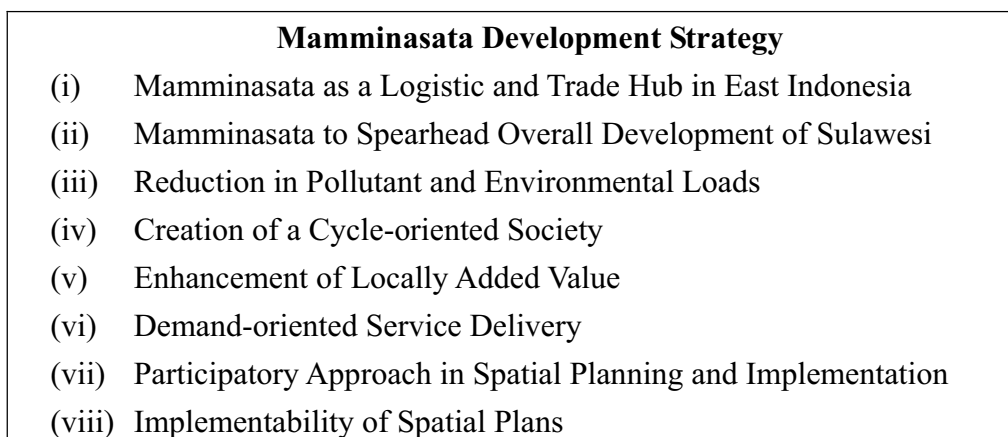


10. DEVELOPMENT PROGRAM

10.1 Development Program

Mamminasata development programs to the year 2020 are proposed for implementation, following the regional development strategy for Mamminasata set as shown below.



Proposed programs are grouped into, (1) Economic development support program, (2) Urban environment and infrastructure development program, (3) Economic infrastructure development program, and (4) Urban management/institutional strengthening program.

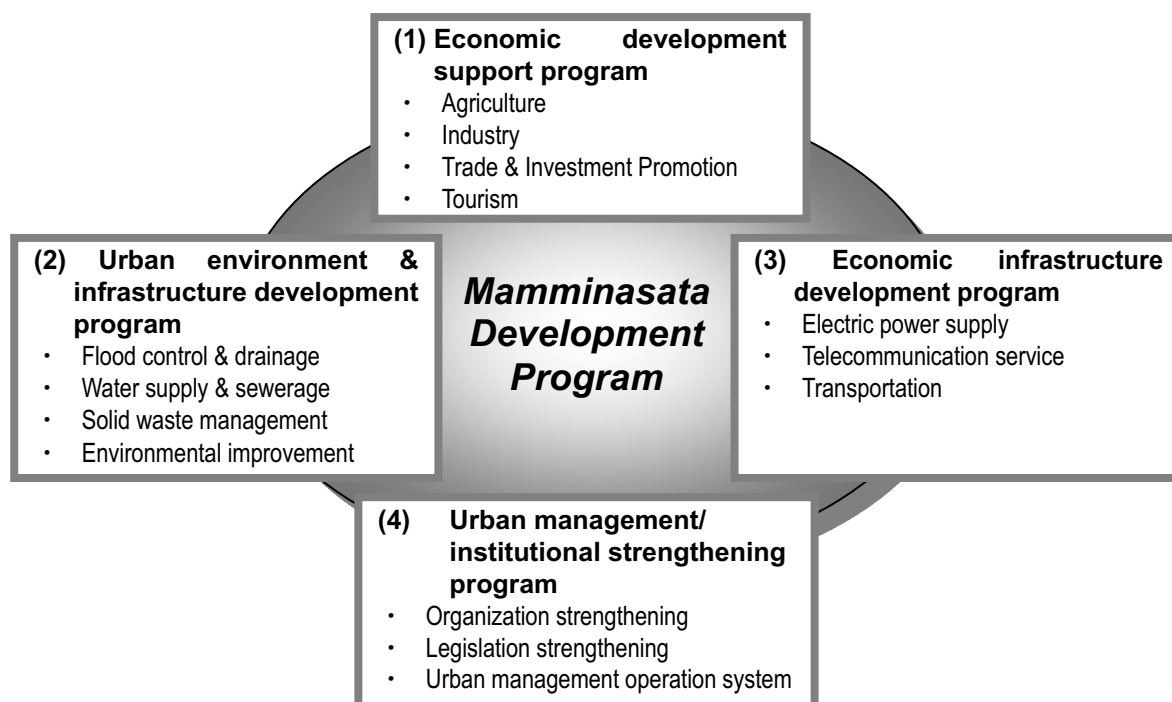


Figure 10.1: Four Programs

1) Economic development support program (Strategy: i, ii, v, vi)

The Mamminasata area is a center of economic activities not only in South Sulawesi province but also in Sulawesi island and Eastern Indonesia. Acceleration of economic activity in Mamminasata is expected to have impact in and out of South Sulawesi province. Economic development support program, including agriculture, industry, trade and investment, and tourism, aims at increasing the productivity of local resources, and to establish a function as “logistic hub” in the region. Project components are listed in the Table 10.1.

Table 10.1: Project Components for Economic Development Support Program

Project Components	Timeframe			Responsible Agency/Players
	Short	Mid	Long	
1.1 Agriculture				
1.1.1 Community-Wise Post Harvest Training	✓			Dinas Agriculture, Producers
1.1.2 Study Program of Producers Group	✓			Dinas Agriculture
1.1.3 Inter-Departmental Collaboration Program for Local Government	✓			Dinas (Agriculture, Fishery, Industry & Trade, Forestry)
1.1.4 Strengthening of R&D Capability	✓			Dinas & Balai Agriculture, Academic institutions
1.1.5 Stock Assessment of Marine Fishery	✓			Dinas (Agriculture, Fishery, Industry & Trade, Forestry), Academic institutions
1.1.6 Strengthening Fishery Marketing	✓			Fishermen, Dinas Fishery, Dinas Industry & Trade
1.1.7 Integrated Livestock Development Program		✓		Government, Producers, Academic Research Institute
1.1.7 Linkage Strengthening Program		✓		Gerbang Emas Secretariat, Concerned Dinas (Agriculture, Fishery, Industry, Forestry), Manufacturers, Producers
1.1.8 Development and Promotion of By-products Industry		✓		Dinas (Agriculture, Fishery, Industry & Trade, Forestry), Manufacturers
1.1.9 Advanced Technological Development for Agro-Processing Industry		✓		Dinas (Agriculture, Fishery, Industry & Trade, Forestry), Manufacturers
1.1.10 Development and Promotion of Packaging Industry		✓		Dinas Industry & Trade, Manufacturers
1.1.11 Hatchery Development Program		✓		Dinas Fishery, Academic Institutions
1.1.12 Fishery Port Development Study in Mamminasata		✓		Dinas Fishery
1.1.13 Agribusiness Education Program			✓	Dinas Agriculture, Academic Institution, Producers
1.1.14 Agricultural Enterprises Formulation Program			✓	Dinas Agriculture, Private investors, Producers
1.1.15 Offshore Fishery Development			✓	Dinas Fishery, Academic Institutions
1.2 Industry				
1.2.1 Cluster Promotion for Cacao Industry	✓	✓		Private sector, ASKINDO, BDS Providers, Dinas (Agriculture, Industry, trade) BPPMD, KIMA, Microfinance institutions
1.2.2 Cluster Promotion for Sugar Industry	✓	✓		Private sector, Dinas (Agriculture, Industry, Trade, BPPMD), P3GI

Project Components	Timeframe			Responsible Agency/Players
	Short	Mid	Long	
1.2.3 Strengthening Capacity of BDS Provider	✓	✓	✓	BDS providers, Supporting institutions (BDI, RETPC), Dinas Industry & Trade
1.2.4 Strengthening Capacity of UPT	✓	✓	✓	BPTTL/UPT, Dinas Industry & Trade
1.2.5 Strengthening Capacity of BDI	✓	✓	✓	PUSDIKLAT-INDAK/BDI, Dinas Industry & Trade
1.2.6 Strengthening Capacity of RETPC	✓	✓	✓	NAFED/RETPC, Dinas Industry & Trade, BDS providers
1.2.7 Strengthening Capacity of BLKI	✓	✓	✓	BLKI, Dinas Labor & Transmigration
1.2.8 Compiling Industrial Statistics	✓	✓	✓	BPS, Dinas (Disperindag)
1.2.9 Development of Industrial Area	✓	✓	✓	KIMA, BPPMD, BKSPMM
1.2.10 Strengthening Capacity of Technical Universities	✓	✓	✓	Faculty of Techniques, UNHAS, LPM UNHAS, LPT-metalwork, Makassar
1.3 Trade and Investment				
1.3.1 Investment Incentives	✓			Ministry of Finance, Investment Coordinating Agency
1.3.2 Establishment of Processing Industrial Park	✓	✓	✓	KIMA, Regional governments
1.3.3 Designation of Bonded Zones	✓			Ministry of Finance
1.3.4 Effective exhibitions	✓			Dinas Industry & Trade, RETPC, NAFED
1.3.5 Offering of "Award for Excellent Mamminasata Export	✓			RETPC, Ministry of Finance
1.3.6 "Target China": Intensive Marketing in Chinese Market	✓			Dinas Industry & Trade, RETPC
1.4 Tourism				
1.4.1 Improvement of Fort Rotterdam	✓	✓		Dinas Culture & Tourism, Makassar city, Ministry of Culture & Tourism
1.4.2 Somba Opu Traditional Culture Park Project	✓	✓		Dinas Culture & Tourism, Makassar city, Indonesia Hotel and Restaurant Association, Private sector
1.4.3 Improvement of Beach Area in front of Fort Rotterdam	✓	✓		Makassar city, Indonesia Hotel and Restaurant Association, Private sector
1.4.4 Improvement of Tourism Information Service	✓	✓		Tourism Office (South Sulawesi, Makassar, Gowa, Maros, Takalar)
1.4.5 Improvement of Existing Tourism Facility	✓	✓		Provincial government, Makassar city, regencies in Mamminasata
1.4.6 Promotion of Marine Tourism		✓	✓	Tourism Office (South Sulawesi, Makassar, Gowa, Maros, Takalar), Hotel and Restaurant Association, Travel Agent Association
1.4.7 Development of Nature and Community-based Tourism		✓	✓	Tourism office, NGO, Indonesian Tours and Travel Agent Association

2) Urban environment and infrastructure development program (Strategy: iii, vii, viii)

Urban environment and infrastructure development program aims at providing utility and services for the people, creating a clean urban environment, and reducing risks of floods and other hazard. Flood control and drainage improvement, water supply and sewerage improvement, solid waste management are included in the program.

Land re-adjustment projects will be implemented together with infrastructure development. Environmental strengthening will promote environmental awareness along with environmental improvement measures. Project components are listed in Table 10.2.

Table 10.2: Project Components for Urban/Social Infrastructure Development Program

Project Components	Timeframe			Responsible Agency/Players
	Short	Mid	Long	
2.1 Flood Control and Drainage Improvement				
2.1.1 Maros River Flood Control Project	✓	✓	✓	Dinas PSDA, Maros District Government
2.1.2 Tallo River Flood Control Project	✓	✓	✓	Dinas PSDA, Makassar City Government
2.1.3 Gamanti/Pappa River Flood Control Project	✓	✓	✓	Dinas PSDA, Gowa and Takalar District Government
2.1.4 North Jeneberang Area Urban Drainage Improvement Project	✓	✓	✓	Dinas PSDA, Gowa District Government
2.2 Water Supply and Sewerage Improvement				
2.2.1 Maros Water Supply Project (water loss overcoming, PSP, new WTPs)	✓	✓	✓	PDAM Maros, Maros District Government
2.2.2 Makassar Water Supply Project (water loss overcoming, PSP, expansion of Somba Opu WTP, new WTPs)	✓	✓	✓	PDAM Makassar, Makassar City Government
2.2.3 Gowa Water Supply Project (water loss overcoming, PSP, new WTPs)	✓	✓	✓	PDAM Gowa, Gowa District Government
2.2.4 Takalar Water Supply Project (water loss overcoming, PSP new WTPs)	✓	✓	✓	PDAM Takalar, Takalar District Government
2.2.5 Maros Wastewater Management Project (community based activity, law enforcement)	✓	✓	✓	Dinas Spatial Plan (Province, Maros)
2.2.6 Makassar Wastewater Management Project (community based activities, law enforcement, off-site system installation)	✓	✓	✓	Dinas Spatial Plan (Province, Makassar)
2.2.7 Gowa Wastewater Management Project (community based activity, law enforcement)	✓	✓	✓	Dinas Spatial Plan (Province, Gowa)
2.2.8 Takalar Wastewater Management Project (community based activity, law enforcement)	✓	✓	✓	Dinas Spatial Plan (Province, Takalar)
2.3 Solid Waste Management				
2.3.1 Community Base Activity (public awareness of recycling)	✓	✓	✓	Dinas Beautification and Environment (Makassar), Dinas Spatial Plan Province, Dinas Cleansing (Maros, Gowa, Takalar), Community
2.3.2 Improvement of Institution	✓			Dinas Beautification and Environment (Makassar), Dinas Spatial Plan Province, Dinas Cleansing (Maros, Gowa, Takalar), Community
2.3.3 Improvement of Collection and Transportation	✓			Dinas Beautification and Environment (Makassar), Dinas Spatial Plan Province, Dinas Cleansing (Maros, Gowa, Takalar), Community
2.3.4 Improvement and Expansion of Existing Landfill Sites	✓			Dinas Beautification and Environment (Makassar), Dinas Spatial Plan

Project Components	Timeframe			Responsible Agency/Players
	Short	Mid	Long	
				Province, Dinas Cleansing (Maros, Gowa, Takalar), Community
2.3.5 Construction of New Landfill Site	✓	✓	✓	Dinas Beautification and Environment (Makassar), Dinas Spatial Plan Province, Dinas Cleansing (Maros, Gowa, Takalar), Community
2.3.6 Construction of Waste Separate Facility	✓	✓	✓	Dinas Beautification and Environment (Makassar), Dinas Spatial Plan Province, Dinas Cleansing (Maros, Gowa, Takalar), Community
2.4 Urban greenery				
2.4.1 Park development	✓	✓	✓	City/district government
2.4.2 Reforestation	✓	✓	✓	City/district government
2.4.3 Street greenery	✓	✓	✓	City/district government
2.5 Environmental improvement				
2.5.1 Promotion of Environmental Awareness	✓	✓	✓	Dinas Education, BAPEDALDA
2.5.2 Waste and Garbage Collection and Recycling	✓	✓	✓	Dinas Spatial Planning, Academic, NGOs
2.5.3 Protection of Biodiversity and Natural Resources	✓	✓	✓	Dinas Spatial Planning, BAPEDALDA, City & District government
2.5.4 Air Pollution Control	✓	✓	✓	Dinas Spatial Planning, BAPEDALDA, City & District government
2.5.5 Water Contamination Control	✓	✓	✓	Dinas Spatial Planning, BAPEDALDA, City & District government

3) Economic infrastructure development program (Strategy: i, viii)

Economic infrastructure development program aims at providing infrastructure necessary for economic activities. Electric power supply, telecommunications service improvement, and transportation are to be improved to support the Mamminasata economy. Project components are listed in the Table 10.3.

Table 10.3: Project Components for Economic Infrastructure Development Program

Project Components	Timeframe			Responsible Agency/Players
	Short	Mid	Long	
3.1 Electric Power Supply				
3.1.1 Earliest Implementation of the Sengkang and Takalar Power Plants	✓			PLN
3.1.2 Energy Conservation Campaign	✓			PLN
3.1.3 Urgent Expansion of Transformer Capacity in the Mamminasata Area	✓			PLN
3.1.4 Construction of the Ring Transmission Networks		✓	✓	Public & PLN
3.1.5 Rehabilitation and Upgrading of Existing Distribution Lines		✓	✓	PLN

Project Components	Timeframe			Responsible Agency/Players
	Short	Mid	Long	
3.1.6 Departure from Dependency on Oil		✓	✓	Public & PLN, other Private sector
3.1.7 Earlier Construction of Hydropower Stations using PPP and CDM		✓	✓	Private or PPP
3.2 Telecommunications Service Improvement				
3.2.1 Introduction of e-Government for Gowa and Maros	✓			Gowa district government, Maros district government
3.2.2 Expansion of CDMA-Based Fixed Phone Service Area	✓			TELKOM, City/District government (Makassar, Maros, Gowa, Takalar)
3.2.3 Reduced Tariff in High Speed Internet Service	✓			Private (telecommunication company)
3.2.4 Rehabilitation and Modernization of Existing Telecommunication Facility		✓	✓	Private (telecommunication company)
3.3 Transportation Development				
3.3.1 Jl. Sutami toll road between Makassar port and Hassanuddin Airport	✓			Dinas Regional Infrastructure, Private
3.3.2 Jl. Perintis together with Jl. Sumoharjo	✓			Dinas Regional Infrastructure
3.3.3 Alauddin road from Pettarani to Sungguminasa	✓			Dinas Regional Infrastructure
3.3.4 Hertasing road extension	✓			Dinas Regional Infrastructure
3.3.5 Malino road from Sungguminasa to Malino direction	✓			Dinas Regional Infrastructure
3.3.6 Takalar access road from Sungguminasa to Takalar direction	✓			Dinas Regional Infrastructure
3.3.6 Middle Ring Road	✓			Dinas Regional Infrastructure
3.3.7 KIMA (Jl Kapasa Raya)	✓			Dinas Regional Infrastructure
3.3.8 Tanjung Bunga Access	✓	✓		Dinas Regional Infrastructure
3.3.9 Mamminasa Bypass		✓	✓	Dinas Regional Infrastructure
3.3.10 Mamminasa Bypass Bridge			✓	Dinas Regional Infrastructure
3.3.11 Abudullah Daeng Sirua		✓	✓	Dinas Regional Infrastructure
3.3.12 Around AirPort	✓	✓		Dinas Regional Infrastructure
3.3.13 AirPort Access	✓	✓	✓	Dinas Regional Infrastructure
3.3.14 Trans Sulawesi	✓	✓	✓	Dinas Regional Infrastructure
3.3.15 KIWA Access		✓		Dinas Regional Infrastructure
3.3.16 Around Sungguminasa	✓	✓		Dinas Regional Infrastructure
3.3.17 Road Facility Improvement	✓	✓	✓	Dinas Regional Infrastructure
3.3.18 Public Transportation Service	✓	✓	✓	Dinas Regional Infrastructure
3.3.19 Introduction of Traffic Demand Management in Makassar	✓	✓	✓	Dinas Regional Infrastructure

4) Urban management and institutional strengthening program (Strategy; iii, vi, viii)

Urban management and institutions are formulated for Mamminasata development. Institutional strengthening program aims at strengthening capability of Mamminasata development implementation including organization strengthening, legislation strengthening for urban development control, and urban management operation system development. Project components are listed in Table 10.4.

Table 10.4: Project Components for Environmental and institutional Strengthening Program

Project Components	Timeframe			Responsible Agency/Players
	Short	Mid	Long	
4.1 Organizational strengthening				
4.1.1 Organizational strengthening (establishment of Mamminasata Development Management Bureau) including legislation	✓			Dinas Spatial Planning, Ministry of Public Works, Ministry of Home Affairs
4.2 Legislation strengthening				
4.2.1 Enactment of legislation required for urban management	✓			Provincial governments, Ministry of Public Works
4.2.2 Transportation management	✓			Dinas Spatial Planning, Dinas Regional Infrastructure
4.3 Urban development management support system				
4.3.1 Strengthening of Development Permit System	✓			Dinas Spatial Planning
4.3.2 Land registration system	✓			Dinas Spatial Planning, BPN
4.3.3 New tax to induce and control development	✓			Dinas Spatial Planning, Ministry of Public Works, Tax agency

10.2 Action Plan

For the implementation of the proposed development program, action plan is formulated primarily for the following projects.

- (i) Projects that are proposed for implementing in the short term (to be implemented in next five years),
- (ii) Projects that are important to be implemented as the Mamminasata Metropolitan area and contribute to the Mamminasata Development Strategy, particularly projects related to urban environment improvement and economic infrastructure are considered as high priority,
- (iii) Projects that will contribute to institutional strengthening, particularly organization establishment and legislation for land use management, and
- (iv) Project that will be integrated to attain the same objectives for development.

Action plan is proposed to attain five major targets for integrated development of Mamminasata as listed in the following.

Table 10.5: List of Action Plan

Sector	Action Plan
1. Economic development	1.1 Agriculture products quality improvement
	1.2 Manufacturing and trade technique and cluster strengthening support
	1.3 Investment and trade strengthening
	1.4 Cluster development of selected commodities
	1.5 Improvement of Fort Rotterdam and beach area
2. Urban environment and infrastructure improvement	2.1 Improvement in municipal water supply
	2.2 Wastewater management

Sector	Action Plan
	2.3 Solid waste management
	2.4 Greenery and riparian environment improvement
3. Economic infrastructure improvement	3.1 Mamminasata artery road improvement
	3.2 Traffic management improvement
	3.3 Power transmission and distribution improvement
4. Institutional strengthening	4.1 Organizational strengthening
	4.2 Legislation strengthening
	4.3 Information management strengthening

Overall implementation management of the action plans shall be responsibility of “Mamminasata Development Management Agency (BPPM)” (detail is described in Chapter 11), and implementation of each action plan shall be managed by concerned organization, particularly provincial government which functions as “facilitator” and coordinates among stakeholders involved in implementation.

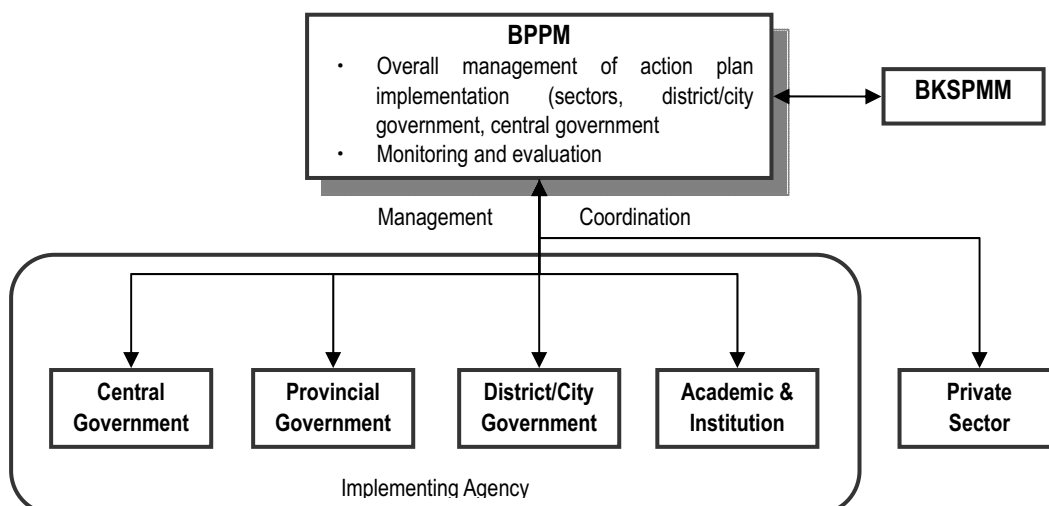


Figure 10.2: Implementation Arrangement

1) Action Plan for Economic Development

Based on the function of the Mamminasata area, action plan for economic development is designed to strengthen support system for quality improvement, marketing and trade strengthening, and institutional strengthening as listed below.

- (i) Agriculture products quality improvement
- (ii) Manufacturing and trade technique and cluster strengthening support
- (iii) Investment and trade strengthening
- (iv) Cluster development of selected commodities
- (v) Improvement of Fort Rotterdam and beach area

Action Plan	1.1 Agricultural products quality improvement
Objective	<ul style="list-style-type: none"> To increase farmers' income by increasing agricultural productivity through (i) improve crop yield, (ii) applying intensive land use (iii) introducing mixed and integrated farming with fish pond culture, and iv) developing and introducing improved varieties for major crops. To supply sufficient quantity and quality of raw materials to agro-/fishery-based processing industry, whereby strengthening linkage with those industry To strengthen commodity marketing system, including dissemination of market information to producers and empowerment of producers' associations/organizations
Importance in Mamminasata Development	Even though Mamminasata is metropolitan area, agriculture activities are the base of the economy particularly in Maros, Gowa, and Takalar. It is also a base for the manufacturing sector because most manufacturing activities are agriculture related. In order to improve manufacturing products and to improve income from the agriculture, quality of agricultural products need to be improved.
Output	<ul style="list-style-type: none"> (i) Increase in quality and introduction of new crops (ii) Increase production efficiency (iii) Introduction of new products from by-products (iv) Strengthening of associations/organizations
Action to be taken	<ul style="list-style-type: none"> Community-Wise Post Harvest Training: Producers should become fully aware of product quality and market signal. For quality control at production level, commodity-wise training programs on post harvest treatment should be formulated and implemented for producers Study Program of Producers Group: In order to have better understandings on agro-processing industry for selected crop producers, periodic study tours are arranged. Participants are expected to learn how their harvest products are processed into commercial goods. It will be a trial to raise producers' awareness of product quality. Strengthening of R&D Capability: Research and development (R&D) capability for region-specific seed / seedling varieties for agriculture and forestry are enhanced to accelerate potential unit yields and qualities. Stock Assessment of Marine Fishery: Marine fish stock assessment are conducted in order to create clear guideline and regulation, which stipulates a marine preserve area and closed seasons by species, in guidance with National Fishery Stock Committee. This assessment is carried out in scientific manner presumably by an academic institute in collaboration with state research institute so that assessment results could be given a strong scientific ground.
Implementation Arrangement	Provincial government (Dinas Agriculture, Dinas Fishery, Dinas Plantation) should take initiative as "facilitator" and coordinate academic institution and producer in quality improvement. In order to select producers who are serious about the quality improvement, any training has to be charged to participants.
Stakeholders	Dinas Agriculture, Dinas Fishery, Dinas Plantation, Association/institutions by commodity, academic institution
Expected Benefit	<ul style="list-style-type: none"> Increase in agricultural product volume and value Increase in farmers income Synergy effect to manufacturing sector
Cost and Financial Source	Rp. 5 billion (public investment)

Action Plan	1.2 Manufacturing and trade technique and cluster strengthening support
Objective	To strengthen capacity of industrial support institution and to strengthen linkage among stakeholders so that support function to manufacturers are efficiently conducted
Importance in Mamminasata Development	Economic activity involves raw material production, processing, and marketing & trade and these activities have to be coordinated well to maximize the increase in value added. The Mamminasata area plays a role in strengthening urban and rural linkage, providing support for activities, and strengthen coordination among institutions

Output	(i) Linkage among institutions are strengthened (ii) There is enough manpower and know-how to support manufacturing activity (iii) Existing institutions are fully utilized and O&M is properly conducted
Action to be taken	<ul style="list-style-type: none"> • Inter-Departmental Collaboration Program for Local Government: In order to strengthen linkage between production and processing sides, the cooperative activities between department of agriculture, plantation, fishery and industry, or the program such as Gerbang Emas should be consistently carried out. The aim of the program is to enhance the initiatives of each department as Governor's Office does for Gerbang Emas. • Strengthening Capacity of BDS Provider: To expand outreach to SMEs and to provide practical and customized services to SMEs by creating list of BDS providers, training of BDS (providers, and strengthen linkage between BDS providers and BDI / RETPC • Strengthening Capacity of BDI (Balai Diklat Industri, Institution for Industrial Training and Education): To increase contribution of manufacturing sector by providing training courses to SMEs and BDS providers • Strengthening Capacity of RETPC (Regional Export Trade Promotion Center): To increase the contribution to manufacturing sector by supporting packaging industry, providing international and domestic market information, compile industrial data, and strengthening linkage with BDS providers and other supporting institutions • Strengthening Capacity of BLKI (Balai Latihan Kerja Industri, Vocational Training Center for Industry and Service): To increase contribution to manufacturing sector by strengthening training program (5S, quality control, packaging)
Implementation Arrangement	Provincial government shall coordinate the actions among the stakeholders. RETPC shall be the facilitator for manufacturing trade strengthening including training with close coordination Dinas Industry & Trade. Other training institutions shall also coordinate with RETPC and Gerbang Emas. In order to select producers who are serious about the quality improvement, any training has to be charged to participants.
Stakeholders	Dinas Industry & Trade, BDI, BLKI, RETPC, Academic institution, Gerbang Emas secretariat
Expected Benefit	<ul style="list-style-type: none"> • Products match the market needs • Market opportunity will increase • Demand will increase • Value added will increase and income will increase
Cost and Financial Source	Rp. 20 billion (public investment, province)

Action Plan	1.3 Investment and trade strengthening
Objective	To increase attractiveness of Mamminasata as investment site by providing investment incentives and also to strengthen the linkage between producers and market (consumers)
Importance in Mamminasata Development	The Mamminasata area is considered as a center of trade and distribution in South Sulawesi province and also in Eastern Indonesia. This function has to be further strengthened to accelerate economic activities in and out of South Sulawesi province.
Output	(i) Investment incentives are available (tax, award) (ii) Linkage between producers and market is strengthened
Action to be taken	<ul style="list-style-type: none"> • Investment Incentives: To promote investment and to develop supporting industry to upgrade agro-/fishery industry by increasing attractiveness of investment condition such as tax privileges • Designation of Bonded Zones: To promote investment by designate newly industrial zone as bonded zone in which companies can receive tax exemption (excise tax, value added tax, luxurious tax and income tax) • Effective exhibitions: To promote exports by holding a variety of exhibits • Offering of "Award for Excellent Mamminasata Export: To promote exports by establishing "Mamminasata Export Excellent Award" for exporters, and select certain companies for the award (possible criteria: export value, number of employments, local contents and ISO certificate) and give incentives for winners (tax exemptions

	proportionally to export value, eligibility to use the award logo, exemption from participation fees for exhibitions and trade missions, and features in media)
Implementation Arrangement	Investment Coordination Agency shall facilitate the investment strengthening with Dinas Industry & Trade in the province. Ministry of Finance shall be involved because change in tax condition requires approval from the Ministry. RETPC shall facilitate trade promotion and exhibit.
Stakeholders	Ministry of Finance, Investment Coordination Agency, KIMA, Dinas Industry & Trade, RETPC
Expected Benefit	<ul style="list-style-type: none"> • Investment will increase • Trade volume will increase
Cost and Financial Source	Rp. 5 billion (public investment, national and provincial)

Action Plan	1.4 Cluster development of selected commodities
Objective	To strengthen the regional and sector linkage to increase value added of local resources and to promote maximize utilization of the local resources
Importance in Mamminasata Development	South Sulawesi province has "Gerbang Emas" program to improve quality and productivity and increase accessibility to market. Eleven commodities are selected and production center (kabupaten) is selected for each commodity, but the linkage among kabupaten and linkage from up-stream to down stream is still weak. Regional linkage and process linkage has to be strengthened to maximize the utilization of local resources
Output	<ul style="list-style-type: none"> (i) Regional coordination is strengthened (ii) Up-stream and down-stream coordination is strengthened (iii) Quality improvement
Action to be taken	<ul style="list-style-type: none"> • Raw material improvement • Processing improvement • Market access improvement • Linkage improvement (regional and sectoral)
Implementation Arrangement	Dinas Industry & Trade shall facilitate cluster development with close coordination with Gerbang Emas Secretariat. The cluster development shall be achieved through implementation of action plan (1.1, 1.2, 1.3) which strengthen all sectors in economic sector.
Stakeholders	Raw material producers, processing (supporting industry), Dinas Industry & Trade, RETPC, Gerbang Emas Secretariat
Expected Benefit	<ul style="list-style-type: none"> • Value of local resources increase which leads increase in income of the people • Processing and supporting sector is developed
Cost and Financial Source	Rp. 10 billion (public investment, province)

Action Plan	1.5 Improvement of Fort Rotterdam and beach area
Objective	Improve attractiveness of Fort Rotterdam and its surrounding area for tourists and the residents.
Importance in Mamminasata Development	Fort Rotterdam is one of the most symbolic architecture in the Mamminasata area and located near Losari Beach where is the recreational place for the residents and tourism spot for tourists. It is also strategically important location for urban development control. Fort Rotterdam improvement has to be conducted in line of implementation of urban development.
Output	(i) Improve attractiveness of Fort Rotterdam and its surrounding area as "cultural and historical area" in the city
Action to be taken	<ul style="list-style-type: none"> • Designate the area and its surrounding as "Fort Rotterdam Historical Area" and control measure is applied (zoning regulation) • Upgrade of museum • Tourism information center • Improvement of front gate area and sidewalk pavement along the wall • Improvement of pedestrian path in the surrounding area • Beautification of beach area
Implementation Arrangement	Dinas Culture & Tourism and Makassar city shall coordinate implementation. Since Fort

	Rotterdam is jurisdiction of Ministry of Culture & Tourism, development requires approval of the Ministry. Project implementation shall involve the Ministry of Culture & Tourism
Stakeholders	Ministry of Culture and Tourism, Dinas Culture & Tourism, Makassar city government
Expected Benefit	<ul style="list-style-type: none"> • Attract more tourists in the area and increase tourism spending • Urban amenity will improve
Cost and Financial Source	Rp. 10 billion (public investment, province)

2) Action Plan for Urban Environmental and Infrastructure Improvement

The environmental conditions in Mamminasata have been deteriorating, and improvement in the urban environment should be implemented urgently under the total management of water supply, wastewater and solid waste management in a package in order to attain sustainable development and MDG goals. Action plan for urban environment and infrastructure improvement will include the following.

- (i) Improvement in municipal water supply service
- (ii) Wastewater management
- (iii) Solid waste management
- (iv) Greenery and riparian environment improvement

Action Plan	2.1 Improvement in municipal water supply service
Objective	Objective is to increase water supply coverage in the Mamminasata Area as whole, utilization of Somba Opu WTP to water supply in Sungguminasa, and strengthen water supply management capacity of PDAM.
Importance in Mamminasata Development	The ratio of population served by treated water is low in Maros, Gowa, and Takalar. In addition, water supply for industrial activity is not enough particularly in the dry season. Increase in water supply capacity in Makassar and expand rural water supply in Maros, Gowa, Takalar is urgently needed to improve living quality of the people in the Mamminasata area and promote economic activity.
Output	<ol style="list-style-type: none"> (i) Expansion of Capacity of Somba Opu WTP (phase 2) (ii) Increase piped water supply capacity of Maros and Takalar including UFW improvement (iii) Improved water supply management and operation (PDAM)
Action to be taken	<ul style="list-style-type: none"> • Expansion of Capacity of Somba Opu WTP (phase 2) • Enhancement of piped water supply capacity of Maros and Takalar • Water loss over coming measures • Capacity development of water supply management and operation (PDAM)
Implementation Arrangement	Each PDAM and district/city government is responsible for water supply. Since the water supply is proposed as inter-regional project, Dinas Spatial Plan shall coordinate each PDAM and district/city government
Stakeholders	PDAM, District/City government, Community
Expected Benefit	<ul style="list-style-type: none"> • Domestic water is available: increase the volume of water so that water shortage will not happen so frequently particularly in the dry season, and coverage area will increase in districts. • Industrial water is available which is expected to activate investment and industrial activity • Increase in land value
Cost and Financial Source	Rp. 478 billion (public investment*) and PPP

Action Plan	2.2 Wastewater management
Objective	Objective of the wastewater treatment management is to improve water quality in canals and ocean and also to increase community awareness on cleaning canals.
Importance in Mamminasata Development	People in the Mamminasata area consider ocean and beach are one of the important assets to be preserved for the next generations. Without sewerage system, water quality of the ocean and canal will be worsen which reduces the attractiveness of the ocean and the Mamminasata area
Output	(i) Off-site sewerage system (ii) Urban amenity (green space, park) (iii) Redevelopment of the urban area
Action to be taken	<ul style="list-style-type: none"> • Implementation of short term plan in Makassar (off site system) • Development of environmental structure in the project surrounding area • Redevelopment project • Cleaning of ditch • Law enforcement
Implementation Arrangement	Each district/city government is responsible for wastewater management, but since there is no wastewater system is installed in Mamminasata, Dinas Spatial Planning shall consider implementation agency.
Stakeholders	Makassar city government, community, Dinas Spatial Planning
Expected Benefit	<ul style="list-style-type: none"> • Improvement of hygiene condition • Improve water quality of canals and ocean which will increase tourists • Improve attractiveness of urban environment • Increase in land value
Cost and Financial Source	Rp. 250 billion (public investment*)

Action Plan	2.3 Solid waste management
Objective	Objective of the solid waste management is to create clean urban environment by constructing and managing landfill site, and at the same time, reduce the garbage volume through community empowerment
Importance in Mamminasata Development	Solid waste management has to be considered in inter-region (district/city) scale due to garbage increase caused by population increase, expansion of urban area to neighboring local government, and availability of landfill site.
Output	(i) Development of final disposal site (TPA) for Makassar and Gowa (ii) Reduction of final disposal (iii) Increase in community awareness on solid waste management (iv) Urban amenity (green space, park)
Action to be taken	<ul style="list-style-type: none"> • Improvement of collection service • Construction of landfill site with sanitary disposal method • Implementation of environmental education • Promotion of 3R (Reduce, Reuse and Recycle) • Introduction of cycle-oriented society
Implementation Arrangement	Dinas Spatial Planning of province is responsible for implementation because solid waste management has to be implemented as inter-regional project. Each district/Makassar is responsible for land provision and support of socialization.
Stakeholders	Dinas Spatial Plan, Dinas Beautification and Environment (Makassar), Dinas Cleaning (Maros, Gowa, Takalar), Community, Schools
Expected Benefit	<ul style="list-style-type: none"> • The urban area will be clean • Improve attractiveness of urban environment • Increase in land value
Cost and Financial Source	Pp. 355 billion (public investment*) and management concession

Action Plan	2.4 Greening and riparian environment improvement
Objective	Objective is create green area in the urban area and to conserve green area in semi-urban area, which is expected to increase urban amenity
Importance in Mamminasata	"Create Beautiful Urban Area" is considered as high priority in Mamminasata spatial plan

Development	(questionnaire to students). However, open space that people can gather is limited, particularly in the urban area. It is necessary to create green open space to improve urban amenity
Output	(i) Increase in green area in urban area (Urban Planning Zone) (parks, trees along road and canals/rivers) (ii) Increase in green area outside urban area (Semi-Urban Planning Zone & Conservation Zone)
Action to be taken	<ul style="list-style-type: none"> • Conserving green area by creating parks • Creating parks in the urban area through urban re-development projects • Planting trees along roads, rivers and canals • Community empowerment
Implementation Arrangement	Dinas Spatial Plan and BAPEDALDA shall coordinate the green promotion. Green area is located in urban area and non-urban area. For non-urban area, Dinas Forestry and Dinas PSDA are responsible for greenery in forest and river respectively. For urban area, district/city government and Dinas Regional Infrastructure are responsible for parks and road, respectively.
Stakeholders	Dinas Forestry, BAPEDALDA, Dinas Regional Infrastructure, Dinas PSDA, Community, Schools
Expected Benefit	<ul style="list-style-type: none"> • Increase in attractiveness of urban environment • CDM
Cost and Financial Source	Rp. 50 billion (Public investment)

3) Action Plan for Economic Infrastructure Improvement

The Mamminasata area has acute shortage in urban infrastructure. Frequent electricity failures interrupt factory operations, causing a great loss to enterprises and the regional economy. The road network in Mamminasata remains at sub-standard level and cannot cope with the growing traffic demand. These constraints are hindering the regional dynamism and sustainable development. Action plan for economic infrastructure improvement will include the following.

- (i) Mamminasata artery road improvement
- (ii) Traffic management improvement
- (iii) Power transmission and distribution improvement

Action Plan	3.1 Mamminasata artery road improvement
Objective	Objective is to improve artery road in Mamminasata to mitigate traffic congestion and to accelerate economic activity
Importance in Mamminasata Development	Three principles of the road network planning is: (i) priority is given to mitigate traffic congestion, (ii) road network plan more practical to implement, and (iii) human friendly and eco friendly road design
Output	Improvement of selected road in the Mamminasata area
Action to be taken	<ul style="list-style-type: none"> • Jl. Perintis (F/S, construction) (national road) • Jl Heltasing(F/S, construction) (provincial road) • Jl. Abdullah Daeng Sirua (F/S, construction) (Provincial road) • Trans-Sulawesi (F/S, construction) (BOT) • Mamminasa bypass (F/S, construction) (National road)
Stakeholders	Dinas Regional Infrastructure, Makassar city government, Maros district government, Gowa district government, Takalar district government

Expected Benefit	<ul style="list-style-type: none"> • Traffic congestion are mitigated which will reduce the time loss • Economic activity will accelerate • Increase in pedestrian (increase in urban amenity)
Cost and Financial Source	Rp. 6,880 billion (public investment*) and BOT

Action Plan	3.2 Traffic management improvement
Objective	Objective is to improve traffic management and improve public transportation system
Importance in Mamminasata Development	One of the reasons for traffic congestion is poor traffic management and lack of public transportation system. Road are filled with pete pete and becak, and there is no rule in road use so that pete pete, becak, cars are mixed and causing congestions. Road use has to be controlled and public transportation system has to be improved.
Output	<ul style="list-style-type: none"> (i) Bus transportation service (ii) Introduction of traffic management (pete pete, becak, cars, street vendors)
Action to be taken	<ul style="list-style-type: none"> • Public transportation service • Designation of lane use by vehicle (pete pete, becak, cars, bus) • Prohibition of becak and pete pete on selected roads
Implementation Arrangement	Public transportation service, including pete pete, has to be managed by province because public transportation system covers all Mamminasata area. Traffic control such as road use control, on the other hand, has to be managed by each district/city.
Stakeholders	Dinas Regional Infrastructure, District/City in Mamminasata
Expected Benefit	<ul style="list-style-type: none"> • Economic activity will accelerate • Traffic congestion are mitigated which will reduce the time loss • Economic activity will accelerate
Cost and Financial Source	Rp. 97 billion (public investment)

Action Plan	3.3 Power transmission and distribution improvement
Objective	Objective is to increase power transmission capability
Importance in Mamminasata Development	Frequent electricity failure disturbs not only the daily lives, but also disturbs economic activities which results in less attractive investment location. Stable power supply is necessary for improvement of quality of life and also promotion of economic activities.
Output	<ul style="list-style-type: none"> (i) Expansion of transformer capacity of sub-station (Daya, Tello, Panakkukang, Sungguminasa) (ii) Upgrading of existing distribution lines (rehabilitation / upgrading of distribution facilities as capacity building on maintenance)
Action to be taken	<ul style="list-style-type: none"> • Transformer capacity increase activity (construction work) • Upgrading of existing distribution lines activity (construction work) • Energy conservation campaign
Implementation Arrangement	Power supply is provided by PLN so public sector involvement in power supply is limited, but the public sector can coordinate with PLN in terms of priority area and monitoring of PLN activity.
Stakeholders	PLN
Expected Benefit	<ul style="list-style-type: none"> • Improve urban condition • Accelerate economic activity (investment, manufacturing)
Cost and Financial Source	Rp. 108 billion (Sub-loan to PLN)

4) Action Plan for Institutional Strengthening

In order to strengthen the authority of urban management and improve urban control measures, institutional aspect has to be strengthened immediately. Action plan for institutional strengthening will include the following.

(i) Organization strengthening

(ii) Legislation strengthening

(iii) Information management strengthening

Action Plan	4.1 Organization strengthening
Objective	Establish a permanent organization with full time qualified staff for Mamminasata development implementation
Importance in Mamminasata Development	BKSPMM is formed as a coordination body for Mamminasata Spatial Plan, but coordination function is weak due to not clear authority and large members. In order to execute proper urban management, permanent organization with full time staff have to be established.
Output	(i) New organization (Mamminasata Development Management Agency: BPPM) are established (ii) BKSP is re-organized (iii) Advisory committee is formed (private and academic)
Action to be taken	<ul style="list-style-type: none"> • Integrate authority and job description of BPPM in Presidential Decree • Preparation of job description of BPPM • Preparation of personnel rule (staff qualification, tasks) • Preparation and stipulation of Provincial Regulation for establishment of BPPM • Preparation and stipulation of Provincial Governor's Decree on BKSPMM
Implementation Arrangement	Dinas Spatial Planning assigns a special team for establishment of BPPM and BKSPMM reform by coordinating with BKSPMM.
Stakeholders	BKSPMM, Dinas Spatial Planning, BAPPEDA, Ministry of Public Works
Expected Benefit	<ul style="list-style-type: none"> • Mamminasata development is well coordinated • Urban environment improves
Cost and Financial Source	Rp. 2 billion (public investment, province)

Action Plan	4.2 Legislation strengthening
Objective	To draft up and stipulate legislation (Provincial Governor's Decree or Provincial Regulation) for strengthen urban development management, particularly land use control, transport management, and environmental management
Importance in Mamminasata Development	For the spatial plan to be in effect, Presidential Decree is needed. In addition, provincial regulation has to be prepared to show specific standard for urban management and control. Legislation has to be strengthened for implementation of the spatial plan.
Output	<ul style="list-style-type: none"> • Presidential Decree for "Spatial Plan for Mamminasata Metropolitan Area" is stipulated • "Zoning Regulation" (Provincial Regulation) is stipulated • "Transport Management and Control" is stipulated • Other legislation necessary concerning urban management is stipulated
Action to be taken	<ul style="list-style-type: none"> • Preparation, inter-department discussion, public consultation of Presidential Decree for "Spatial Plan for Mamminasata Metropolitan Area" • Preparation, inter-department discussion, public consultation of "Zoning Regulation" (Provincial Regulation) • Preparation, inter-department discussion, public consultation of "Transport Management and Control"
Implementation Arrangement	Dinas Spatial Planning assigns a special team for decree preparation reform by coordinating provincial government. Even though Ministry of Public Works is responsible for decree preparation, provincial government shall constantly follow up on the decree preparation.
Stakeholders	Dinas Spatial Planning, BAPPEDA, Ministry of Public Works
Expected Benefit	<ul style="list-style-type: none"> • Urban environment improves • Development activity can be controlled
Cost and Financial Source	Rp. 2 billion (public investment, province)

Action Plan	4.3 Information management strengthening
Objective	Establish maps and database that can be a base for urban management and control
Importance in Mamminasata Development	Many agencies posse their own database and maps with different format, and they are not centrally managed so that the data and maps can not be utilized for urban management. It is necessary to establish centrally controlled database system which can be open to public.
Output	(i) GIS database (ii) Map
Action to be taken	<ul style="list-style-type: none"> • Mapping • Establish standard format • Establish database
Implementation Arrangement	Dinas Spatial Planning has to coordinate organizations that posse maps and data with BPN, provincial government, district/city government, BPS for organize data.
Stakeholders	BPN, Dinas Spatial Planning, BAPPEDA, District/City in Mamminasata, BPS
Expected Benefit	<ul style="list-style-type: none"> • Urban management efficiency will improve • Urban development is controlled through dissemination of planning map
Cost and Financial Source	Rp. 10 billion (public investment, province)

Note: Public investments in large infrastructure projects (marked with * in the above list) are subject to discussion on financial plan in the following Section 10.3.

10.3 Financial Plan¹

For the implementation of the proposed development programs and action plans, financial issues should be addressed to evaluate if and how they are made financially implementable.

1) Public Finance

In line with the policy of regional autonomy (Law No.22, 1999), the Law of Fiscal Balance between the Central Government and the Regional Governments (Law No.25, 1999) stipulated that at least 25% of national budget is transferred to regional/local governments. Such a transfer fund (Rp.120 trillion in 2004) is distributed 10% to provincial governments and 90% to regency (Kabupaten) governments. The national budget allocates nearly 20% to development expenditures for implementation of projects at the national level (Rp.70.9 trillion in 2004). Since the national budget is in deficit, further increase in development expenditures will not be expectable.

The budgetary scale of South Sulawesi province is relatively small, totaling about Rp.850 billion in 2004. About 56% of the provincial budget is allocated to personnel and other routine expenditures, and the budget for development expenditures is limited to around 34% or Rp.290 billion (2004). About 10% of the provincial budget is transferred to Kabupaten governments.

¹ Refer to Sector Study Report (15) for detail.

Annual budget of Makassar city and three regencies (Maros, Gowa and Takalar Kabupatens) in Mamminasata totals Rp.1,400 billion in 2004 (larger than the provincial budget). Nearly 80% of the Mamminasata budget is used for personnel and other routine expenditures, and the budget for development expenditures is limited to around 20% or Rp.280 billion (2004).

The available fund for public investments in development projects at the national, provincial and regency (Mamminasata) levels, therefore, is schematically shown in the following.

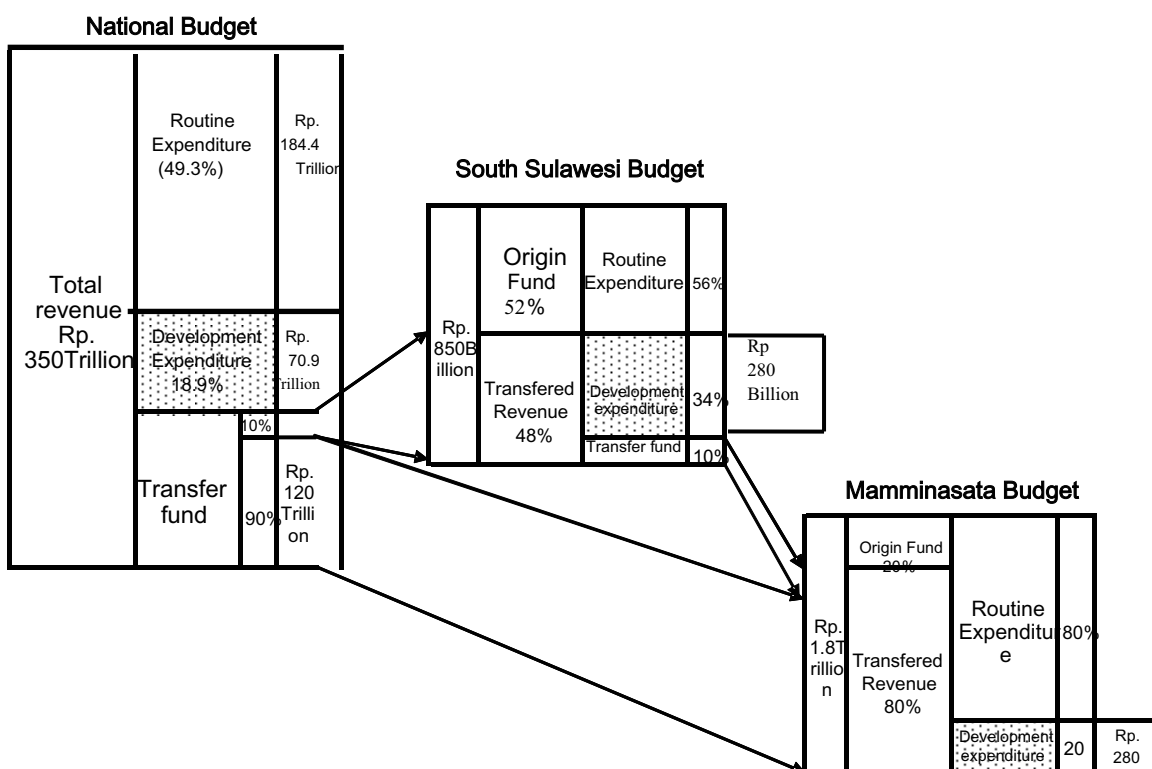


Figure 10.3: Development Budget at National, Provincial and Mamminasata Levels

Under such public financial situation, implementation of the integrated spatial plan for Mamminasata should take the following into account.

- (i) Makassar municipality, Maros, Gowa and Takalar regencies should better reduce the routine expenditure that accounts for 80% of total expenditure, particularly personnel expenditure (65% of routine expenditures or 52% of total expenditures) in order to allocate more funds for development of the spatial plan.
- (ii) Private investment should be encouraged so that the private sector would play an increasing role in Mamminasata development.
- (iii) Public and private partnership (PPP) should also be encouraged in

development finance, demarcating the roles and responsibility of respective partners.

- (iv) Semi-public corporation and special company (e.g., PELINDO for seaport and PT.AP-I for airport) should implement the expansion projects by their own finance or by PPP.
- (v) Public investment should be minimized, phasing out the implementation of projects in accordance with the demand for such services.
- (vi) Loans on concessional terms (soft loans) should be secured in order to lessen annual financial burden at the regional and national levels.

2) Basic Principle for Finance

For the implementation of infrastructure development in Mamminasata, financial arrangements would be made in line with the following principles.

- (i) Profitable Sector: Business can be financially profitable and it should be operated by the private finance initiative (PFI)
- (ii) Semi-profitable: Management will require public financial support now, but it could be reformed to be profitable and manageable by the private sector in future.
- (iii) Non-profitable: Business can't be financially viable and it should be operated in principle by the public sector.

The following tables present basic principle for financing the infrastructure development projects proposed under the Mamminasata spatial plan.

Table 10.6: Financing for Profitable Sector

Infra Sector	Service Provider	The method of private participation now and future	Management reform needed for regional government/Special company	Tariff strategy	Program for the poor	Financing plan		
						Equity or Tax	Loan possibility	Others
Profitable sector	Power generation	PT.PLN-VIII (SC) + PP	ppp		improve back margin	Self finance		PO, CDM
	Communication	PT.Telkom + Singtel (KSO)	KSO		improve back margin	Self finance		Listed
	Toll road	PT. Binamarga (SC) BOT Projects	BOT			Investor Fund + Regional Gov fund		
	Bus service	Private Sector (Organda)	--	Inter/Antitransk Transportation	Tariff revision	Tariff table		
	Seaport	PT. PELINDO-IV (SC)	Concession, Long term lease	improve Container handling efficiency	Repeal informal tariff		Expecting Investment from Real Estate developer	
	Airport	PT. AP-I (SC)	Privatization					
	Office Building	Private Sector Developer	--	--			Self finance	ppp
	Housing	Private Sector Developer	--	--			Self finance	ppp

Table 10.7: Financing for Semi- and Non-Profitable Sector

Sector	Service Provider	The method of private participation now and future	Management reform needed for regional government/Special company	Tariff strategy	Program for the poor	Financing plan			
						Equity or Tax	Loan-possibility	Others	
Semi-profitable - Profitable Sector	Flood control & drainage improvement	Province/City Dinas	--	--		Public finance	0		
	Water supply / sewerage	Water supply: Kabupaten/Kota PDAM, Sewerage: No service provider actually	Privatization	Firstly cuts cost and NRW for making it profitable. Then merge 4 PDAMs for making integrated PDAM-Mamminasata profitable. Finally PDAM-Mamminasata expands into sewerage business	Tariff revision	Tariff table	Accumulates Retained Earnings by management reform	0	
	Solid waste	City Beautification Dinas (DK), Special co. (PDK)	Management-Concession in garbage collection, transportation BOOT-Concession in organic waste recycling into organic fertilizer BOT-Concession in garbage power generation	General administration cost reduction Planning integrated PSP scheme Setting up expenditure covering ratio after PSP	Tariff revision	Tariff table		0	
	Transmission	PT PLN-VI (SC)						0	
	Distribution	PT PLN-VI (SC)						0	
	Arterial road	Province/City Dinas	--	--			Public finance		
	Health	Province/City Dinas	--	--			Public finance		
	Education	Province/City Dinas	--	--			Public finance		
	Environment	Province/City Dinas	--	--			Public finance		

Source: JICA Study Team

Further, as discussed in Section 4.5, a macroeconomic framework for public investment should be observed to the maximum extent. A target for the public investment (PIP) in Mamminasata has been set at 3~4% of GRDP, or around Rp.1,300~1,400 billion per annum.

3) Financing of Action Plan

An indicative financial plan for priority infrastructure projects to be implemented by the public investment in the short-term has been worked out as summarized in the following.

Table 10.8: An Indicative Public Investment Plan for Water Supply, Sewerage and Solid Waste Projects

	Investment (Rp.billion)	
	1st Priority	2nd Priority
Water Supply		
(i)Somba Opu water treatment plant expansion	295	
(ii)Rural water supply in Maros (incl. UFW program)	166	
(ii)Rural water supply in Takalar (incl. UFW program)	17	
Sewerage Treatment		
(i) Sewerage treatment Phase-1	250	
Solid Waste Landfill		
(i) Landfill site at Pattalasang	315	
(ii)Promotion of Reduction, Reuse & Recycling	40	
Total	1,083	

Source: JICA Study Team

Table 10.9: An Indicative Investment Plan for Electric Power Projects

Power Generation	Scheme	Investment (Rp.billion)	1 st Priority	2 nd Priority
1.Sengkang gas	IPP	340	340	
2.Takalar coal	IPP	460	460	
3.Jenepont-2, coal	IPP	2,200	2,200	
4.Malea hydro	IPP	2,840	2,840	
5.Poko hydro	IPP	5,380		5,380
6.Jenepont-1, coal	PLN	1,100		1,100
7.Bakaru hydro	IPP	3,050		3,050
Total	PLN	1,100	-	1,100
Total	IPP	14,270	5,840	8,430
Power Transmission/Substation				
1.Transformers	PLN	51	51	-
2.Distribution	PLN	57	57	-
Total	PLN	108	108	-
Grand Total	PLN	1,208	108	1,100
	IPP	14,270	5,840	8,430

Source: JICA Study Team

Table 10.10: An Indicative Investment Plan for Road Transport Projects

Road/Section	Scheme	Investment (Rp. billion)	1 st Priority	2 nd Priority
1. Sutami Toll road	BOT	460	-	-
2. Perintis expansion	P(N)	360*	360	
3. Alauddin	P(P)	100		100
4. Malino access	P(P)	140		140
5. Middle ring road (sec.1)	BOT	320	-	-
6. KIMA road	P(P)	100		100
7. T. Bung access	P(P)	120		120
8. Takalar access	P(P)	290		290
9. Mamminasata Bypass / Bridge	P(N)	3,550	3,550	
10. Abdulla Dg. Sirua	P(P)	530	530	
11. Around Airport	P(P)	100		100
12. Airport access	P(N)	960		960
13. Trans-Sulawesi / Bridge	BOT	4,280	-	-
14. Hertasning	P(P)	260	260	
15. KIWA Access	P(P)	260		260
16. Around Sungguminasa	P(P)	110		110
Total	BOT	5,060		
Total	Public	6,880	4,700	2,180
Total	P(National)	4,870	3,910	960
	P(Province/ Regency)	2,010	790	1,220

* Land acquisition and re-allocation cost is not included.

Source: JICA Study Team

Summing up the above indicative investment plan, the required public investments for Mamminasata are estimated as follows.

Table 10.11: An Indicative Public Investment Plan for Mamminasata

Infrastructure	Total Public Investment	Priority Investment	Annual Budget
Water supply, sewerage, solid waste	1,083	1,083	36
Electric power sector	1,208	108	4
Road transport sector	6,880	4,700	157
Total	9,171	5,891	196

Note: Annual budget is estimated at 1/30 of investment on the assumption that loans on concessional terms are made available with a repayment period of 30 years.

Source: JICA Study Team

The above estimated annual fund requirements of Rp.196 billions will be equivalent of around 35% of the current development expenditures in Mamminasata (Rp.280 billion) and South Sulawesi province (Rp.280 billion), totaling Rp.560 billion. If the two large investments in national roads (Perintis of 360 billion and Mamminasata bypass/bridge of 3,550 billion) are executed by the national budget and excluded from regional funding, the annual budget requirement would be Rp.66 billion or 12% of the regional budget.

Likewise, the total investment amount in large infrastructure projects (Rp.9,171 billion), as well as other public investments listed in the action plan proposed in Section 10.2 (totaling Rp. 210 billion), would be within the macroeconomic framework of PIP (Rp.20 trillion in 2005-2020).

Consequently, it is assessed preliminarily that the indicative financial plan for infrastructure development as note above would be rational and justifiable. The total investment would also be within the macroeconomic framework set for the Mamminasata spatial plan.

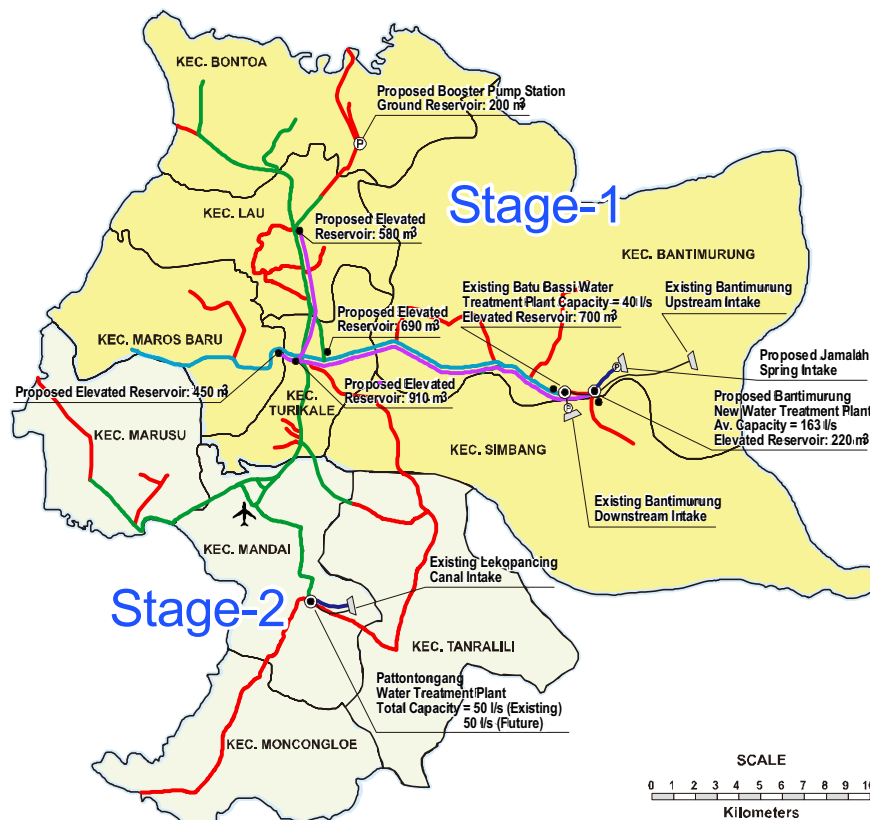
In order to attain a balanced financial arrangement for Mamminasata, it is suggested that a soft loan be secured in packages for the stage-wise implementation of the prioritized infrastructure development projects.

plant (from the existing capacity of 1,000 lit/sec to 3,000 lit/sec), the pre-feasibility study on the urgent improvement of the overall water supply system has been made on the systems serving Maros and Takalar regencies.

1) Water Supply Improvement in Maros

Potable water in Maros is currently supplied by the Batu Bassi treatment plant (20 lit/sec in dry seasons and 40 lit/sec in wet seasons) and the Pattontongang treatment plant (50 lit/sec). Water treated at these two plants was 7,550 m³/day in 2005. The total number of customers was 5,700 in 2004, of which nearly 90% were household customers with an average consumption of 113 lcpd. With a low level of service ratio (9.7% in 2004), the Maros people are suffering from a shortage in water supply and are dependent on shallow dug wells in the area not covered by the treated water supply system.

To cope with this situation, two alternative water sources have been studied, i.e. spring water (150 lit/sec) at Jamaloh and the expansion of Pattontongang treatment plant (50 lit/sec) with an additional water intake from Lekopancing.



Source: JICA Study Team

Figure 11.2 Proposed Water Supply Improvement in Maros

For staged improvement, it is proposed that Jamaloh spring water would be treated at the new Bantimurung treatment plant and serve the northern part of Maros as the first stage (water demand of about 14,000 m³/day in 2015), and that the Pattontongang plant would be expanded as the second stage (water demand of about 6,700 m³/day in 2015) as shown in the Figure 11.2.

The first stage improvement with the Bantimurung water treatment with Jamaloh spring water will require the following facilities.

Intake facilities	:	Intake weir, diversion, gate, baffle wall, screen and raw water intake gate
Intake pump station	:	180 lit/sec (max.) in discharge; 8 m in head
Treatment facilities	:	Slow sand filtration
Transmission pipelines	:	200~500 mm in diameter and 21.7 km in total length
Reservoir	:	Clean water tanks of 4,000 m ³ in total capacity
Distribution pipelines	:	100~300 mm in diameter and 71.9 km in total length
Rehab. of existing pipeline	:	150~300 mm in diameter and 37.6 km in total length
O&M equipment	:	Service meters, leakage control equipment, etc.

Together with the installation of facilities for additional water supply, measures are to be taken to lower the ratio of unaccounted-for-water (UFW). Although the Master Plan envisages the UFW ratio lowered to a level of 25% in Mamminasata, the Bantimurung water supply system should lower its UFW ratio from the current 50% down to 20% in 2015, with the appropriate provision of metering devices, leakage control equipment and an increased number of UFW staff.

After completion of the first stage improvement, the serviced population in Maros regency would increase from the current 30,000 (about 6,000 households) to 185,000 (about 37,000 households) in 2010, while the service coverage ratio of the target area would improve from 11.7% in 2004 to 61.0% in 2010. This will largely contribute to the improvement of the service coverage ratio of the entire regency area from 9.7% (2004) to 54.0% (2010). Since the target level under the Master Plan is 70% (the same as the MDG goal) in 2015, it is expected that the remaining percentage would be attained by the second stage project, which is to be formulated during the implementation of the first stage improvement.

The construction cost of the Batimurung water supply system is preliminarily estimated to be US\$18.9 million¹ as summarized in the following table.

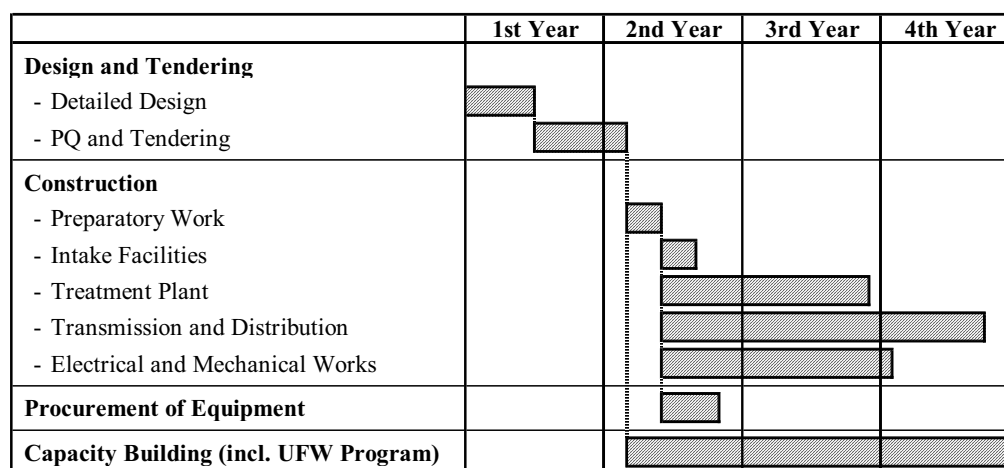
¹ Equivalent to Rp. 166 billion with an exchange rate of "US\$ 1 = Rp. 8,760 as of May 2006".

Table 11.1 Estimated Cost of Batimurung Water Supply System

Items		Amount (US\$ thousand)
I.	Civil Works	3,341
1.	Intake Facilities	134
2.	Intake Pumping Station	48
3.	New Water Treatment Plant	953
4.	Clear Water Tank with Pumping Station	101
5.	Ground Reservoir with Booster Pumping Station	52
6.	Elevated Reservoir (6-locations)	2,053
II.	Pipe Works	10,207
1.	Raw Water Pipe	298
2.	Transmission Pipe	4,949
3.	Distribution Pipe (including rehabilitation)	3,383
4.	Tertiary Pipe	741
5.	Road Crossing, Pipe Bridge, etc.	836
III.	Electrical and Mechanical Works	670
IV.	Procurement of Equipment	103
V.	Sub-Total (I~IV)	14,320
VI.	Engineering Service (D/D, Supervision, UFW Program)	2,864
VII.	Physical Contingency	1,744
VIII.	Total Construction Cost (V~VII)	18,928

Source: JICA Study Team

The project implementation will take four years including the construction period of 32 months. The following figure shows a time schedule for the implementation.



Source: JICA Study Team

Figure 11.3 Project Implementation Schedule for Water Supply Improvement of Maros

Financial evaluation has been made on the basis of incremental water sales revenues and the improvement costs. The FIRR is calculated to be 3.6%. On the other hand, the EIRR is calculated to be 10.3% on the basis of economic costs and the benefits to accrue from the increase in water consumption and reduction in the generalized cost of water (defined as the value saved in the cost of drawing water and/or purchasing). The

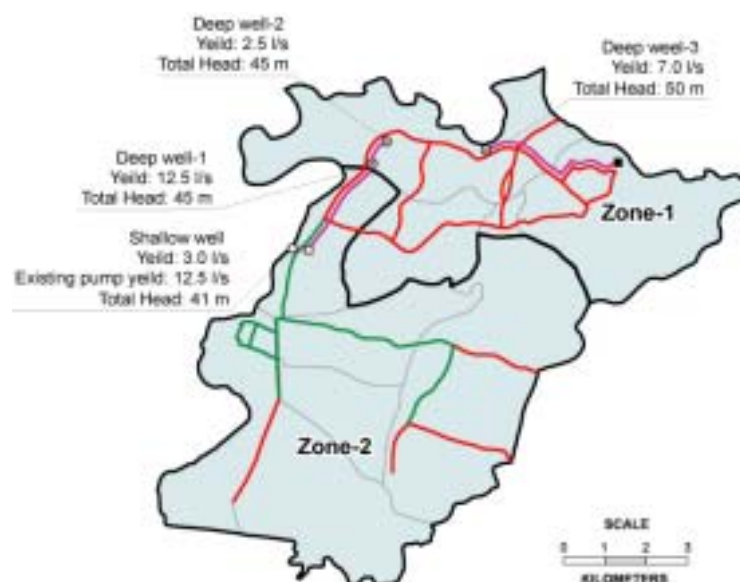
proposed water supply improvement of Maros, therefore, has been assessed to be marginally feasible in economic terms. Better management of PDAM Maros is required to improve the financial performance.

The low EIRR and FIRR are partly attributable to the higher costs in installation and rehabilitation of transmission and distribution pipelines extended to rural areas where alternative safe water sources are unavailable (due to saline groundwater in the coastal land) for a large number of households. Financial arrangements should pay due attention to such situations and to the cost of securing a safe water supply for the Maros people.

2) Water Supply Improvement in Takalar

In Takalar, piped water is currently supplied to the central area by the Takalar Central Water Supply System (10 lit/sec) and the IKK Polombankeng Utara Water Supply System in part of Polombankeng Utara Sub-district (3 lit/sec in dry seasons). The total number of customers was about 2,100 as of December 2005 with a low service ratio of 4% in coverage. The Takalar people are thus suffering from an acute shortage in safe water supply. They mostly depend on shallow dug wells that are affected by flood water intrusion and other unhealthy contamination.

To cope with these conditions, it is proposed to increase the capacity of the IKK Polombankeng Utara Water Supply System by 22 lit/sec through rehabilitation and expansion of the existing system. The designed production capacity of the IKK Polombankeng system should therefore reach 25 lit/sec or 2,160 m³/day.



Source: JICA Study Team

Figure 11.4 Proposed Water Supply System Improvement in Takalar

The improvement work for the IKK Polombankeng Utara Water Supply System will include the following.

Deep well facilities	:	Three additional deep wells with diameter of 250 mm, depth of 110~130 m and yield of 2.5~12.5 lit/sec. One existing shallow well with diameter of 2,000 mm, depth of 8 m and yield of 3 lit/sec.
Pumping stations	:	Installations for three new deep wells.
Disinfection	:	Introduction of chlorination system
Transmission pipeline	:	100~200 m in diameter, 5.8 km in total length.
Distribution pipeline	:	90~250 m in diameter, 32.4 km in total length.
Reservoirs	:	Two locations. 250 m ³ each.
Service pipeline	:	50~75 mm in diameter, 21.6 km in total length.
O&M equipment	:	Service meters, leakage control equipment, laboratory equipment, etc.

Through the completion of the water supply system improvement, the serviced population in Polombankeng Utara sub-district would increase from the present 1,800 (about 350 households) to 21,500 (about 4,300 households) in 2010, while the service coverage ratio of the target area would improve from 4.2% in 2005 to 50.0% in 2010. This will significantly contribute to the improvement of the service coverage ratio in the regency from 4.0% (2005) to 11.7% (2010).

Since PDAM Takalar also has the problem of a high UFW ratio, capacity development in terms of management capacity, staff training and a UFW program will be included in the implementation program.

The total construction cost of the IKK Polombankeng Utara water supply system improvement in Takalar is preliminarily estimated to be US\$1.9 million² as tabulated in the following table.

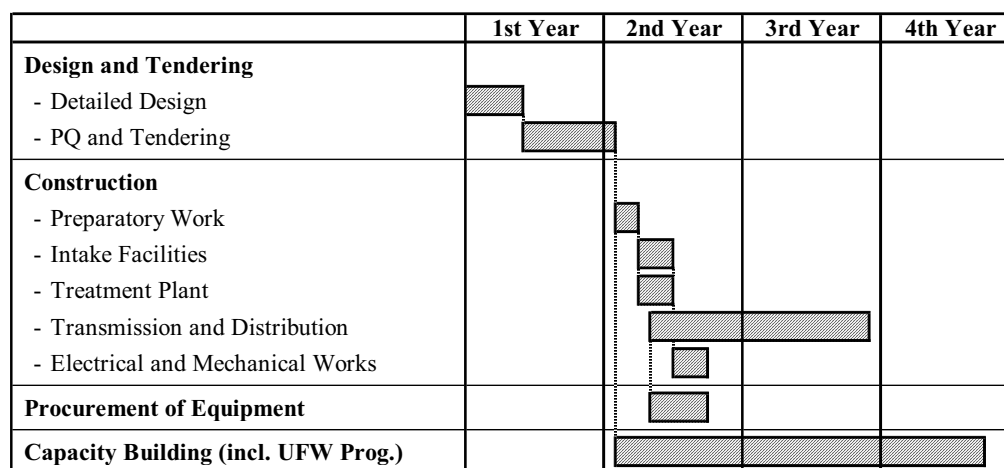
Table 11.2 Estimated Cost of Water Supply System Improvement in Takalar

Items		Amount (US\$ thousand)
I.	Civil Works	396
	1. Deep Well	90
	2. Pump House	55
	3. Reservoir Tanks	52
	4. Public Hydrant	199
II.	Pipe Works	907
	1. Transmission Pipe	300
	2. Distribution Pipe	607
III.	Electrical and Mechanical Works	59
IV.	Procurement of Equipment	80
V.	Sub-Total (I~IV)	1,441
VI.	Engineering Service (D/D, Supervision, UFW Program)	289
VII.	Physical Contingency	176
VIII.	Total Construction Cost (V~VII)	1,906

Source: JICA Study Team

² Equivalent to Rp. 17 billion with an exchange rate of "US\$ 1 = Rp. 8,760 as of May 2006".

The construction work will take around 22 months, as shown in the following figure.



Source: JICA Study Team

Figure 11.5 Project Implementation Schedule for Water Supply Improvement of Takalar

Financial evaluation has been made on the basis of incremental sales revenues and estimated costs. The FIRR is calculated to be 5.7%, while the EIRR is 15.5%. The improvement project of Takalar is assessed to be economically feasible and financially marginal. As in the case of Maros water supply system improvement, the EIRR and FIRR are low, due partly to the higher costs in installation and rehabilitation of lengthy transmission/distribution pipelines in rural areas. Management of PDAM Takalar should be improved in line with the project implementation.

11.2 Improvement of Landfill Site for Solid Waste Management

As discussed in Chapter 8.3, the existing landfill site for solid waste disposal at Tamangapa in Makassar is nearly full and a new landfill site is required to dispose of the increasing volume of solid waste. Under the spatial plan for Mamminasata, it has been proposed that Makassar city and three regencies will cooperate in infrastructure improvement for mutual interest in the Mamminasata metropolitan area. A new landfill site for Mamminasata has been proposed, to be located at Pattallassang in Gowa regency under such a regional cooperation spirit.

1) Justification for Implementation

The volume of solid waste to be disposed of in Makassar and Maros up to 2020 would amount to about 8.4 million m³ at a bulk density of approximately 0.4 kg/lit, as discussed in Chapter 8.3. Some solid waste to be generated nearby Pattallassang in

Maros and Takalar regencies might also utilize Pattalassang if and when required. Such a volume of solid waste disposal would require a gross landfill area of nearly 90 ha.

The site at Pattalassang has a total area of about 210 ha and is currently used for a mixed plantation, rice fields and mixed forests. The land use at Pattalassang has been designated by the regency government for industrial use. Topographic and geological conditions create no specific difficulty in construction though geological layers have to be further surveyed. The Pattalassang site may be used not only for the landfill site but for location of industries, inclusive of recycling industries.

The initial environmental examination, as indicated in the following table, indicates that an EIA is required, particularly for offensive odor and water pollution by leachate.

Table 11.3 Summary of Initial Environmental Examination at Pattalassang Landfill Site

Environmental Impacts Effective Factors		Pollution					Natural Environment									Social Environment															
		1 Air Pollution	2 Water Pollution	3 Soil Contamination	4 Noise and Vibration	5 Land Subsidence	6 Offensive Odor	7 Topography and Geology	8 Soil Erosion	9 Groundwater	10 Hydrological Situation	11 Coastal Zone	12 Biology (Flora and Fauna)	13 Meteorology	14 Landscape	15 Global Warming	16 Resettlement	17 Economic Activities	18 Landuse and Resional Resource	19 Social Communities	20 Infrastructure and Public Service	21 Minorities and Low Income People	22 Uneven Distribution of Interest	23 Gendor	24 Right of Children	25 Cultural Property	26 Public Health Condition	27 Waste and Garbage	28 Water Rights - Right of Common	29 Hazards and Accident	
General		△	○			△				△	△		△		△		+				+							△	△	△	△
Construction Phase	Change of Topography · Occupation		△				△	△	△	△		△		△		△	+	△			+	△					△	△	△	△	
	Construction Vehicles	△			△																										
	Construction Machines	△			△																										
Operation Phase	Occupation								△	△		△	△	△	△				△												
	Operation	△	○	△	△		○								+		+	+		+	+					△	△	△	△		

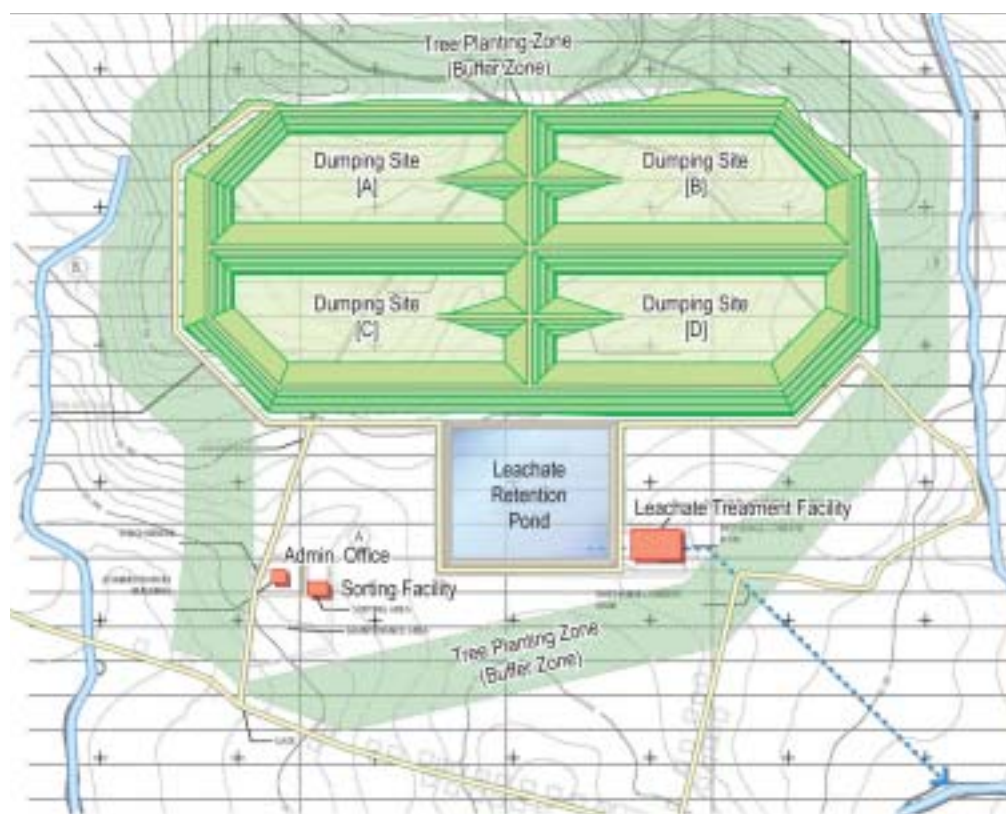
Note: ○ : significant negative impact
△ : Less negative impact
blank : no effect
+ : positive impact is expected

Source: JICA Study Team

Some proper mitigation measures should be taken in designing the sanitary landfill site. For the prevention of offensive odor, daily cover soil is to be applied, together with a gas venting system. A leachate collection system should be adopted to prevent contamination of surface and groundwater. Green spaces will also be designed to mitigate adverse impact and enhance the landscape around the site.

2) Preliminary Design

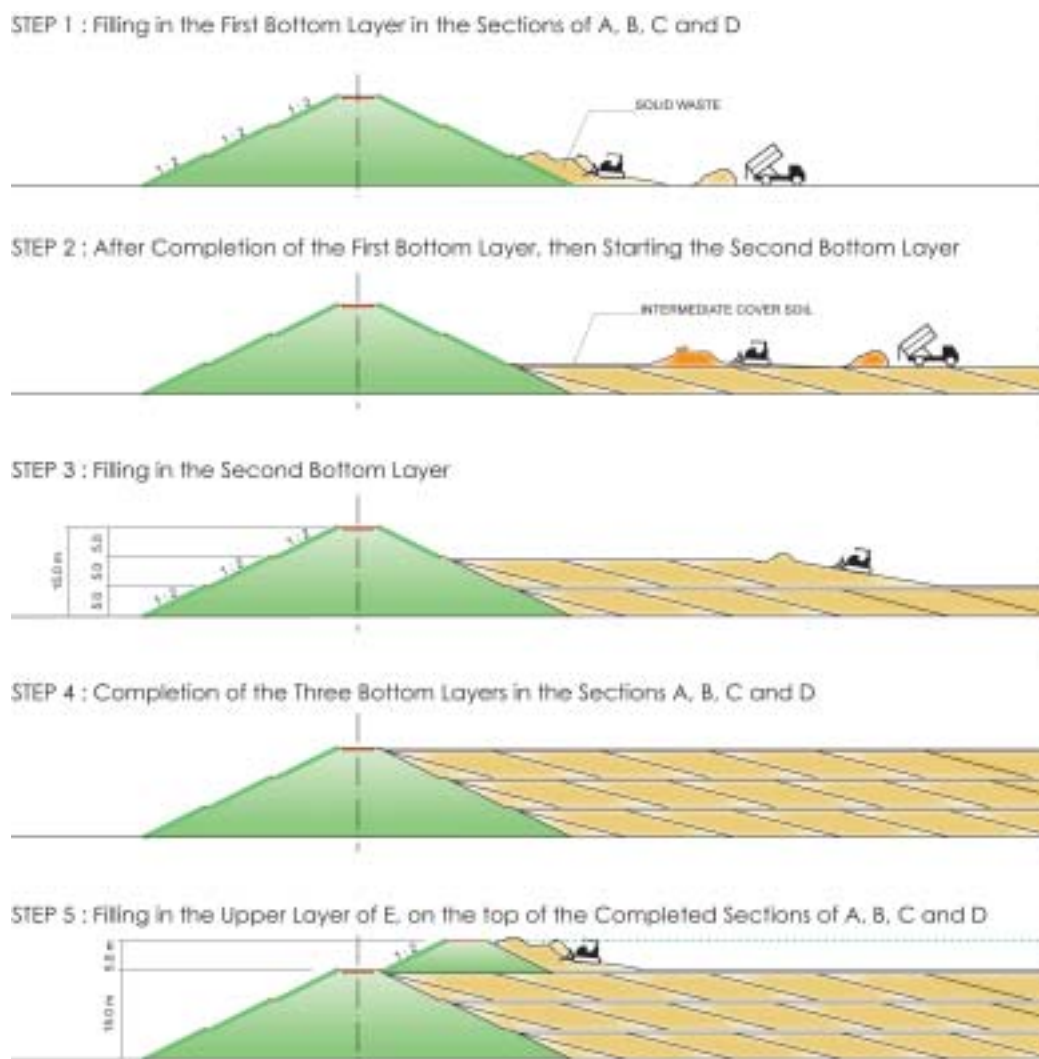
A semi-aerobic landfill system is proposed, using the cell and push-up methods with daily cover soil. After unloading from collection vehicles, solid waste is spread by bulldozer and compacted by landfill compactor. It is covered daily by soil to prevent odor, and leachate is treated to maintain water quality. The landfill site, at the end of its useful life, could be used as a recreation park or sports field. A preliminary design of the Pattallassang landfill site is illustrated in the figure.



Source: JICA Study Team

Figure 11.6 Layout Plan of Pattallassang Landfill Site

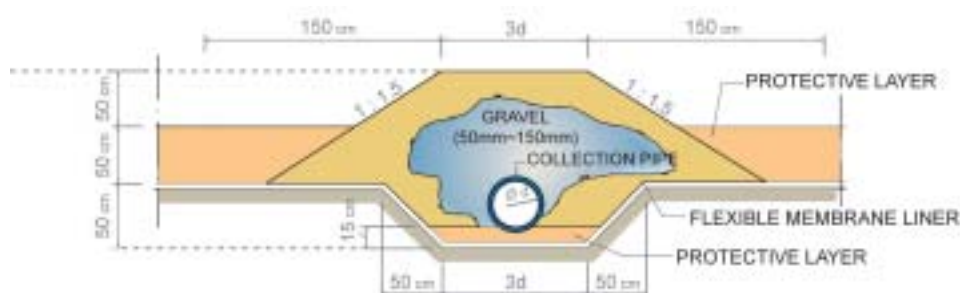
The landfill area is designed on a gently sloping area, and it is divided into four sections (A, B, C and D) with 15 m as the height of the bottom layer. After filling in the four bottom sections, another section (E), 5 m in height, will be added on as an upper layer to cover the four sections underneath. The landfill capacity of the bottom sections is 925,000 m³ each and with an upper section of 1,700,000 m³ totals 5,400,000 m³. A schematic diagram of the landfill process is illustrated in Figure 11.7.



Source: JICA Study Team

Figure 11.7 Schematic Diagram of Landfill Process

The total leachate volume has been estimated for each landfill section. The diameters of the main and branch collection pipes are calculated to be 600 mm and 300 mm, respectively. Main leachate collection pipes should be installed over the protection soil and top layer of the artificial liner along the gutter of the base layer, which is made of gravel or permeable material. The pipes should be perforated in the upper half to collect leachate effectively, while the bottom half should not be perforated to let the collected leachate flow smoothly without leakage. The leachate pipes should be covered with well-arranged filter soil. The proposed width and thickness of the packed filter material will not only facilitate the filtration of leachate entering into the perforation of the pipes, but also increase the bearing capability of the pipes under static and dynamic loading during operation.



Source: JICA Study Team

Figure 11.8 Schematic Diagram of Leachate System

Landfill gas is generated by decomposition of organic waste dumped in the landfill site, which may cause fires or affect the surrounding environment and, in the worst case, human health. Therefore, a gas venting system is proposed to appropriately remove the generated gas, as well as to promote the decomposition process of organic waste. Technically, vertical gas venting pipes should be installed at intervals of 30 to 50 m, connecting with leachate collection pipes at the bottom.

A transportation route to the landfill site should be established for smooth logistics of waste collection. Improvement of the existing road, including some bridge construction, is proposed for an effective transportation access, as shown in the following figure (the blue line).



Source: JICA Study Team

Figure 11.9 Transportation Route for Landfill Site in Pattalassang

Heavy equipment for the landfill operation has been selected on the basis of the land structure, size, landfill method, and collected solid waste type. The following heavy equipment is to be procured.

Table 11.4 Heavy Equipment to be Procured for Landfill Operation

Equipment	Role of equipment	Number of items
Bulldozer	to spread and compact landfill layers	4
Wheel loader	to carry cover soil, to spread waste to be sorted	1
Excavator	to dig cover and spread cover soil	1
Landfill compactor	to compact the waste	2
Dump truck	to carry cover soil and solid waste	3

Source: JICA Study Team

2) Implementation Schedule and Estimated Cost

The implementation of the Pattallassang landfill site will take three years for completion, including two years for the construction work.

	1st Year	2nd Year	3rd Year	4th Year
Design and Tendering				
- Detailed Design	■			
- PQ and Tendering		■		
Construction		■	■	■
Procurement of Equipment		■		
Capacity Building			■	■

Source: JICA Study Team

Figure 11.10 Implementation Schedule for Pattallassang Landfill Site

The cost of landfill site construction and procurement of related equipment is estimated to be US\$35.9 million³ as summarized in the following table.

Table 11.5 Estimated Cost of Pattallassang Landfill Site

Items	Amount (US\$ thousand)
I. Civil Works	26,174
1. Road (approach, on-site)	2,046
2. Stormwater Drainage	273
3. Landfill Area Arrangement	5,481
4. Liner Facility	9,787
5. Leachate Facilities (collection, treatment and discharge)	8,405
6. Gas Removal Facilities	120
7. Monitoring Well	62
II. Building and Accessories (office, weigh bridge, workshop, etc.)	968
III. Electrical and Mechanical Works	65
IV. Procurement of Equipment	1,628
V. Sub-total (I~IV)	28,835
VI. Engineering Services (D/D, Supervision)	3,585
VII. Physical Contingency	3,500
VIII. Total Construction Cost (V~VIII)	35,920

Source: JICA Study Team

³ Equivalent to Rp. 315 billion with an exchange rate of "US\$ 1 = Rp. 8,760 as of May 2006".

With the estimated operation and maintenance cost, the landfill cost per cubic meter of solid waste is estimated to be about US\$ 2.50 which is 2.5 times as much as the current actual unit cost of US\$ 1.0. Since the present collected retribution fee per cubic meter is calculated to be US\$ 0.14 (32% of the collectible fee of US\$ 0.44), the improvement of the waste management system, inclusive of the landfill construction, might cause a larger deficit if the retribution fee collection system is not improved along with the landfill construction. The responsible agency should therefore make as much effort as possible to recover the management cost through a revision of the retribution fee level as well as to enhance the collection efficiency.

On the basis that 0.05 m³ of domestic waste⁴ is generated per person per month, one household would dispose of about 0.25 m³ of waste per month. Assuming that US\$ 2.5 per cubic meter would apply to the domestic waste collection service to fully recover the required cost, a household would have to pay US\$ 0.63 (around Rp. 6,000) per month. People would not be willing to pay that much, judging from the fact that the present retribution fee, collected for the domestic waste collection, is Rp. 600~2,200 per month. However, it is worth referring to the World Bank's study on the affordability to pay (ATP) for waste management, where it is stated that people can afford to pay up to 2% per month from the disposable per capita income for a municipal waste collection service. ATP for waste management should be further studied, seeking for a more effective and efficient way of providing waste collection and disposal service along with the introduction of a new sanitary landfill system.

An economic evaluation was made on the basis of the estimated economic cost and the benefit assumed to be 2% per month of disposable per capita income, in accordance with the aforementioned World Bank's statement on the affordability to pay (ATP) for waste management. The EIRR has been calculated to be 18.8%, and the investment in the improvement works is assessed as being economically justifiable.

⁴ Per capita waste generated in the Mamminasata area was estimated to be about 0.001 m³ (1 liter) per day according to the Waste Quantity and Quality Survey conducted in the course of this Master Plan Study. In this case, about 0.03 m³ (30 liters) of waste is generated per capita per month, but 0.05 m³ (50 liters) has been used for simplification.

11.3 Substation Expansion and Distribution System Rehabilitation

As pointed out in Chapter 9.1, the Mamminasata metropolitan area experienced serious load shedding (rolling blackouts and/or scheduled blackouts) from July to October 2005. Mamminasata again suffered from extensive load shedding in April 2006. Such load shedding is due partly to a lack of power generation capacity in South Sulawesi. New power stations should be developed as recommended in Chapter 9.1 without further delay.

Frequent power interruption is another issue to be solved urgently. In Mamminasata, there were nearly 5,700 forced outages in 2005, of which 98% resulted from troubles in the distribution system. Overloading of transformers at substations was a principal reason for such forced outages and blackouts. Distribution facilities are generally old, poorly maintained, overloaded and weak with respect to capacity to accommodate increasing demand or even maintain acceptable supply quality to meet the existing demand. With these situations in view, it is proposed that the substation expansion and distribution system rehabilitation project be taken up as a priority project for implementation.

1) Justification for Implementation

In August 2005 when the power sector study was conducted for the Mamminasata spatial plan, several substations had shortages in transformer capacity. Thereafter, PLN has reinforced transformers at Daya (20 MVA), Panakkukang (60 MVA), Takalar (30 MVA), Borongole (10 MVA) and Mandai (20 MVA). However, as of April 2006, the maximum load on the transformer in Panakkukang substation exceeded the allowable limit of 80% and even 100% for some times as shown in the following figure.

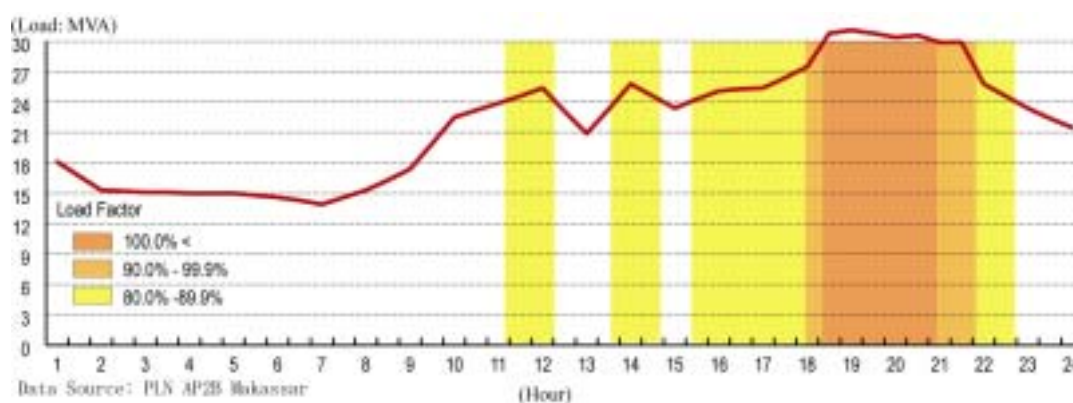


Figure 11.11 Hourly Load on the Transformer in Panakkukang Substation

Further, the newly constructed Tanjung Bunga substation was designed several years ago to have a capacity of 30 MVA and it is predicted that the transformer load will soon exceed 90%. This substation has to expand its transformer capacity as quickly as possible. Transformer capacity at Maros and Sungguminasa substations should also be increased to meet the increasing demand towards 2008 - 2009.

As noted above, troubles have been frequently occurring on distribution lines. The incidence of forced outages is 2.5 times larger than the Indonesian average. In order to stabilize the electricity supply in Mamminasata, rehabilitation and upgrading of the distribution facilities by PLN is urgently required.

2) Facilities to be Improved and Estimated Cost

To improve the capacity of substations, installation of additional transformers is required. As shown in the following table, four 150/20 kV step-down transformers, with a total capacity of 180 MVA, need to be installed with associated equipment. The total procurement cost of these facilities will amount to US\$5.8 million⁵.

Table 11.6 Estimated Cost of Transformer Capacity Augmentation

Items	Amount (US\$ thousand)
A. Panakkukang - 1 x 150 kVA Transformer Bay - 1 x 60 kVA Power Transformer 150/20 kV - 10 x 20 kV Switchgear	1,694
B. Tanjung Bunga - 1 x 150 kVA Transformer Bay - 1 x 60 kVA Power Transformer 150/20 kV - 10 x 20 kV Switchgear	1,694
C. Maros - 1 x 150 kVA Transformer Bay - 1 x 30 kVA Power Transformer 150/20 kV - 9 x 20 kV Switchgear	1,196
D. Sungguminasa - 1 x 150 kVA Transformer Bay - 1 x 30 kVA Power Transformer 150/20 kV - 9 x 20 kV Switchgear	1,196
Total Cost (A~D)	5,779

Source: JICA Study Team

On the other hand, medium and low voltage line replacement and extension is also

⁵ Equivalent to 51 billion Rupiahs with an exchange rate of "1 US\$ = 8,760 Rupiahs as of May 2006".

required to upgrade the distribution systems. Distribution transformers should also be upgraded in view of the growing load. The required facilities, and the associated estimated costs totaling US\$6.5 million⁶, for the rehabilitation of distribution systems are listed in the following table.

Table 11.7 Estimated Cost of Distribution System Rehabilitation

Items		Amount (US\$ thousand)
1.	Service Transformer (130 units)	859
2.	Terminal Connector (2 units)	206
3.	Medium Voltage Line 3 x 240 mm ² (4.1 km)	369
4.	Terminal Connector Panel (34 sets)	1,173
5.	Low Voltage Distribution Panel (360 sets)	651
6.	Distribution Transformer (138 sets)	749
7.	Low Voltage Twisted Connector (70.0 km)	444
8.	Low Voltage Conductor 3 x 150 mm ² (44.0 km)	393
9.	150 kV Transmission Line (15.8 km)	1,695
Total Cost (1~9)		6,538

Source: JICA Study Team

With the two sub-projects combined, the total estimated cost for the substation expansion and distribution rehabilitation project will be about US\$12.3 million.

3) Evaluation

The substation expansion will be able to cover the demand until 2011 (Maros), 2012 (Tanjung Bunga) and 2013 (Panakkukang and Sungguminasa) and ensure stable power supply to industries and households. Moreover, they will reduce the cost and time for repair and maintenance, as well as the environmental risk, such as soil contamination by leakage of insulation oil.

Table 11.8 Effects of Transformer Capacity Augmentation

Substation Name		With Project	Without Project	Note
Panakkukang	Capacity	60 MVA	120 MVA	Additional transformer capacity is enough to cover the demand until 2013
	Load Factor	87% in 2007	44% in 2007	
Tanjung Bunga	Capacity	30 MVA	90 MVA	Additional transformer capacity is enough to cover the demand until 2012
	Load Factor	102% in 2007	34% in 2007	
Maros	Capacity	20 MVA	30 MVA	Additional transformer capacity is enough to cover the demand until 2011
	Load Factor	84% in 2008	56% in 2008	
Sungguminasa	Capacity	30 MVA	60 MVA	Additional capacity is enough to cover the demand until 2013. Existing 20 MVA (10 x 2 units) will be relocated to other substations.
	Load Factor	100% in 2009	50% in 2009	
Total		Capacity	140 MVA	300 MVA

Source: JICA Study Team

⁶ Equivalent to Rp. 57 billion with an exchange rate of "US\$ 1 = Rp. 8,760 as of May 2006".

Benefits of the distribution network rehabilitation will accrue from (i) fewer unplanned outages and an improved quality of electricity supply (e.g., less voltage fluctuation), (ii) lower distribution losses with improved power sector financial performance, and (iii) reduced load shedding resulting from insufficient distribution transformer capacity. The reduction in distribution loss will also bring about fiscal benefits and allow these budgetary resources to be used for other critical needs.

11.4 Improvement of Perintis-Urip Road

Through the study of road transportation in Mamminasata, as discussed in Chapter 9.3, it has been clarified that priority is to be accorded to the improvement of Ir. Sutami toll road and Perintis-Urip road. Since the expansion and improvement of Ir. Sutami toll road (from 2 lanes to 6 lanes) is about to start on a BOT basis, a pre-feasibility study has been made on the improvement of the Perintis-Urip road that forms a trunk road in Mamminasata running from Maros to the center of Makassar. This road is a national road of 15.5 km in total length (Perintis Kemerdekaan of 11.8 km and Urip Sumoharjo of 3.7 km). The existing road alignment ranges from 22 m to 24 m with four lanes. With an estimated traffic volume of 682,000~733,000 pcu/day, the Perintis-Urip road is heavily congested at present.

1) Justification for Improvement

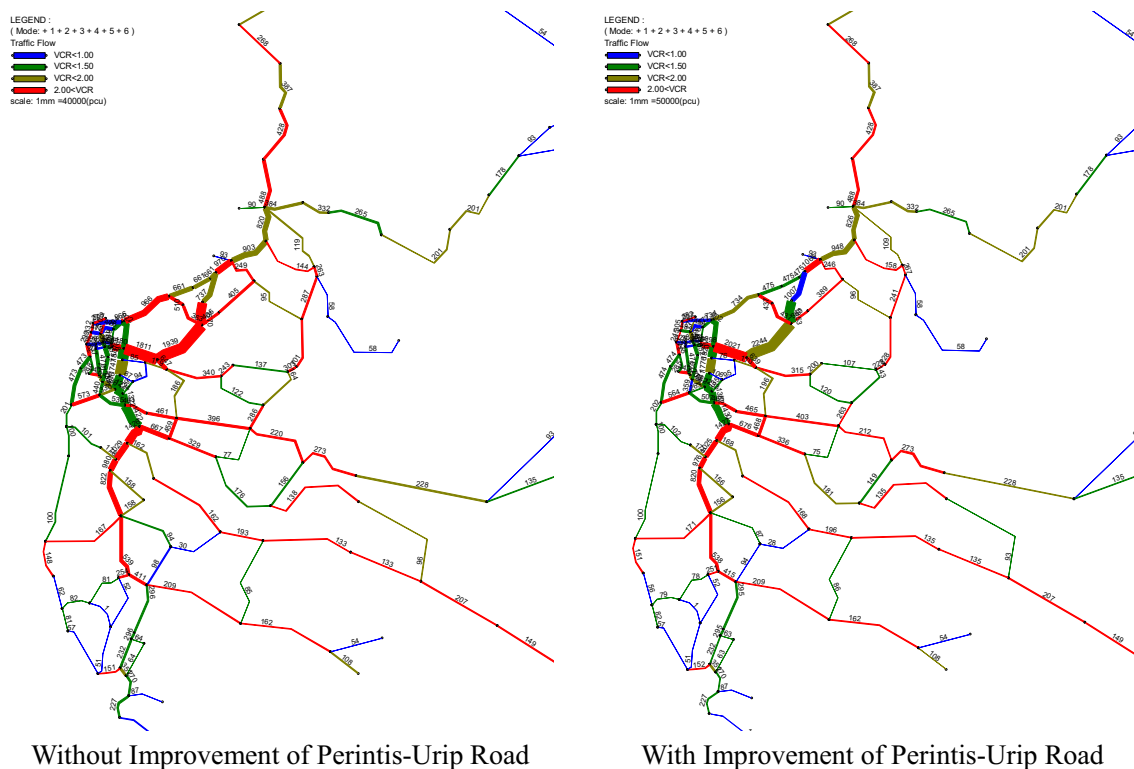
Although the traffic demand forecast for the integrated spatial plan in Mamminasata has justified a priority for the improvement of the Perintis-Urip road, the pre-feasibility study first reviewed the anticipated traffic demand on this road after the completion of the Ir. Sutami toll road expansion. The simulation analysis indicates that the traffic demand on Ir. Sutami toll road will steadily increase towards 2020 while the traffic along Perintis-Urip road will reach its maximum around 2010 (1,114,000~1,219,000 pcu/day with a volume-capacity ratio over 2.0) and then gradually decrease towards 2020 in the event that the road network improvement is not realized in Mamminasata, as shown in the following table.

Table 11.9 Traffic Volume without Urip-Perintis Road Improvement

Without Perintis Widening Project		
Perintis Road	Jn. Toll Road ~ Tell Bridge	Tell Bridge ~ KIMA Road
Traffic Volume		
2005 (4 lanes)	682	733
2020 (ditto)	1,976	2,130
Volume-Capacity Ratio (=VCR)		
2005 (4 lanes)	1.0~1.5	1.5~2.0
2020 (ditto)	>2.0	>2.0
Sutami Road	Tell Bridge ~ KIMA Road	KIMA Road ~ Jn. with Perintis
Traffic Volume		
2005 (2 lanes)	355	221
2020 (ditto)	760	422
Volume-Capacity Ratio (=VCR)		
2005 (2 lanes)	1.5~2.0	1.0~1.5
2020 (ditto)	>2.0	>2.0

Source: JICA Study Team

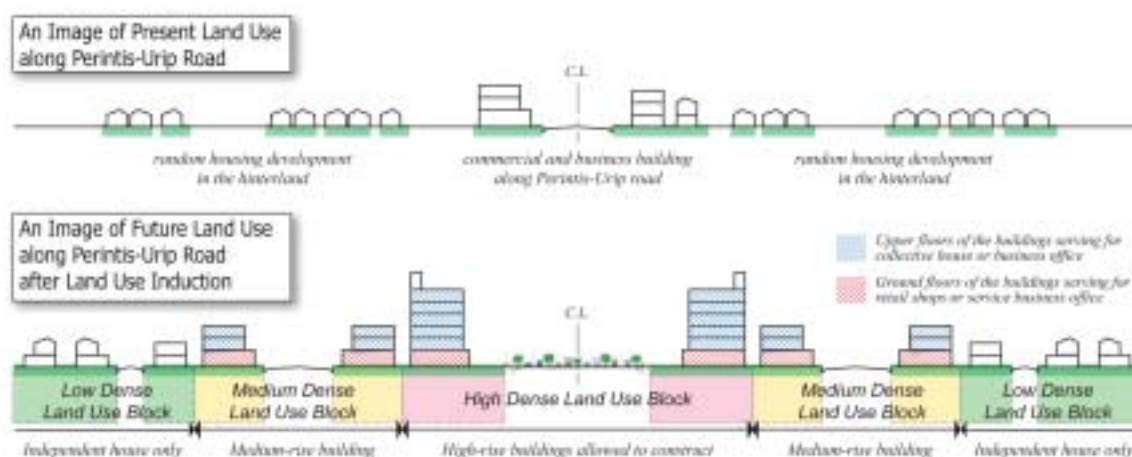
In the case that the Perintis-Urip road is not improved, the traffic demand on the Ir. Sutami toll road will exceed 2.0 in VCR resulting in heavy congestion. On the contrary, if the Perintis-Urip is improved, the traffic congestion ratio (VCR) will be kept between 1.0 and 1.5, and the traffic volume will constantly increase and contribute to the profitability of the Ir. Sutami toll road. In this way, the improvement of the Perintis-Urip road is required even after the expansion of Ir. Sutami toll road.



Source: JICA Study Team

Figure 11.12 Comparison of Future Traffic Volumes in 2020

Another important role of the improvement of Perintis-Urip road is its contribution to the higher land use along this road as envisaged under the spatial plan for Mamminasata. The land use along this road is planned for improvement from the current random use to well induced high and medium density land use, as illustrated in the following figure.



Source: JICA Study Team

Figure 11.13 Image of Present and Future Land Use along Perintis-Urip Road

It is therefore planned that land use management would be promoted in parallel with the improvement of Perintis-Urip road.

2) Preliminary Design

In accordance with the MoPW design standard, the Type-II, Class-1 road classification will be applied, with the following geometric design conditions.

Table 11.10 Geometric Design Conditions

Item		Design Standard Value	Applied Value
Road Classification		Type-II, Class-I	
Design Speed		60km/h	
Cross-section	Carriageway Width	3.5m	3.25m (considering land acquisition)
	Shoulder Width	0.5m	0.5m
	Sidewalk Width	3.0m	3.0m
Horizontal Alignment	Min. Radius	150m	150m (except intersections)
	Min. Curve Length	100m	100m
	Omission of Transition	>600m	>600m
Vertical Alignment	Min. Curve Length	25m	25m
	Cross-fall	2.0%	2.0%

Source: Ministry of Public Works

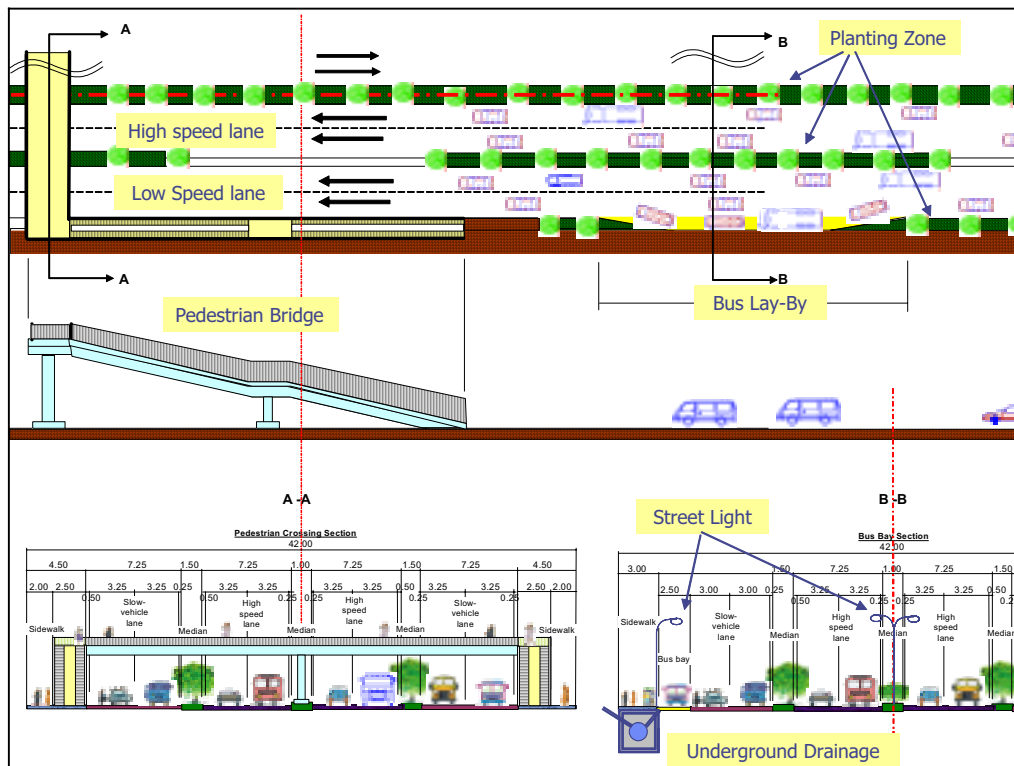
The MoPW has already staked the right-of-way with a total width of 42 m. A typical cross-section is proposed in due consideration of both traffic and urban development functions. The spatial plan proposes 8 lanes, and it will be further studied in due consideration of the land use and comprehensive transportation network at the subsequent stage of engineering study.



Source: JICA Study Team

Figure 11.13 Typical Cross Section (Flat Section)

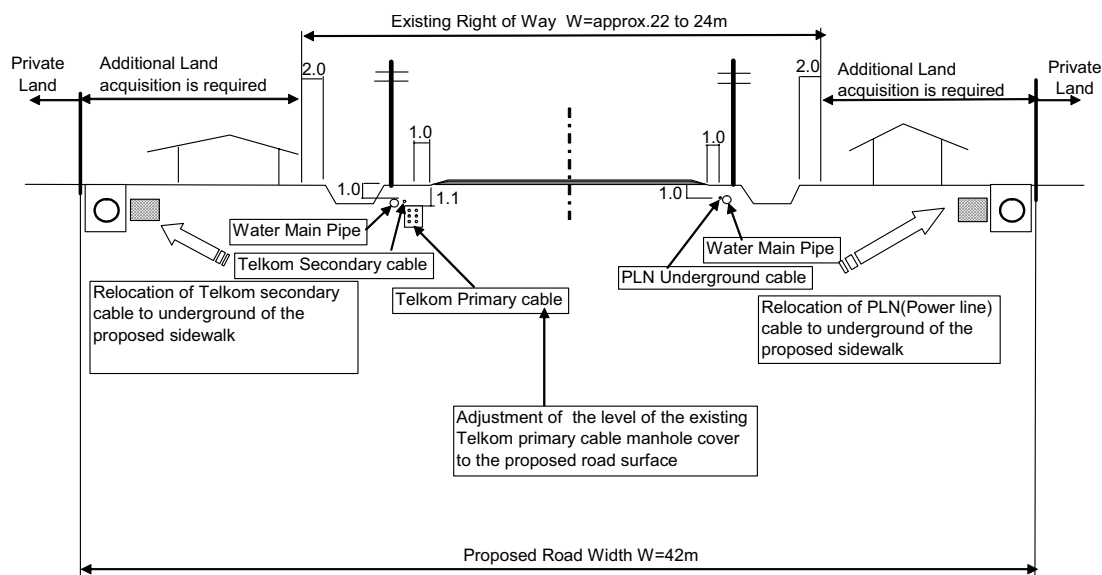
The road facilities have been designed as shown in the following figure, including the bus lay-by, pedestrian bridge, underground drainage and green planting zones.



Source: JICA Study Team

Figure 11.14 Preliminary Design of Road Facilities

Preliminary design has also been worked out for relocation of the public utilities, e.g., water pipes, power lines, and telecommunication cables, as shown in the following figure.



Source: JICA Study Team

Figure 11.15 Public Utilities Relocation Plan

Other related facilities, including two bridges on the Tallo and Pampang rivers, as well as junctions and culverts, have been designed as shown in the pre-feasibility study report in the separate volume.

3) Estimated Cost and Construction Schedule

Based on the preliminary design, the cost of improvement works of the Perintis-Urip road is estimated to be about US\$41.1 million⁷ in direct construction cost, and about US\$61.2 million⁸ in total construction, inclusive of the land acquisition cost and public utility relocation cost as shown in the following table.

⁷ Equivalent to Rp. 360 billion with an exchange rate of "US\$ 1 = Rp. 8,760 as of May 2006".

⁸ Equivalent to Rp. 536 billion with an exchange rate of "US\$ 1 = Rp. 8,760 as of May 2006".

Table 11.11 Summary of Estimated Construction Cost

Items	Amount (US\$ thousand)		
	Total (A)+(B)	Jl. Urip (A)	Jl. Perintis (B)
I. Civil Works	33,984	7,851	26,133
1. Site Cleaning	181	41	140
2. Demolition	350	83	267
3. Earth Work	2,360	417	1,943
4. Pavement	8,870	2,052	6,817
5. Drainage	17,419	3,961	13,458
6. Bridge	1,681	492	1,189
7. Culvert	149	--	149
8. Safety Facility	1,179	398	782
9. Ancillary Work	1,796	407	1,389
II. Engineering Service (D/D, Supervision)	3,738	864	2,875
III. Physical Contingency	3,398	785	2,613
IV. Total Construction Cost (I~III)	41,120	9,499	31,621
V. Land Acquisition, Compensation and Relocation	20,065	6,832	13,233
VI. Total Project Cost (IV+V)	61,185	16,331	44,854

Source: JICA Study Team

For the land acquisition, staking of right-of-way has already been completed but land acquisition has not been initiated yet.

The construction will take six years inclusive of the pre-construction works and land acquisition. The following figure shows a proposed construction time schedule.

	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year
JL. Perintis (11.6 km)						
Design and Supervision	■					
Land Acquisition		■				
PQ and Tendering			■			
Construction			■	■		
JL. Urip Sumoharjo (3.9 km)						
Design and Supervision	■					
Land Acquisition		■	■	■		
PQ and Tendering				■		
Construction					■	■

Source: JICA Study Team

Figure 11.16 Project Implementation Schedule for Road Improvement

4) Evaluation

Some basic data and information on noise and water along the existing road, as well as the land tenure, have been collected in the course of this Study. An initial environmental examination, as summarized below, indicates the predictable extent of impacts.

Table 11.12 Environmental Impacts and Effective Factors

Environmental Impacts Effective Factors		Pollution			Natural Environment								Social Environment																			
		1 Air Pollution	2 Water Pollution	3 Soil Contamination	4 Noise and Vibration	5 Land Subsidence	6 Offensive Odor	7 Topography and Geology	8 Soil Erosion	9 Groundwater	10 Hydrological Situation	11 Coastal Zone	12 Biology (Flora and Fauna)	13 Meteorology	14 Landscape	15 Global Warming	16 Resettlement	17 Economic Activities	18 Landuse and Resional Resource	19 Social Communities	20 Infrastructure and Public Service	21 Minorities and Low Income People	22 Uneven Distribution of Interest	23 Gendor	24 Right of Children	25 Cultural Property	26 Public Health Condition	27 Waste and Garbage	28 Water Rights - Right of Common	29 Hazards and Accident		
General		○	△		○										△	○	+	○														
Construction Phase	Change of Topography · Occupation		△			△	△		△	△		△	△	△	○	+	△	△		+	△						△	△	△	△		
	Construction Vehicles	△			△																											
	Construction Machines	△			△																											
Operation Phase	Occupation													+	△		+	○													△	
	Operation	○	△		○	△											+		+		+						△	△			△	

Note: ○ : significant negative impact
△ : Less negative impact
blank : no effect
+ : positive impact is expected

Source: JICA Study Team

In accordance with the provincial regulations, the environmental impact assessment (EIA) is to be conducted before the final decision on the construction work. The EIA should pay specific attention to the impacts of air pollution, noise, resettlements and land acquisition, as well as a split of communities along the improved road.

Economic evaluation has been made on the basis of the estimated economic cost and the benefits to accrue from the saving in vehicle operating cost (VOC) and saving in travel time. The EIRR is calculated to be 30.6%, and the investment in the improvement work is economically feasible and justifiable.

The most important issue in executing the improvement work is the land acquisition. It is desirable that the land acquisition be processed in conjunction with the land re-adjustment to make the land use more effective along the improved road.

11.5 Implementation of Priority Projects in Package

For the implementation of the above priority projects, two alternative approaches might be considered. One is to implement them project by project, and the other is to execute them in packages for a staged implementation. From the viewpoint of spatial development in Mamminasata, it is desirable that these projects be realized in packages, as illustrated in the following figure.

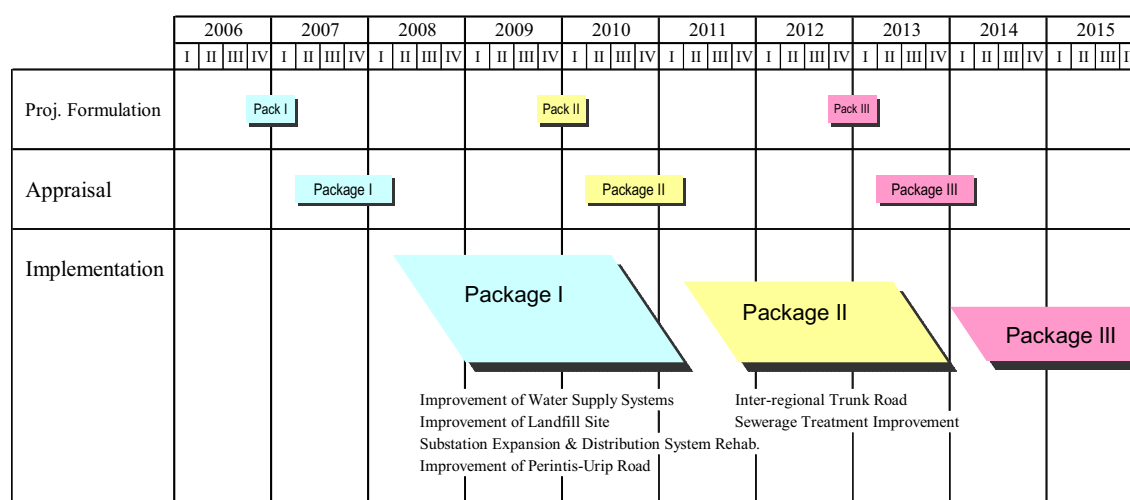


Figure 11.17 Staged Implementation of Projects in Packages

External financial assistance might be sought in financing the implementation of priority projects in packages. For reference, the priority projects proposed above for the betterment of infrastructure and urban infrastructure will add up to the total investment amount summarized in the following table.

Table 11.13 Total Amount to be Invested in Priority Projects

Project Name	Construction Cost	
	US\$ million	(Rp. billion)
1. Improvement of water supply systems in Maros and Takalar	20.8	(183)
- Water Supply System Improvement of Maros	18.9	(166)
- Water Supply System Improvement of Takalar	1.9	(17)
2. Improvement of landfill site for solid waste management	35.9	(315)
3. Expansion of substation capacity and rehabilitation of electricity distribution system	12.3	(108)
4. Improvement of Perintis-Urip road	41.1	(360)
Total	110.1	(965)

Note: US\$ 1.00 = Rp. 8,760 (as of May 2006)

The costs in the above table don't include the costs related to land acquisition and relocation.

Source: JICA Study Team

12. INSTITUTIONAL STRENGTHENING

12.1 Legislations¹

Clear and effective legislation has to be prepared and stipulated for urban management. A Presidential Decree for Mamminasata Metropolitan Spatial Plan is to be prepared as a base of successful implementation. It is also necessary to formulate various legislations at the provincial level, such as rules/regulations on urban management, transportation management, and proper organization.

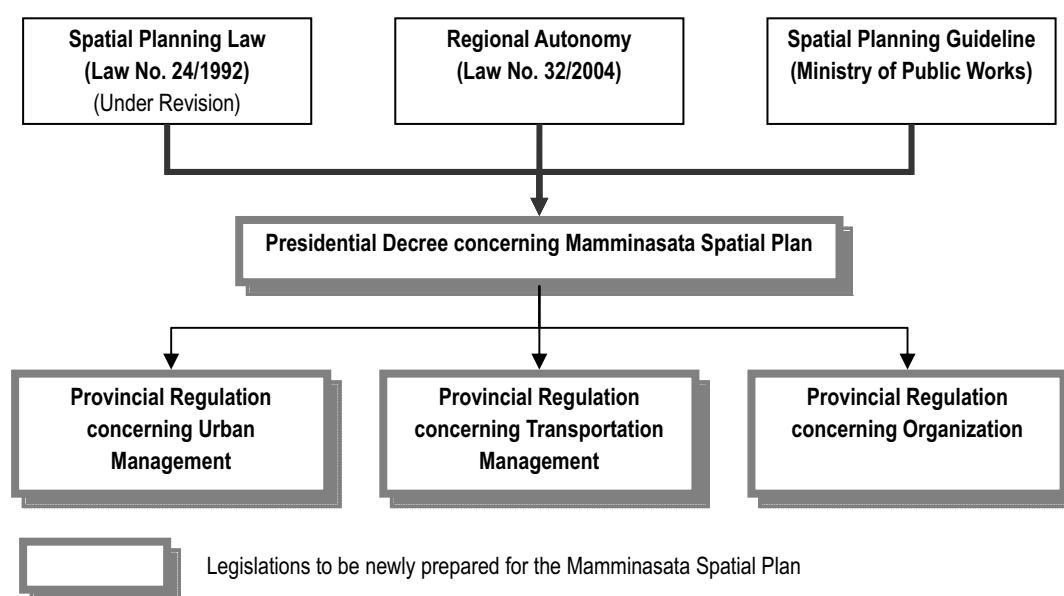


Figure 12.1 Legislations to be Formulated

1) Stipulation of Mamminasata Spatial Plan under a Presidential Decree

In order to ensure successful implementation of the Mamminasata spatial plan, a Presidential Decree should better be promulgated. The Decree will specify the spatial utilization strategy, control strategy, institutional arrangement, and monitoring. In order to promote efficient implementation with appropriate authority, organizational establishment for urban management also needs to be clearly defined.

¹ Refer to Sector Study Report (16) for detail.

Table 12.1: Draft Contents of a Presidential Decree

Chapter I	General Provision
Chapter II	Policy and Strategy
Chapter III	The Integrated Spatial Plan of Mamminasata Metropolitan Area
Chapter IV	Area Spatial Utilization Strategy
Chapter V	Institution and Inter Regional Coordination
Chapter VI	Area Spatial Utilization Control Strategy
Chapter VII	Society Involvement and Improvement
Chapter VIII	Other Provisions
Chapter IX	Crime Provision
Chapter X	Investigation

Draft Decree is under preparation by Dinas Spatial Planning (province) based on the “Integrated Spatial Plan (Draft)”. Since the preparation of the Presidential Decree is under the responsibility of the Ministry of Public Works, the Decree will be prepared finally by the Ministry.

2) Provincial Regulation concerning Urban Management

Provincial regulation concerning urban management is to be formulated to show development guidance based on the Presidential Decree. The objective of the legislation is to appropriately regulate development activities respective zone and area designated under land use zoning. General direction for land use regulation is proposed as shown in the following.

Table 12.2: General Direction for Urban Planning Zone

Zone	Area	Definition
Urban Planning Zone	Promotion Area [Cat. 1]	<ul style="list-style-type: none"> Area of high urbanization (Makassar and Sungguminasa) Urban development has to be well controlled to avoid further deterioration of urban environment. Improvement of urban amenity (parks and green area) and efficient land utilization is the priority concern for the land use control
	Promotion Area [Cat. 2]	<ul style="list-style-type: none"> Area where urbanization has begun recently (Maros & Takalar) Since urbanization level is still low, proper control shall be applied for urbanization
	Control Area	<ul style="list-style-type: none"> Areas of low utilization such as swamp, inundation/flood prone area, green open space Development activities are strictly regulated
Semi-Urban Planning Zone	Agricultural Priority Area	<ul style="list-style-type: none"> The area where development activities are strictly regulated for the purpose to protect agricultural production.
	Agricultural and Settlement Area	<ul style="list-style-type: none"> The area where urbanization has not begun and utilized either as agriculture or no utilization. Urbanization with control measure is directed in this area New town, industrial zone, education/R&D development area planned in this area The area where development activities are allowed with a certain condition (type, scale, infrastructure) This area will become “urban planning zone” in the future

Zone	Area	Definition
	Control Area	<ul style="list-style-type: none"> • Areas of low utilization such as swamp, inundation/flood prone area, green open space • Development activities are strictly regulated
Production Forest Zone	Afforestation Area	<ul style="list-style-type: none"> • The hilly area surrounded by forest area and presently grass land • Create production forest with intensive afforestation
Protection Zone	Protected Forest Area (Existing)	<ul style="list-style-type: none"> • Existing forest area where should be protected. • Development activities are strictly regulated
	Water-front Reserves	<ul style="list-style-type: none"> • River, lakes, ocean area • Development activities are strictly regulated

(1) Regulations for Urban Planning Zone

Makassar is designated as Urban Planning zone Promotion Area (Cat. 1) and Control Area. In principle, any development is prohibited in the Control Area. Promotion Area (Cat. 1) is designated to promote efficient and effective land use. Urban Planning Zone, Promotion Area (Cat. 2) is applied to the existing urban center in each district, except for Makassar, to establish urban area with excellent urban amenity. Guidance for the land use control in this zone is summarized in the following table.

Table 12.3: Land Use Control in Urban Planning Zone

Area	Definition
Promotion Area [Cat. 1]	Residential Area (Losari Beach area) The residential and commercial mix use with low height. Only small scale shops are allowed. Building Coverage Ratio (%) : 30, 40, 50, 60 depending on location Building Volume (%): 50, 60, 80, 100, 150, 200 depending on location
	Residential Area (Panakkukang Area) The residential area with low and middle height. Mainly residential use only. Building Coverage Ratio (%) : 30, 40, 50, 60 depending on location Building Volume (%): 50, 60, 80, 100, 150, 200 depending on location
	Commercial Area (along large road, Jl Petterani) The commercial and business use. Building Coverage Ratio (%) : 60, 80 depending on location Building Volume (%): 400
	Industrial Area Only allows industry that is not harmful to environment Building Coverage Ratio (%) : 50, 60, 80 depending on location Building Volume (%): 80, 100, 150, 200 depending on location
Promotion Area [Cat. 2]	Residential Area The residential and commercial mix use with low height. Only small scale shops are allowed. Building Coverage Ratio (%) : 30, 40, 50, 60 depending on location Building Volume (%): 50, 60, 80, 100, 150, 200 depending on location
	Commercial Area The commercial and business use. Building Coverage Ratio (%) : 60, 80 depending on location Building Volume (%): 400

Area	Definition	
	Industrial Area	Only allows industry that is not harmful to environment Building Coverage Ratio (%) : 50, 60, 80 depending on location Building Volume (%): 80, 100, 150, 200 depending on location

It is also important to provide regulations on parks and green area. Following table shows the idea of the size of parks by the number of residents.

Table 12.4: Regulations on Urban Amenity

Land Use	Facility/Items	Development Target
Open space	Urban park: General park	Size: 10 ha Population: 100,000 persons
	Urban park: Athletic park	Size: 15 ha Population: 100,000 persons
	Residential park: medium scale	Size: 4 ha Population: 40,000 persons
	Residential park: small scale	Size: 1 ha Population: 10,000 persons
	Water front (river, lakes)	Utilization of exiting water area as a park or increase access.
Green area	Road, Parks, Open space	More than 20% of the new development area (including parks, street trees)

(2) Regulations for Semi-urban Planning Zone (Agricultural and Settlement Area)

In the agricultural and settlement area, urban development can be allowed in the area only with development permits. In order to avoid uncontrolled urban development by small scale development, only large scale planned development is allowed in the area. The minimum development area will be 20 ha. New township will be developed under this control.

Table 12.5: Land Use Control in Agricultural and Settlement Area (Semi Urban Planning Zone)

Area	Definition	
Agricultural and Settlement Area	Residential Area	The residential and commercial mix use with low height. Only small scale shops are allowed. Building Coverage Ratio (%) : 30, 40, 50, 60 depending on location Building Volume (%): 50, 60, 80, 100, 150, 200 depending on location
	Commercial Area	The commercial and business use. Building Coverage Ratio (%) : 60, 80 depending on location Building Volume (%): 400
	Industrial Area	Only allows industry that is not harmful to environment Building Coverage Ratio (%) : 50, 60, 80 depending on location Building Volume (%): 80, 100, 150, 200 depending on location

3) Transportation Management

Transportation management is indispensable for urban development. Legislation for transportation management should also be strengthened as part of urban management.

Table 12.6: Legislation for Transportation Management

Items	Description
Road Structure	<ul style="list-style-type: none"> Promote user friendly road structure. Efficient road structure for automobiles and pedestrians. Landscape (trees, design) has to be defined.
Traffic management	<ul style="list-style-type: none"> Promote efficient road management by vehicle control and road utilization (separate lane for types of vehicle). Control route of pete-pete, becak, motor cycle, private vehicle, large vehicle. Some roads shall be prohibited from enter for a certain type of vehicle. Control by the function of the roads and the zoning in the urban area. Establishment of pedestrian only period (e.g. weekend) in designated area Control of street vendors. Proper management of traffic lights.
Parking	<ul style="list-style-type: none"> Control the parking along the streets which disturb traffic flow.
Road signs	<ul style="list-style-type: none"> Clear road sign not only for the local people, but also for tourists. Design and location have to be appealing.
Barrier free	<ul style="list-style-type: none"> Structure of road and traffic management that concerns socially handicapped people.
Exhaust control	<ul style="list-style-type: none"> Control exhaust from vehicle.

In addition, it is important to adopt a new method of road construction, particularly regulation on land usage, because once the road plan is announced, people buy land to make profits which makes land acquisition and road construction difficult.

Table 12.7: Usage of Land along New Trunk Road

Items	Description
General	The purpose of this regulation is to protect the land speculation and to share the benefit from the increasing in value of the land along the new trunk road due to the new development, between government, as developer and the payer of the new road construction, and the land owner as the beneficiaries
Area to be applied	Both sides of 100 m width from the edge of the new trunk road
Type of usage	It will be categorized and for agriculture/forest, housing commercial/offices, industry and others
Right to use land	The proprietary rights of the land owner shall be kept while the rights of usage of the land shall be handed over to the government after the development of the new trunk road. However, the right usage will remain with the present owner if there is no alternation in his usage of the land. In case of the succession to the legitimacy, the right of usage shall be allowed to succeed.
Transfer of the land	When the land owner at present hand over the land to the third person (s) after the x months prior to the announcement of the development plan (herein after is called as "x day"), the right of the usage of the land shall belong to the government automatically.

Items	Description
Benefit from the transferring of the land	When the owner transfer the land after “x day”, the business tax shall be charged to the owner at present against 50% of the balance between the sale price and the public assessment value before “x day”, and against the balance between the sale price and the purchased price for the new purchaser of the land

Provincial regulation concerning organization is discussed in the following Section 12.2

4) Urban Management Operation System

Improvement of development permit system

Development permit is an important system for urban management, which controls unwanted development and promotes sound development in accordance with the characteristics of designated zones and areas. Development application has to be screened by the regulation/guidelines provided for designated urban area. Transparent permitting system together with staff training has to be established. Permitting authority, whether province or district/municipality, has to be clarified for each urban management legislation.

Strengthening of land registration system

A proper land registration system is a mandate for urban development, which requires an accurate base map and database on land registration including land titling, size, and location. Since this type of land information is indispensable for urban development projects, a database system has to be established at the earliest. Establishment of database shall start with preparation of the base map, survey of land titling, then integrate other urban information such as public facilities and utility lines, which shall be managed by GIS (Geographic Information System).

Introduction of taxes to induce and control development

A way to control and manage urban development is to impose taxes depending on the land condition, which can also be used as an incentive to develop in accordance with the spatial plan. Conversion of agricultural area to settlement area, settlement area along urban roads, and redevelopment of urban area need to have different tariff rates. Tax exemption can also be applied for urban management. Since land transaction related tax for urban development is only BPHTB (land transaction tax), which is imposed when the land tile is transferred (usually 5% of land price), exemption on land transaction tax will not be effective. Tax exemption shall be considered for income tax and construction permit.

Strengthening of urban development mechanism

In order to promote urban development that will satisfy all stakeholders including residents, developer, and government, new urban management mechanism shall be

applied. Such a mechanism includes “redevelopment method” and “land re-adjustment method”. Application of these methods for Mamminasata development shall be considered further with provincial government.

12.2 Organizational Strengthening

1) Organizational Strengthening

In 2003, the Mamminasata Metropolitan Development Coordination Board (BKSPMM) was organized under the Governor’s Decree (No.860-XII-2003). BKSPMM is headed by Vice-Governor, South Sulawesi province and 4 major/district governors. Dinas Spatial Planning is functioning as secretariat to BKSPMM.

BKSPMM is in low profile having some constraints, including (i) unclear legal status, (ii) inefficient organizational structure having more than 80 officers from regencies, and (iii) unclear responsibility and less talented staff in management of urban development planning and implementation. BKSPMM is organized as shown in the following diagram. Although it has coordinated for planning of the Mamminasata spatial plan, it is would not be capable of managing the implementation of the spatial plan.

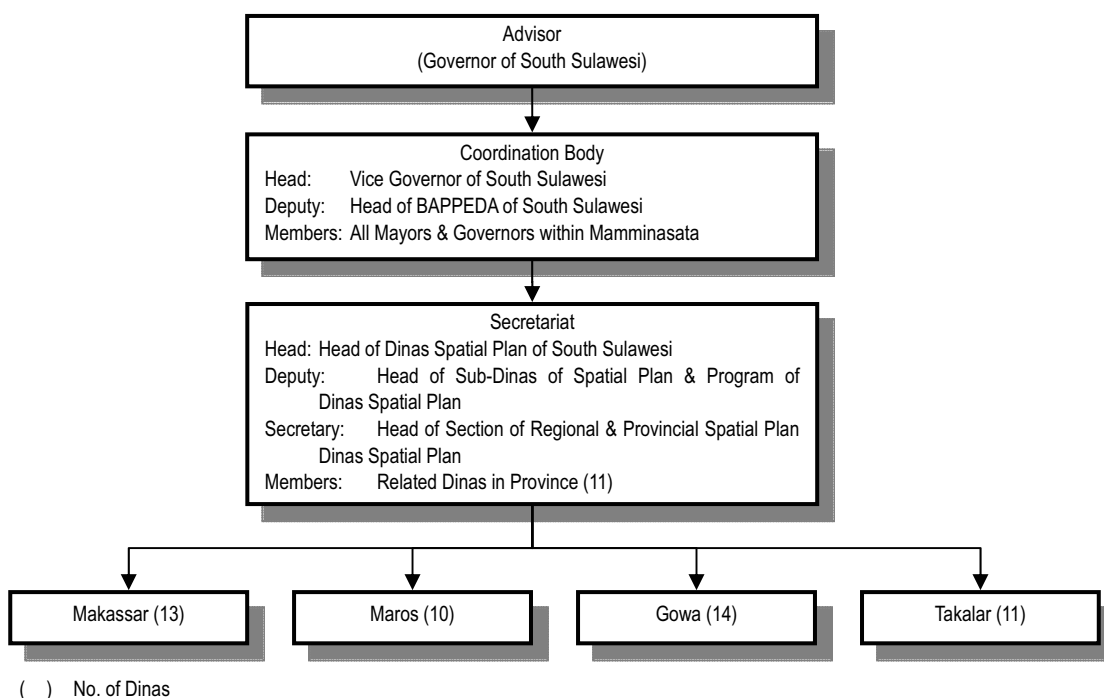


Figure 12.2: Organization of Existing BKSPMM

Four alternative measures have been discussed for strengthening the existing BKSPMM for the successful implementation of the Mamminasata spatial plan under the strong leadership and management. **The first alternative** is to strengthen the management capability of BKSPMM for the implementation of the spatial plan through the following measures.

- (i) Members of the Coordination Body should periodically meet and take strong leadership in the coordinated execution of the spatial plans.
- (ii) The function and staff of the secretariat should be reinforced by highly qualified and full-time experts specialized in management of spatial plans.
- (iii) Members of BKSPMM at the municipal/district level should streamline and they should be reinforced with qualified management officers.

The second alternative is to set up a management office of BKSPMM under the provincial secretariat or BAPPEDA with newly recruited qualified full-time staff and to make it function as a secretariat to the Coordination Body, as shown in the following.

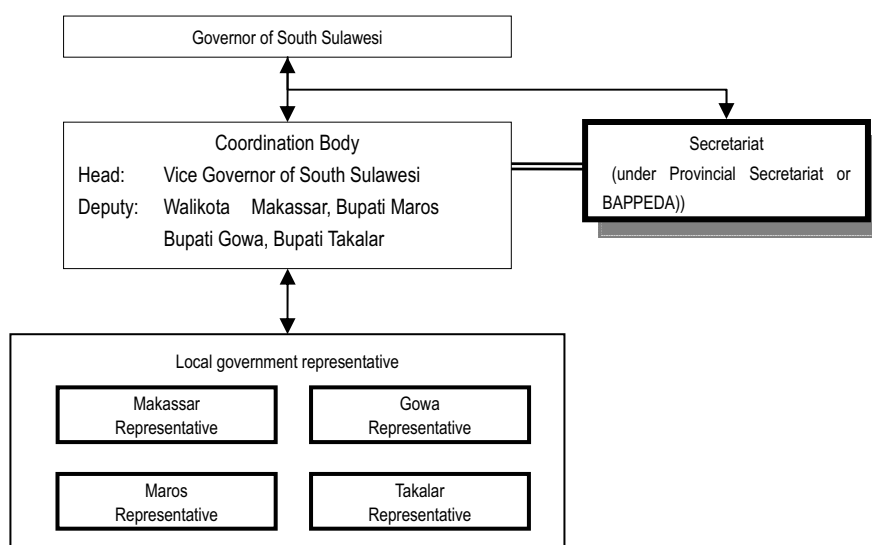


Figure 12.3: Improved Organization of BKSPMM (Alternative 2)

The third alternative is to organize and structure a new office called the “**Mamminasata Development Management Bureau**” (BPPM) in the functional section of the provincial government so that authority of the Agency is strong enough to manage stakeholders. BPPM will be newly staffed with several qualified experts in project/program management, programming and budgeting, financing, and engineering. BPPM will coordinate closely with the Coordination Body of BKSPMM.

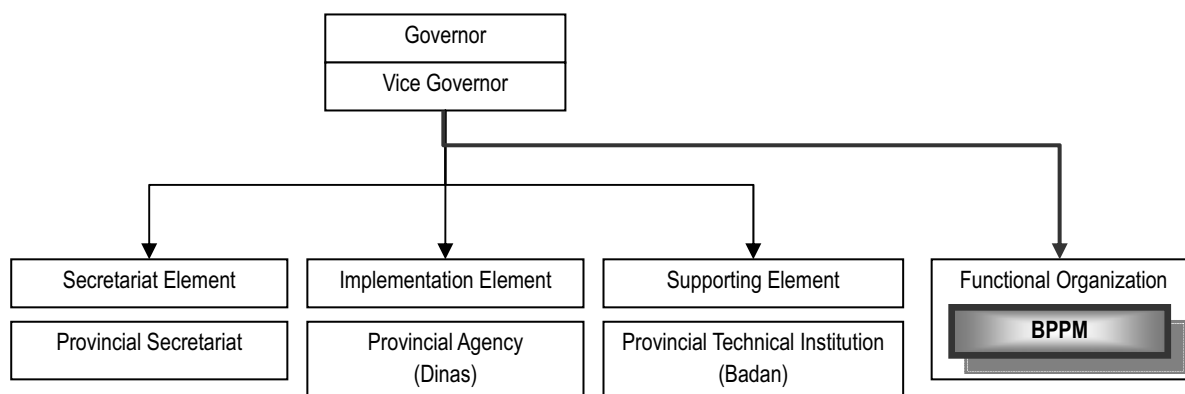


Figure 12.4: Mamminasata Development Management Agency as Functional Organization (Alternative 3)

BPPM is composed of three division, (i) infrastructure & environment, (ii) legal & finance division, (iii) database/monitoring division with total of 10~15 staff. The head of the Agency shall be Echelon II, which is equivalent to Dinas Head and BAPPEDA head.

BKSPMM shall be reformed so that it will be composed of one chairman and four vice chairmen. Provincial Vice Governor continues to be a Chairman, and heads of district/city from the Mamminasata Metropolitan Area (Makassar, Maros, Gowa, Takalar) will be Vice Chairmen.

It is important that BPPM activities be monitored by the third parties (residents,, academic, private sector and others) for the purpose of securing transparency of the operation. Existing monitoring or supervision function of government activities shall include monitoring of BPPM activities.

In addition, “Advisory Committee” or “Advisory Board” will be newly established. The committee members are composed of private and academic sector and functions as consultation to Governor.

The forth alternative is to establish independent organization (e.g. Mamminasata Urban Development Corporation) as the government organization starts to function as required and the development demand accelerates in the future. The main function of the corporation is implementation of urban development projects to provide comfortable living environments by providing basic infrastructure, particularly in the new town development areas.

The Corporation should be independent from the government organization, and the financial status in particular has to be secured for sustainable organizational operation and sustainable urban development. The organizational structure, job

description and financial structure shall be determined by BPPM and BKSPMM when the Corporation is organized.

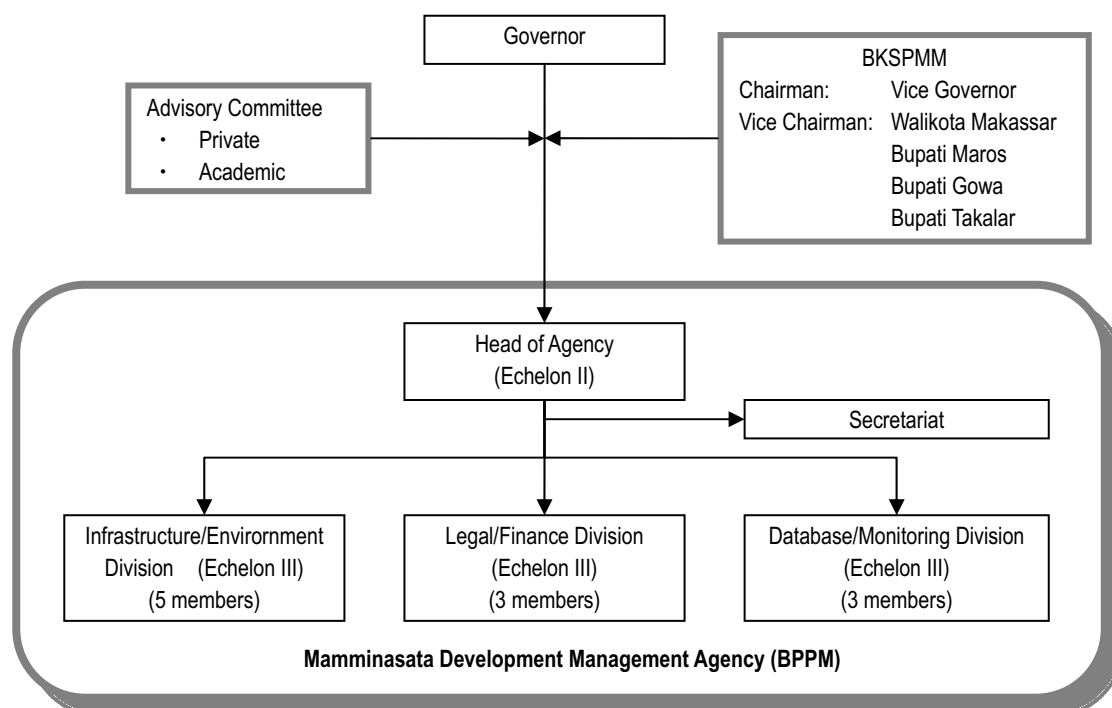


Figure 12.5: Organization Structure of BPPM (Badan) (Alternative 4)

2) Function of BPPM

The main function of BPPM is control and monitoring of Mamminasata development including implementation management, environmental management, project finance, legal enforcement, and database management. Management of action plans is also the task of BPPM.

Table 12.8: Task of Mamminasata Development Management Agency (Proposed)

Position	Established as functional organization of South Sulawesi Government
Coverage	<ul style="list-style-type: none"> Management and control of urban development projects in the Mamminasata area and district/city projects that have impact on Mamminasata particularly infrastructure and environment
Job description	<ul style="list-style-type: none"> Management of Mamminasata development implementation listed in Presidential Decree Coordination of BKSPMM and other stakeholders (government, private, PMU) infrastructure and environmental management, legal and financial management, and information system management and monitoring and control
Staff	<ul style="list-style-type: none"> Full time competent staff (Total number of staff 10~15) Specialist; Urban management, finance (project finance), environment, infrastructure, supporting staff government or private staff

Table 12.9: Job Description of BPPM

Function	Description
(i) Overall management of action plan implementation	<ul style="list-style-type: none"> • Implementation management • Coordination with concerned organizations • Financial and physical management
(ii) Infrastructure and environmental management	<ul style="list-style-type: none"> • Plan and implementation management • Physical management • Environmental management
(iii) Legal and financial management	<ul style="list-style-type: none"> • Legislation preparation and enforcement • Public finance management (PPP, PFI, Concession, public investment)
(iv) Information system management/ Monitoring and control	<ul style="list-style-type: none"> • Information system management (monitoring and dissemination) • Mapping • Monitoring and evaluation of project implementation

3) Organizational Development Scenario

The Alternative 3 above is most desirable in view of the efficient and functional coordination/management as well as strong leadership that would be indispensable for the implementation of the Mamminasata spatial plan and the attainment of the “creative, clean and coordinated metropolitan area”.

In order to assign proper authority and function of BPPM, the organizational establishment should be included in the institutional section of the Presidential Decree for the Spatial Plan for the Mamminasata Metropolitan Area. Since stipulation of the Presidential Decree is expected to take some time, BKSPMM with permanent staff should be formed in an appropriate provincial government position. In long term Alternative 4; Establishment of Mamminasata Development Corporation is to be considered. Organizational strengthening scenario is summarized in table below.

Table 12.10: Organizational Strengthening Scenario

	Short Term (2006~2010)	Mid to Long Term (2010~)
Organization strengthening scenario	<ul style="list-style-type: none"> • Strengthen BKSPMM function • Establishment of BPPM as functional organization in South Sulawesi Provincial government. • Establishment of Advisory Committee to promote Public Private Partnership 	<ul style="list-style-type: none"> • Establishment of “Mamminasata Urban Development Corporation”, independent from government organization. • Public-private financed organization.
Description	<ul style="list-style-type: none"> • Main function of BPPM at this stage is to formulate necessary legislation, GIS database establishment, promotion of PPP and urban management capacity development. • Also close coordination with Project Management Unit (PMU) to be established for “Urban Environmental Improvement Project” • Provide capacity building for BKSPMM and BPPM 	<ul style="list-style-type: none"> • Enhance public and private coordination in urban development such as joint investment. • Public-private financed organization.

Organizational setting for Mamminasata development to be established by 2010 is illustrated in the following figure.

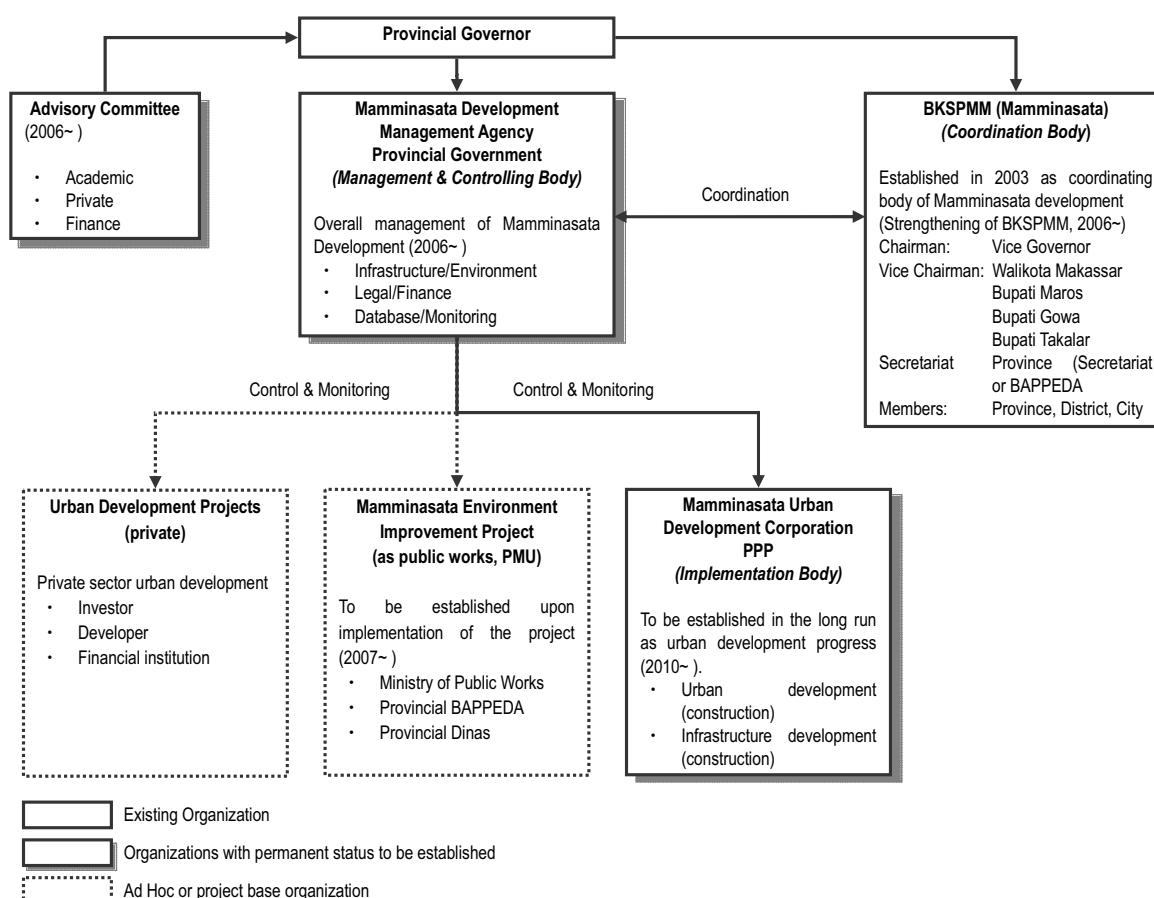


Figure 12.6: Organizational Setting for Mamminasata Development

12.3 Capacity Development

1) Capacity Development Strategy

In order to realize the spatial plan, the empowerment and capacity building of local administrations are vitally important. Deregulation and decentralization of central government is in progress over the world country. Local governments are expected to receive full benefit of decentralization so that the regional matter could be managed by its own staff. For effective capacity building, specific attention will be paid in the following.

(1) Importance of OJT

Several methods of training are available: lecture, OJT at site, OJT abroad, attending seminar, training at other agencies. The training method should be selected in due

consideration of the character of the training. A lecture will be suitable for training for teaching basic knowledge. OJT will be suitable for training operational activities, particularly in urban management.

For capacity development in urban management, OJT shall be a key method. Even governmental officials could get enough information from their jobs, the final result will depend on the circumstance of economic, natural and human conditions. These conditions are different from place to place, time to time, and we never face the same conditions as ever before. The only way to learn the situation would be the on-the-job training or experiences in other worlds.

There may be three ways to make it possible. One is to make them participate in suitable training courses offered by donors. Second is an exchange of human resources between the private and public sectors. Private fields usually have better system for management. Third is an exchange officials among municipalities, as well as between local government and central government.

(2) Sustainable Capacity Development

Capacity development is usually conducted in a form of lectures and workshops in a relatively short period, and monitoring and feedback is rarely conducted. In order to maximize the outcomes, capacity development should be conducted together with continuous feedback by trainees, by which sustainability could be secured. Following figure shows an example of sustainable capacity development.

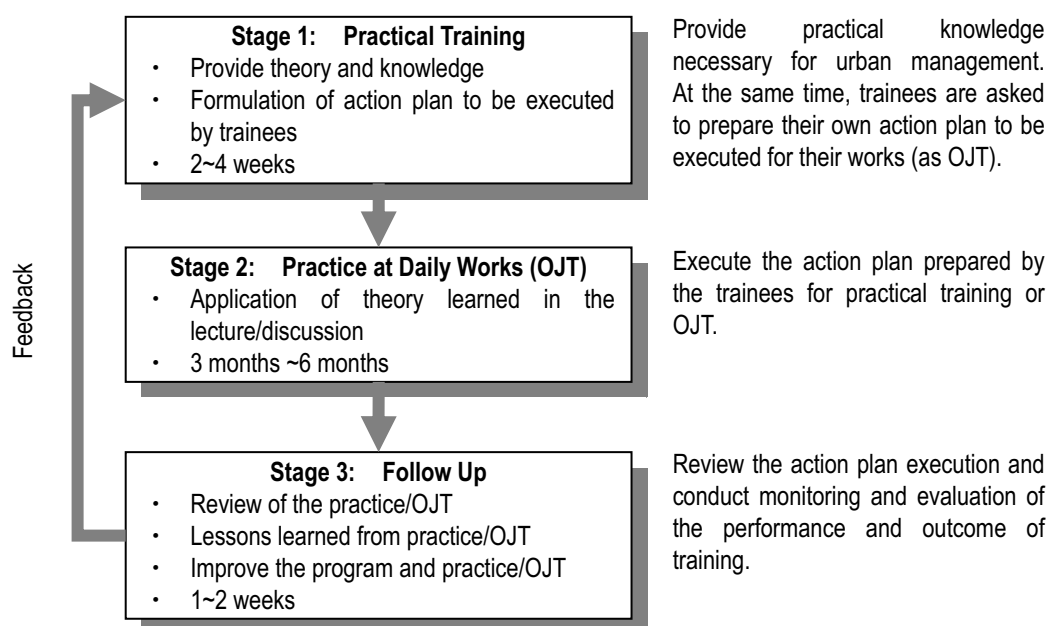


Figure 12.7: An Effective Capacity Development Scheme

2) Human Resource Development

Objective of human resource development is to develop urban management skills and create personnel who can be leaders in Mamminasata. Human resources development focuses on strengthening of implementation capability which covers (i) legal strengthening, (ii) coordination strengthening, (iii) land database strengthening, (iv) project finance strengthening, (v) environment management strengthening, (vi) transport management strengthening, and (vii) general administrative skills.

Target of human resource development is BPPM candidate staff, related field from BKSPMM and other technical organizations such as BAPPEDALDA and BPN.

No. 1 Legal strengthening	
Objective:	Clear legislation and strong enforcement is mandate for land use control. Legislation necessary for land use control has to be available and enforcement has to be strengthened
Justification:	There is no zoning regulation that shows clear guidance on land use control and existing legislation (law and regulation both at central government and regional government level) is not obeyed. In order to create urban environment unique to the Mamminasata Metropolitan area and strengthen land use control, legislation has to be prepared and enforcement activity has to be strengthened
Activities:	(i) Drafting of legislation (ii) Clarifying enforcement measure (iii) Dissemination of legislation to stakeholder (BKSPMM, developer, private organizations)
Target group:	BPPM Provincial Secretariat (legal section) Dinas Spatial Planning (Province & District/City) BAPPEDA (Province & District/City)

No. 2 Coordination strengthening	
Objective:	Objective is to strengthen coordination between BPPM and BKSPMM in implementation of urban development
Justification:	Since implementation of urban development involves many stakeholders, government and non-government, coordination among them is important for efficient implementation.
Activities:	(i) Meeting arrangement (ii) Public relations (iii) Business administration (relevance, efficiency, effectiveness, accountability) (iv) Stakeholder participation (v) Community involvement (public consultation)
Target group:	BPPM BKSPMM Non-government organization

No. 3 Land database management	
Objective:	Objective of the database management is to establish land data base with standard format, strengthen database management including update, sharing, utilized for urban development.
Justification:	Database on land has to be available and has to be shared among stakeholders for urban management. Also database is scattered through a variety of organizations for different purpose, format is different, and data is not shared. It is necessary to prepare database with same format so that whoever needs data can have access to the data.
Activities:	(i) Preparation of maps covering Mamminasata Area (ii) Establishment of land use database (GIS, CAD, and other forms) with same format by combing the data from related agencies such as BPN, central and local government (iii) Database management (update, sharing)
Target group:	BPPM Provincial Secretariat (legal section) Dinas Spatial Planning (Province & District/City) BAPPEDA (Province & District/City) BPN BAPPEDALDA (Province & District/City)

No. 4 Project finance strengthening	
Objective:	Objective of the project finance is to strengthen financial capability for the Mamminasata urban development by introducing PPP and other project finance scheme.
Justification:	Mamminasata urban development requires a large amount of fund. Since government fund is limited, it is necessary to seek for the funds from private sectors or international donors. It is also necessary to consider self-finance urban development scheme.
Activities:	(i) Introduction of project finance scheme (ii) Public Private Partnership (PPP) (iii) Search for investment opportunity
Target group:	BPPM BAPPEDA

No. 5 Environment management	
Objective:	Objective of environment management is to improve natural environment such as air and water and also to improve urban amenity such as green space and parks.
Justification:	Urban environment is one of the most important issues in the Mamminasata urban development.
Activities:	(i) Environmental monitoring (air, water, solid waste) in urban area, coastal area and forest area (ii) Urban amenity improvement
Target group:	BPPM Dinas Spatial Planning (Province & District/City) BAPPEDALDA (Province & District/City)

No. 6 Transport management	
Objective:	Objective of transport management is to strengthen transport management and improve road development system
Justification:	Transport condition can not be solved simply by increase road network and capacity. Transport management including vehicle management, lane management, road development system shall be strengthen to reduce traffic congestion
Activities:	(i) Vehicle management (becak, petepete, automobile) (ii) Separate lane for different transport mode (iii) Traffic light management (iv) Road development system (land acquisition, tax)
Target group:	BPPM Dinas Spatial Planning (Province & District/City) Dinas Transport (Province & District/City)

No. 7 General administrative skills	
Objective:	Objective of administrative skills to improve computer, writing, and mathematics skills necessary for daily works
Justification:	Urban management requires data collection and most of which is available through internet. Mathematics skill is weak for many government officials. Basic mathematics needed for development management has to be provided.
Activities:	(i) Computer (word, excel, mapping, internet) (ii) Mathematics
Target group:	BPPM Dinas Spatial Planning

13. CONCLUSION AND RECOMMENDATION

13.1 Conclusion

The Study on Implementation of the Integrated Spatial Plan for the Mamminasata Metropolitan area, as presented in this report, will lead to the following conclusions.

- 1) This Study has put emphasis on the protection of the environment and the betterment of the amenity in the Mamminasata area, modifying the direction of the existing plans. Through discussions at Workshops and Working Group meetings, this modification has been supported by stakeholders in the region. Stakeholders are willing to hand over a better environment and amenity to the generations to come.
- 2) With the increased population and advanced urbanization in Makassar, land use patterns would inevitably be changed not only in Makassar but also in other regencies in Mamminasata. Such a change should not be left as it is made independently, but it should be well coordinated, guided and regulated under the spatial plan not only at the regency level but at the regional level in Mamminasata.
- 3) The economic development target set as one of frameworks for the integrated spatial plan in Mamminasata, particularly for agriculture and manufacturing sectors, will be attainable if development efforts are made to the direction as indicated in this Study. Such a target, however, will not be attainable without strenuous efforts of the public and private sectors, as well as support of the academic sector.
- 4) In the event that the economic development targets are attained as programmed, employment opportunities will be substantially increased and the unemployment rate could be lowered to the level of around 5%. With more employment opportunities, the poverty rate will no doubt be lowered though it has not been quantified. The standard of living of the people in Mamminasata will be enhanced as a whole.
- 5) With a common target set under the integrated spatial plan, dynamism would be created and expanded in every part of the development activities in

Mamminasata. The integrated spatial plan for Mamminasata would serve as a model for future development of regional Metropolis in Indonesia.

- 6) A large investment will be required to improve economic infrastructure as well as to improve urban infrastructure as proposed in this Study. Most of such infrastructure will be required for integrated regional development and not for specific regency where it is located. Consequently, cooperation among regencies in Mamminasata is indispensable to attain the common objectives for development.
- 7) Funds available for public investment in infrastructure projects are limited, and financially profitable projects should be implemented by the private sector as far as possible. Since urban and economic infrastructure that are non-profitable and/or semi-profitable are managed and implemented by the public budgets at the national, provincial and regency levels, additional public investment funds would be required for Mamminasata. In this context, the regency governments should earmark more development expenditures (currently around 20% of municipality and regency expenditures in Mamminasata), saving the routine expenditures (currently about 80%).
- 8) The proposed programs will not be successfully implemented only with the financial arrangements. Their sustainability will more depend on a strong commitment and initiative of all stakeholders, particularly in the public administration. Such a commitment will be led by the institutional arrangement for implementation. At the same time, every stakeholder should observe the rules and regulations to be set out for spatial development and management in Mamminasata. Without such a firm commitment and observation, the spatial plan for Mamminasata will not be sustainable.

13.2 Recommendation

Various recommendations have been presented for implementation of the regional and sectoral development plans. For successful implementation as an integrated spatial plan, overall recommendations are presented in a summarized form, as follows.

- 1) District spatial plans for Makassar, Maros, Gowa and Takalar regencies should be elaborated by referring to the Mamminasata spatial plan, and they should be well coordinated among them. Unless otherwise, both district spatial plan and Mamminasata spatial plan will turn out to be useless. It is therefore recommended that the district spatial plans be formulated and implemented in conformity with the principles and recommendations presented in this Study.
- 2) In formulating the district spatial plans, it is desirable that the database be commonly used for easy reference among districts, as well as for easy coordination if and when required. Since the database used for this Study is made available, including GIS database, it is recommended that the database be utilized to the utmost extent by the district offices in charge.
- 3) District spatial plans should also be formulated in due consideration of the budget for development expenditures in each regency. Since the regency's budget for development is currently limited to an average of 20% of total budget and the remaining 80% is earmarked for personnel and other routine expenditures, it is recommended that the routine expenditures be reduced to secure more budget for development expenditures.
- 4) For better coordination in implementation, the provincial government should take initiative in setting up a management office for the Mamminasata spatial plan. Such a management office should be staffed with highly capable experts and granted with proper authorities for management. It should better be supported by a board or committee composed of representatives from the public, private and academic sectors. It is recommended that the management office and board/committee be organized by the provincial government at the earliest for the realization of "**coordinated**" Mamminasata metropolitan area.

- 5) Collaboration and partnership with the private sector is of vital importance for the successful implementation of the Mamminasata spatial plan. Likewise, partnership with the academic sector should also be promoted further and the wisdom of the public, private and academic sectors are collectively mobilized to realize “**creative**” metropolitan Mamminasata. At the same time, cooperation and collaboration with local NGOs is to be promoted, particularly for the creation of “**clean**” Mamminasata.
- 6) For coordinated management of the implementation of the Mamminasata spatial plan, as well as for the implementation of the district spatial plans, it is desirable that a Presidential Decree be set forth to regulate the manners for planning and implementation. It is recommended that the initiative be taken by the Ministry of Public Works for the promulgation of the Presidential Decree for the Mamminasata spatial plan.
- 7) Irrespective of whether the Presidential Decree is promulgated or not, adequate codes, rules and regulations are to be set forth for land use, urban development, traffic management, environmental management and other management for the implementation of the spatial plans, as discussed preliminarily in this Study. It is recommended that adequate measures be taken for the establishment of such codes, rules and regulations for the implementation of the Mamminasata spatial plan.
- 8) In view of the fact that the public awareness is weak, particularly in the protection of the environment and amenity, various initiatives should be taken to motivate the people in protecting the environment and respecting the public interest. Several pilot operations in the course of this Study (e.g., a painting contest, green campaign, tree planting, a health exchange program for garbage collection, a trial in environmental education) have demonstrated that the public awareness can be enhanced through a participatory approach. It is therefore recommended that the participatory approach be applied in motivating the people to create a **clean, creative and coordinated** metropolitan area of Mamminasata.
- 9) Measures should be immediately taken to implement the short-term action programs proposed under this Study. Such programs would require budgetary arrangements for implementation at the national, provincial and regency levels. Since the available financial resources are limited at each

level, loans on concessional terms should be secured so that the annual fund requirements for infrastructure development and other large investments would be minimized. It is recommended that such loans be requested to the international financial institutions, preferably in packages to facilitate the coordinated implementation.

- 10) The implementation of the Mamminasata spatial plan should be monitored periodically and lessons should be learned by all stakeholders. Since the social and economic situations are changing year by year, it is recommended that the proposed Mamminasata spatial plan be reviewed and updated after five years, in or around 2010.