.

(1) Major causes of flood

The major causes of flood in JABODETABEK MPA have been identified as follows:

- Poor urban drainage combined with substandard removal of solid and liquid waste,

- Land subsidence, especially in the northern part of DKI Jakarta,
- Change in upper catchment management resulting in urbanization, deforestation, erosion, and reduced water storage,
- Improper application of sufficient spatial planning, and
- Climate change, in particular rainfall intensity and rise of sea level.

(2) Low Implementation Capacity

A number of flood control and urban drainage management plans were prepared but implementation of these plans was delayed or did not materialize due to the difficulty in land acquisition, resettlement, regional water rights, shortage of public funds, insufficient laws and institution, etc.

(3) Governance of Flood Control and Urban Excess Water Management

Governance of flood control in Indonesia is classified into two layers, i.e. flood control of river basins (called macro-drainage) and urban excess water management (called micro-drainage). The flood control of river basins covering more than two provinces is being managed by the national government (Directorate General of Water Resources, Ministry of Public Works) while river basins covering only one province are managed by the provincial government. The micro-drainage is managed by the municipal government concerned such as DKI Jakarta. For both macro-drainage and micro-drainage, Integrated Water Resources Management of river basins at levels of both national government and local government is to be strengthened. The Integrated Water Resources Management is the management by taking both i) structure measures which include river channel improvement and reservoir development, and ii) non-structure measures which include spatial control, emergency response system. The followings are issues of the governance in comprehensive flood management.

- Clarification of roles by each concerned government
- Establishment of monitoring functions of works on comprehensive flood management
- Coordination among government organizations in a river basin

It is crucial for the governments to legally decide the responsibility of the government to achieve the target flood control level. The recommended target design flood control level for JABOTABEK by JICA (The Study on Comprehensive River Water Management Plan in Jabotabek, 1997) from once in 25 years to once in 100 years has been accepted. However, the responsibility of the government to achieve the target flood control level is not legally defined yet while it is legally defined in EU countries and Japan (Refer to Table

4.8.2).

Table 4.8.2 Example of Flood Control Target Level

Fixed Target Flood Control Level	Countries Concerned
-Urban 1/100 – 1/1,000 -Industry 1/100 – 1/500 -Rural Agriculture 1/10 – 1/50	Russia, Finland, Greece, Turkey, Hungary,and Czech (large town min. 1/100)
-Class A River < 1/200 -Class B River 1/100 – 1/200 -Class C River 1/50 – 1/100 -Class D River 1/10 – 1/50 -Class E River > 1/10	Japan
Comparison of Costa and Benefit Benefit > Cost + importance of socio-economy	France, Netherlands, USA, Portuguese, and Czech

Source: MPA Study Team based on EU countries' and Japan's regulations

4.8.3 Status of Flood Control Works in JABODETABEK

(1) Progress of flood control projects in the master plan for JABOTABEK Macro-drainage

The flood control master plan for JABOTABEK (JICA, 1997) is basically kept unchanged. The progress of the flood control projects proposed in the master plan was reported as of September 2011 by Balai Besar Wilayah Sungai Ciliwung-Cisadane and summarized in Table 4.8.3.

Table 4.8.3 Progress of Flood Control Measures

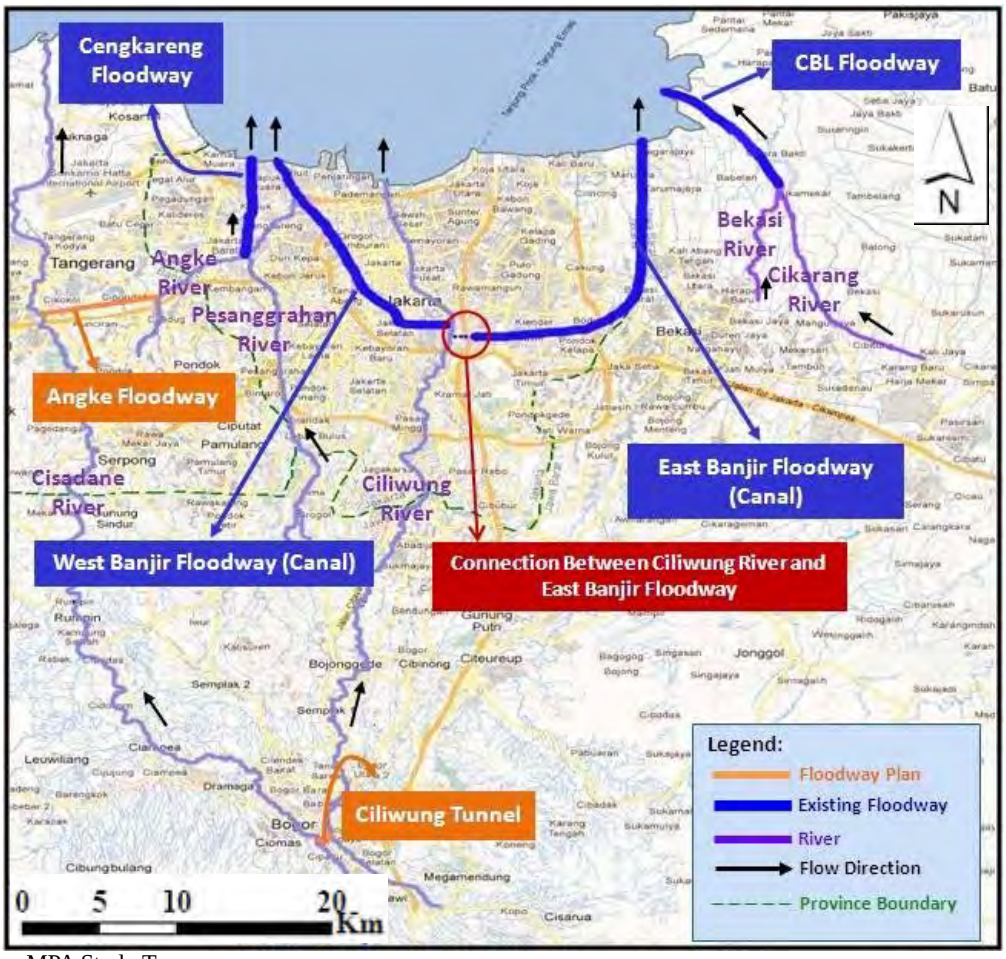
Target Flood Control Level	Progress as of August 2012
West Flood Canal System (WFC): 100-year design flood	The World Bank financing for the improvement/dredging to restore the discharge capacity of the existing system to the original design stage is pending due to incomplete resettlement and sub loan arrangement The 100 year design flood is not achieved yet in the middle stretch from Manggarai gate. A multipurpose tunnel plan below WFC route has been studied to discharge the 2007 flood level to the sea
East Flood Canal System (EFC): 100-year design flood	The remainder was completed at 2011 except the interconnection of the Ciliwung River to the EFC through the Cipinang River The project of interconnection which is using siphon tunnel is cancelled because it is not main priority of flood solution for Ciliwung River and not significant to improve discharge capacity of canal system[*)].
Cengkareng Floodway System and downstream reaches: 100-year design flood	Pra-qualification process is on-going. Construction process will be started in the end of November 2012. Construction will be focused in the spot which land acquisition and resettlement is not necessary[**)]. Land acquisition and resettlement will be conducted by DKI Jakarta on 2014-2015[**)].
CBL (Cikarang-Bekasi-Laut) Floodway: 50-year design flood	It was completed 10 years ago
The Cisadane River downstream reach: 50-year design flood, first stage for 25-year design flood	Not started yet. Spot bank erosion protection only started Channel widening not started yet due to land acquisition issues
The Cidurian River: 25-year design flood	No information (Balai Besar Wilayah Sungai Ciujung-Cidurian)
The Cimanceuri River: 25-year design flood	D/D was finished at 2011[**)] Construction process still pending due to budget allocation[**)]
The Cirarab River: 25-year design flood	Construction process was started in August 2012 and it is planned will be finished in this year[**)].
Ciliwung Floodway Tunnel to the Cisadane River	No progress: Not listed in the Spatial Plan

Source: MPA Study team based on Balai Besar Wilayah Sungai Ciliwung Cisadane

[*)] Based on meeting of MPA study team with Mr. Pitoyo Subandrio as Director of River and Coastal Area, DG of Water Resources, Ministry of Public Works in his office on Monday, November 21, 2011.

[**)] Meeting result with Mr. Jaya Sukarna as Head Division of General Planning of Balai Besar Ciliwung Cisadane and Mr. Ryan (staff of Mr. Jaya Sukarna) on Tuesday, August 28, 2012 in BBWS Ciliwung-Cisadane office.

The general location map of the floodways of the Ciliwung River, Cisadane River, Cilarang River, Bekasi River, Pesanggrahan River, and Angke River is shown in Figure 4.8.2.



Source: MPA Study Team

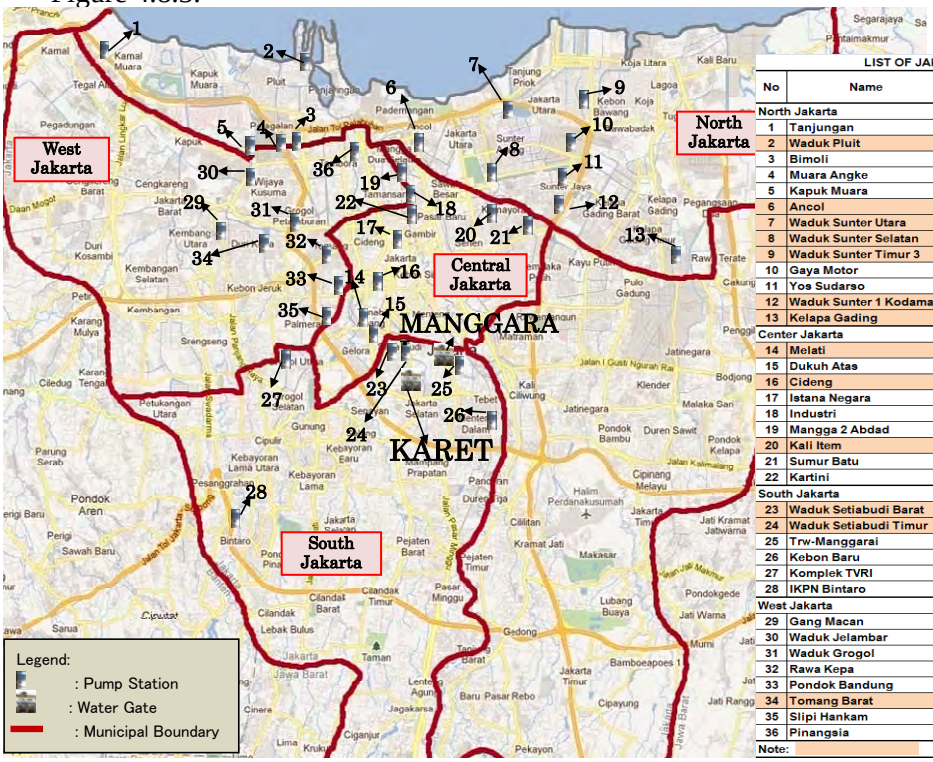
Figure 4.8.2 General Location Map of the Rivers and Floodways in JABODETABEK

(2) Progress of Urgent Flood Mitigation Project in DKI Jakarta

Jakarta Urgent Flood Mitigation Project (JURMP) aims to restore the capacity of the city's flood control system to its original design level through priority dredging of selected waterways and retention ponds, rehabilitation of embankment and repair of pumping stations and identified trash racks, and construction of Confined Disposal Facilities (CDFs) for dredged materials.

The project components of the Jakarta Urgent Flood Mitigation Project (JURMP) were implemented by three government institutions/entities, i.e.: national government, projects implemented by Jakarta Province, and projects implemented by Directorate General of Human Settlement, Ministry of Public Works (Cipta Karya).

The locations of the existing drainage pump stations in DKI Jakarta area are shown in Figure 4.8.3.



LIST OF JAKARTA PUMP STATION

No	Name	Waduk Area (Ha)	Unit	Discharge (m^3/s)	Service Area (Ha)
North Jakarta					
1	Tanjungan		3	12	385
2	Waduk Pluit	80	11	48.4	2633
3	Bimoli		2	1	
4	Muara Angke	0.5	2	1	50
5	Kapuk Muara		1	0.25	1.5
6	Ancol		3	15	635
7	Waduk Sunter Utara	32	3	10	1250
8	Waduk Sunter Selatan	25.9	6	15	586
9	Waduk Sunter Timur 3	8	3	15	570
10	Gaya Motor		2	0.25	3
11	Yos Sudarso		1	0.25	1.5
12	Waduk Sunter 1 Kodamat	8	3	4	200
13	Kelapa Gading		2	4	130
Center Jakarta					
14	Melati		8	8.8	8.5
15	Dukuh Atas		6	0.36	1
16	Cideng			40	
17	Istana Negara		4	1	50
18	Industri		4	1.6	
19	Mangga 2 Abdad		2	2.6	
20	Kali Item		4	8	
21	Sumur Batu		2	0.5	
22	Kartini		1	0.5	
South Jakarta					
23	Waduk Setiabudi Barat		7	8.98	172
24	Waduk Setiabudi Timur		6	8.52	140
25	Trw-Manggarai		6	1.83	1
26	Kebon Baru		4	1.6	1.6
27	Komplek TVRI		2	1.65	5
28	IKPN Bintaro		3	1.1	8
West Jakarta					
29	Gang Macan		2	2	
30	Waduk Jelambar		4	1.95	50
31	Waduk Grogol		3	1.7	100
32	Rawa Kepa		4	8	277
33	Pondok Bandung		4	3	90
34	Tomang Barat		8	10.96	200
35	Slipi Hankam		6	0.48	50
36	Pinangsia		2	1	
Note:		Discharge ≥ 4 m3/s			

Source: Jakarta Coastal Defense Strategy

Figure 4.8.3 Existing Drainage Pump Stations in DKI Jakarta

The International Bank for Reconstruction and Development (IBRD) or the World Bank suspended to provision of funds for the implementation of the project to GOI until completion of the following three subjects;

1) Resettlement of the illegal residents in DKI Jakarta,
2) Determination of the Confined Disposal Facilities (CDFs) for dredged materials in DKI Jakarta, and
3) Regulation of the sub-loan from the national government to Jakarta Province. The World Bank is able to facilitate its loan to the national government but there is no legal basis to facilitate the loan from the national government to provinces at present.

(3) Alternative measures for urban excess water management (Micro-drainage)

In order to minimize land acquisition and resettlement of legal and illegal residents, various underground drainage systems, retention pond systems, and multipurpose tunnel systems have been proposed for DKI Jakarta as alternative measures to the open surface channel drainage system since 2008.

(4) Future Status of Macro-drainage and Micro-drainage of DKI Jakarta

The flood inundation issues in DKI Jakarta will not be resolved through flood control of

the major rivers (macro-drainage) only.

The micro-drainage issues in DKI Jakarta are expected to worsen due to land subsidence, increase of flood runoff in the business and commercial areas, rise of spring high tide, sedimentation of soils and floating solid wastes, etc.

Comprehensive urban excess water management is necessary for DKI Jakarta to resolve the prevailing issues.

4.9 ELECTRIC POWER INFRASTRUCTURE

4.9.1 Power Demand and Consumption

(1) Total Indonesia

The growth of Power Demand and Consumption (Sales) of whole Indonesia from 2011 to 2020 is expected as shown in Table 4.9.1. Although the economic depression in 2009 decreased the electric power consumption, the peak power demand and consumption recovered in 2010 and are expected to grow at a rate in proportion to the GDP of Indonesia.

(2) Java-Bali System

The Java-Bali system is the backbone for supplying electric power to the JABODETABEK MPA. The Power Demand and Consumption in Java-Bali system were forecasted as shown in the Table 4.9.1, where the growth rate is bigger than that of whole Indonesia.

Table 4.9.1 Power Demand and Consumption

		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Indonesia												
	Peak Demand (MW)	25,177	27,792	30,435	32,856	35,456	38,361	41,444	44,496	47,768	51,301	55,053
	Consumption (Sales) (TWh)	145.7	162.4	177.8	193.4	210.1	227.6	246.2	264.6	284.4	305.7	328.3
	Growth rate (%)	6.1	6.2	6.5	7.2	7.4	6.9	6.9	6.9	6.9	6.9	6.9
Java-Bali System												
	Peak Demand (MW)	19,486	20,672	22,283	23,928	25,635	27,625	29,763	31,801	33,974	36,305	38,742
	Consumption (Sales)(TWh)	115.1	125.2	135.8	146.8	158.5	171.1	184.6	197.4	211.1	225.8	241.2
	Growth rate (%)	7.6	10.4	8.4	8.1	8.0	7.9	7.9	7.0	7.0	7.0	7.0

Source: PLN RUPTL 2010-2019(for Java-Bali:2010), RUPTL2011-2020(for other data)

(3) Power Demand in JABODETABEK Area

This Study shall focus on JABODETABEK area, which covers DKI Jakarta, Tangerang, Bekasi, Bogor, and Depok. Data of Power Demand just corresponding to JABODETABEK area were identified in Table 4.9.2. The data of respective area were provided by PLN and summed up by MPA Study Team. The Power Demand and growth of its respective area in JABODETABEK area are also shown in Figure 4.9.1and Figure 4.9.2.

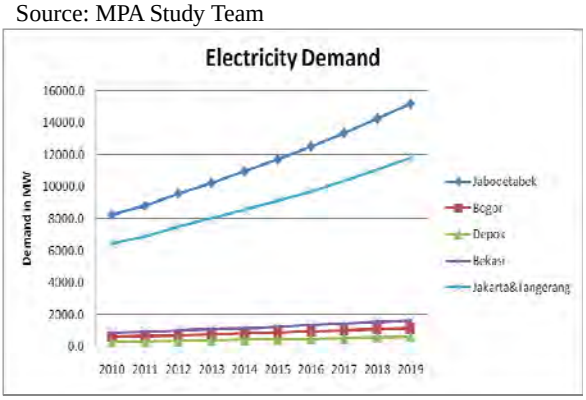
4.9.2 Power Supply to JABODETABEK MPA

(1) Present Power Demand and Supply System (as of November 2011)

Table 4.9.2 JABODETABEK MPA Power Demand

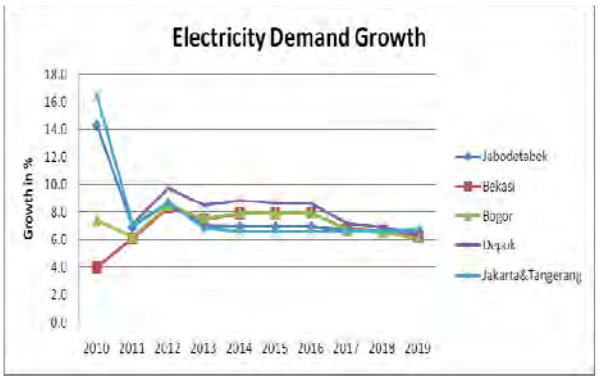
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Peak Demand (MW) (Growth Rate(%))	8,244 (14.3)	8,813 (6.9)	9,574 (8.6)	10,244 (7.0)	10,954 (6.9)	11,711 (6.9)	12,524 (6.9)	13,365 (6.7)	14,256 (6.7)	15,195 (6.6)	16,128 (6.7)
Peak Demand(MW) of DKI+Tangerang (Growth Rate(%))	6,461 (16.5)	6,918 (7.1)	7,515 (8.6)	8,027 (6.8)	8,558 (6.6)	9,123 (6.6)	9,726 (6.6)	10,376 (6.7)	11,068 (6.7)	11,809 (6.7)	12,608 (6.8)
Peak Demand (MW) of Bekasi (Growth Rate(%))	871 (4.0)	925 (6.1)	1,002 (8.3)	1,077 (7.5)	1,162 (7.9)	1,253 (7.9)	1,353 (8.0)	1,445 (6.8)	1,540 (6.6)	1,636 (6.2)	1,744 (6.7)
Peak Demand(MW) of Bogor (Growth Rate(%))	604 (7.4)	641 (6.2)	695 (8.5)	748 (7.6)	807 (7.9)	871 (7.9)	941 (8.0)	1,004 (6.7)	1,070 (6.6)	1,135 (6.1)	1,209 (6.6)
Peak Demand(MW) of Depok (Growth Rate(%))	308 (16.5)	330 (7.1)	362 (9.7)	393 (8.5)	427 (8.8)	464 (8.7)	504 (8.6)	540 (7.2)	578 (6.9)	615 (6.4)	656.8 (6.8)

Source: MPA Study Team



Source: MPA Study Team

Figure 4.9.1 Area- wise Power Demand in JABODETABEK



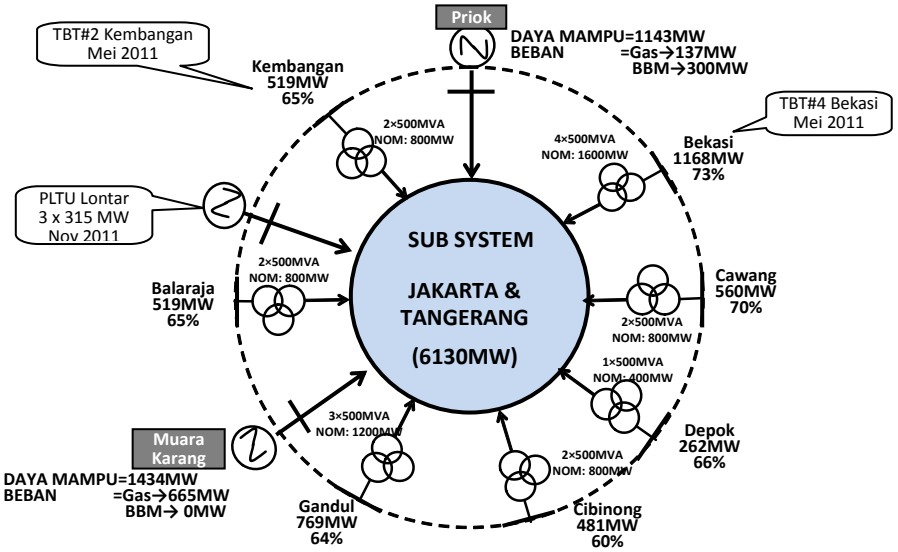
Source: MPA Study Team

Figure 4.9.2 Area-wise Power Demand Growth in JABODETABEK

Learning from the big blackout in DKI Jakarta area which happened in October 2009, PLN enhanced 500/150kV substations in November 2011 as shown in Figure 4.9.3.

(2) Power Supply System to JABODETABEK MPA (2020)

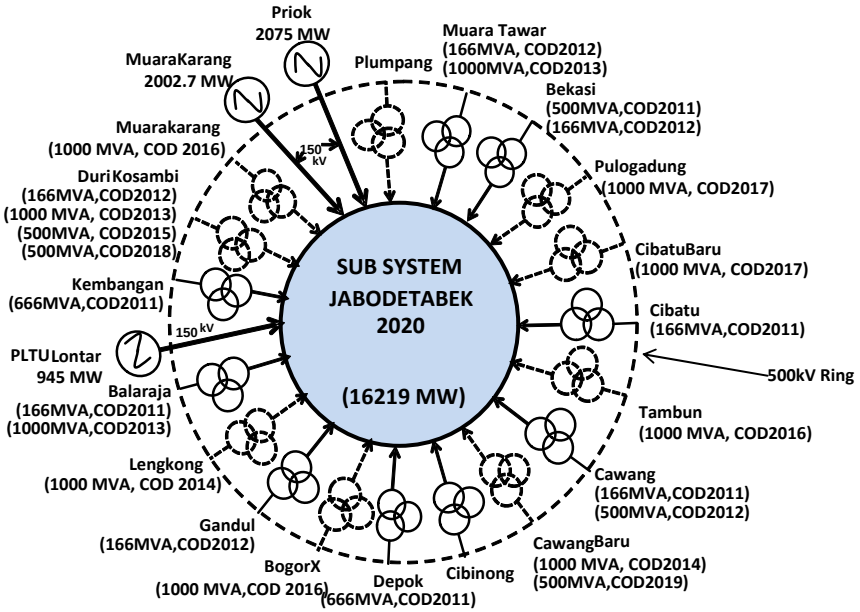
The electric power to JABODETABEK MPA is fed mainly from power plants in Muara Karang, Tanjung Priok, Muara Towar and Lontar through 500 kV or 150 kV transmission network. The 150 kV transmission system is backed up by outer 500kV transmission lines of Java-Bali system through 500 kV/150 kV substations as shown in Figure 4.9.4. This means that electric power to JABODETABEK MPA is supplied not only from the power plants in the Metropolitan area, but also from power plants connected to the Java-Bali transmission system.



(In case the connected load is not clear, unit MVA is used.)

Source : MEMR: KONDISI INFRASTRUCTUR KETENEGALISTRIKA

Figure 4.9.3 Power Supply for DKI Jakarta+Tangerang Area in November 2011



(In case the connected load is not clear, unit MVA is used.)

Source : PLN RUPTL 2011-2020 and MPA Study Team

Figure 4.9.4 Power Supply to JABODETABEK Area in 2020

4.9.3 Power Plant Development and Operation in Java-Bali System

(1) 10,000 MW(1st) Fast Track Program (2006-2009)

The government's 10,000 MW (1st) Fast Track Program (2006-2009) included 20 coal-fired power plant units with a total output of 7,490 MW in the Java-Bali system. The start of the operation was scheduled originally in 2009. However, only one unit was constructed and has operated with 315MW. The current status of operation of remaining units is shown in the Table 4.9.3.

Table 4.9.3 Completion Year and Number of 1st FAST TRACK Program Unit

Year	Completed		Planned to commence its operation			
	2009	**2010**	**2011**	**2012**	**2013**	**2014**
No. of Unit (Capacity: MW)	1 (315)	1 (315)	7 (2,560)	7 (2,620)	3 (1,050)	1 (600)

Source: PLN RUPTL2011-2020

(2) Power Generation Agency

Most of the electric power plants in Java-Bali system are being operated by PT. PLN, the state-owned private company and its subsidiary companies (PT. Indonesia Power and PT. PJB). The remaining electric power required is being purchased from the IPPs (Independent Power Producers) or supplied by the leased generators. The capacity of power generation facilities and ratio between PLN and subsidiaries and IPP for each type of plant in Java-Bali system in 2010 are shown in Table 4.9.4.

The amount of electric power produced in 2010 for entire Indonesia is 123,477 GWh by PT. PLN and subsidiaries, 38,076 GWh by IPP and 8,233GWh from the leased generators.

Table 4.9.4 Capacity of Power Generation Facilities in Java-Bali System (in 2010)

Type of Plant	PLN + Subsidiaries (MW)(Ratio: %)	IPP (MW)(Ratio: %)	Total	
			MW	Ratio (%)
PLTA (Hydroelectric)	2,386(94.1)	150(5.9)	2,536	10.9
PLTU (Coal-fired)	7,620(71.4)	3,050(28.6)	10,670	46.0
PLTGU (Gas-fired steam plant)	6,643(100)	NA	6,643	28.6
PLTG (Gas turbine)	2,086(93.3)	150(6.7)	2,236	9.6
PLTD (Diesel engine)	76(100)	NA	76	0.3
PLTP (Geothermal)	360(34.4)	685(65.6)	1,045	4.6
Total	19,171(82.4)	4,035(17.6)	23,206	100.0

Source: PLN RUPTL 2011-2020

(3) PLN's Power Plant Development and Operation Plan

The development of power generation plants is promoted under the government's 10,000 MW (1st) Fast Track Program (2006-2009) and Fast Track Program Stage 2 (2010-2014). With reference to PLN RUPTL 2011-2020, the Table 4.9.5 shows the capacity and type of power plants for 2011-2020, which were totally reviewed including the ongoing plants under the government programs.

Table 4.9.5 Capacity and Type of Power Plants in Java-Bali System

Generating Agency			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
PLN (MW)	Ongoing	PLTU	2,220	3,280	1,050	660						
		PLTGU	444	743								
	Planned	PLTU					660		1,000	600		1,000
		PLTGU									750	750
		PLTG				150				400		400
		PLTA					210	1,102	37		450	950
IPP (MW)	Ongoing	PLTU	660	815		380						
		PLTGU	150									
	Planned	PLTU					1,660	3,520	2,860	600		
		PLTP			60		385	325	270	815	855	165
		PLTA					47					
Total Capacity to be added (MW)			4,474	4,838	1,110	1,190	2,962	4,947	4,167	2,415	2,655	3,265
Existing Capacity (MW)			**21,407**	**21,007**	**20,531**	**20,531**	**20,531**	**20,531**	**20,531**	**20,531**	**20,531**	**20,531**
Total Generating Capacity (MW)			**27,091**	**31,529**	**32,163**	**33,353**	**36,315**	**41,262**	**45,429**	**47,844**	**50,499**	**53,764**
Reserve Margin (%)			**31**	**41**	**34**	**30**	**31**	**39**	**43**	**41**	**39**	**39**

Source: PLN RUPTL 2011-2020

4.9.4 Reliability and Quality of Power Supply to JABODETABEK Area

(1) Reliability of Power Supply

The reliability of electricity supply to consumer is measured using the parameters of SAIDI (System Average Interruption Duration Index) and SAIFI (System Average Interruption Frequency Index). Historical trend of SAIDI and SAIFI of total Indonesia is shown in Table 4.9.6. The figures were drastically improved in 2010 but still not satisfactory in comparison with developed countries.

SAIDI=System Average Interruption Duration Index (hour/year/subscriber)
SAIFI= System Average Interruption Frequency Index (time/year/subscriber)

Table 4.9.6 Electricity Quality of the PLN System (Total Indonesia)

	2005	2006	2007	2008	2009	2010
SAIDI	15.77	27.01	28.90	80.90	16.70	6.96
SAIFI	12.68	13.85	12.77	13.33	10.78	6.83

Source: PLN Annual Report 2010

(2) Voltage Drop in 500 kV Transmission Line

According to Appendix C1.8 of PLN RUPTL 2011-2020, the analysis of power flow in Java-Bali system shows the voltage drop between two substations (sending substation and receiving substation).

The figures of voltage drop shown there are the results of simulation analysis by PLN. The direction of power flow is always from East to West in the Java-Bali 500 kV transmission line. The maximum voltage drop of 30.9 kV (6.2%) is seen in 2020, which is still within the Grid Code (-5%/+5%). The voltage drop actually estimated in June 2011 was 11.5% in Bandung-south Substation, 11.4% in Cibatu Substation, and 11.3% in Cwang Substation with a maximum drop during daytime. The power flow from the central region to west

region of Java was total 2,788MW in total (Northern route; 1704 MW and Southern route: 1,068 MW).

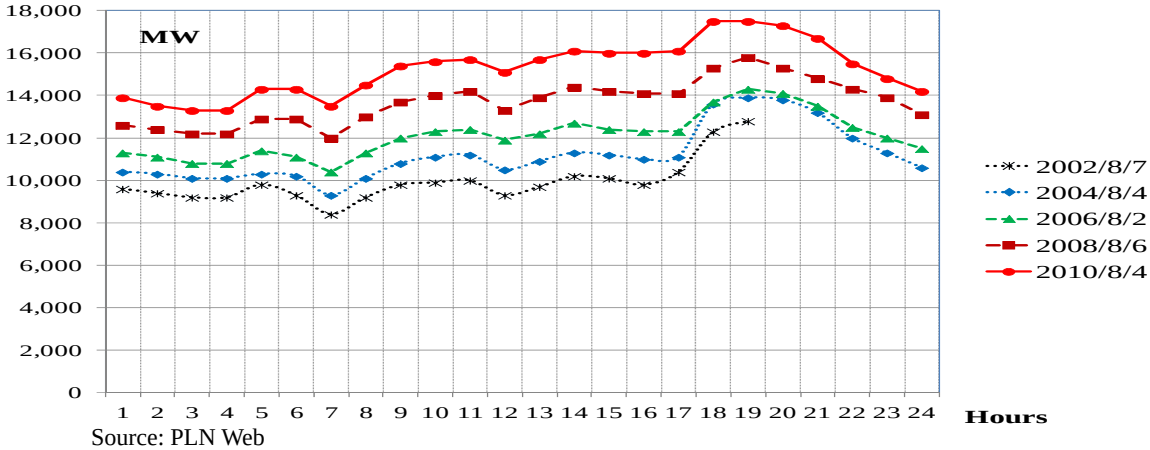
These bigger voltage drops seem to be caused by the distance of 500 kV transmission lines from power generating plants which are located in central and east regions of Java Island to JABODETABEK MPA.

4.9.5 Tariff System of PLN

The tariff system of PLN was revised in July 2010. It applied the unified tariff rate throughout Indonesia except for the Batam Special Economic Zone, where special rate is applied. The tariff rate was classified into 20 sectors like household, commercial, industrial, public, etc., where different tariff rates were applied. In 2009, the average electricity generation unit cost was IDR 768 kWh and the average sale price was IDR 670 kWh. To compensate the gap between sale price and production cost of electricity power, a great amount of government's subsidy was provided as PLN's revenue.

4.9.6 Energy Conservation Awareness and Demand Side Management (DSM)

According to the survey conducted by JICA (2009) for the promotion of energy conservation activities, effective measures to reduce energy consumption in Indonesia have not been taken yet and the level of awareness for energy conservation is not high. Due to global uprising over fuel price, the promotional activities and measures to be taken by consumers so called Demand Side Management (DSM) became a pressing issue. However, high level of government's subsidy was regarded as an obstacle to people's awareness of energy conservation.



Source: PLN Web

Figure 4.9.5 Daily Peak Demand of Java-Bali System

The power supply side must add facilities to meet the growing peak demand of the system, but it was hard to catch up with its growing pace. The daily peak demand in Java-Bali system is observed during 18:00-21:00, which is assumed to be taking place in residential area as shown in Figure 4.9.5. The total capacity of power generation plants must meet the peak demand with

proper supply margin reserve margin.

JICA and other international institutions have proposed various measures to mitigate the peak demand as DSM which shall be taken by government, private enterprises, and individual people.