MINISTRY OF PUBLIC WORKS

MAMMINASATA METROPOLITAN DEVELOPMENT
COOPERATION BOARD (MMDCB)

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

THE STUDY ON IMPLEMENTATION
OF INTEGRATED SPATIAL PLAN
FOR THE MAMMINASATA METROPOLITAN AREA,
SOUTH SULAWESI PROVINCE IN INDONESIA

INTEGRATED SPATIAL PLAN FOR MAMMINASATA METROPOLITAN AREA

covering
Makassar, Gowa, Maros and Takalar

FINAL REPORT

SUMMARY

JULY 2006

KRI INTERNATIONAL CORP.
NIPPON KOEI CO., LTD.

Final Report

1. SUMMARY
   with electronic version of Summary Report, Main Report, Sector Study Report and Pre-Feasibility Study Report

2. MAIN REPORT
   with electronic version of Main Report, Sector Study Report and Pre-Feasibility Study Report

3. SECTOR STUDY REPORT

4. PRE-FEASIBILITY STUDY REPORT

Preface

In response to the request from the Government of Indonesia, the Government of Japan decided to conduct “The Study on Implementation of Integrated Spatial Plan for the Mamminasata Metropolitan Area, South Sulawesi in Indonesia” and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA dispatched a study team to Indonesia over the period from April 2005 to June 2006. The Study team consists of KRI International Corp. and Nippon Koei Co., Ltd, headed by Mr. Hajime KOIZUMI as Team Leader.

The Study team held a series of discussions with the concerned officials in the Central and Local Government of Indonesia, people of experience or academic standings, and private institutions such as urban planner and NGOs, and conducted related field surveys and trainings, study trip to Curitiba city in Brazil, and participatory pilot projects of tree planting and food in exchange for collected garbages. After returning to Japan, the Study team made further studies and compiled the final results in this report.

It is hoped that this report will contribute to the implementation of Integrated Spatial Plan for Mamminasata Metropolitan Area and to enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the concerned officials in the Central and Local Government of Indonesia and all the people involved in the course of the Study for their close cooperation extended to the Study team.

July 2006

Takashi KANEKO
Vice-President
Japan International Cooperation Agency

July 2006

Mr. Takashi KANEKO
Vice-President
Japan International Cooperation Agency (JICA)

Letter of Transmittal

Dear Sir,

We are pleased to submit to you the Final Report for "The Study on Implementation of Integrated Spatial Plan for the Mamminasata Metropolitan Area, South Sulawesi Province in Indonesia". This Study has been conducted by the Study Team organized by KRI International Corp. and Nippon Koei Co., Ltd in collaboration with counterpart experts assigned by the Ministry of Public Works through the Directorate General of Spatial Planning and the Mamminasata Metropolitan Development Cooperation Board (MMDCB) of South Sulawesi .

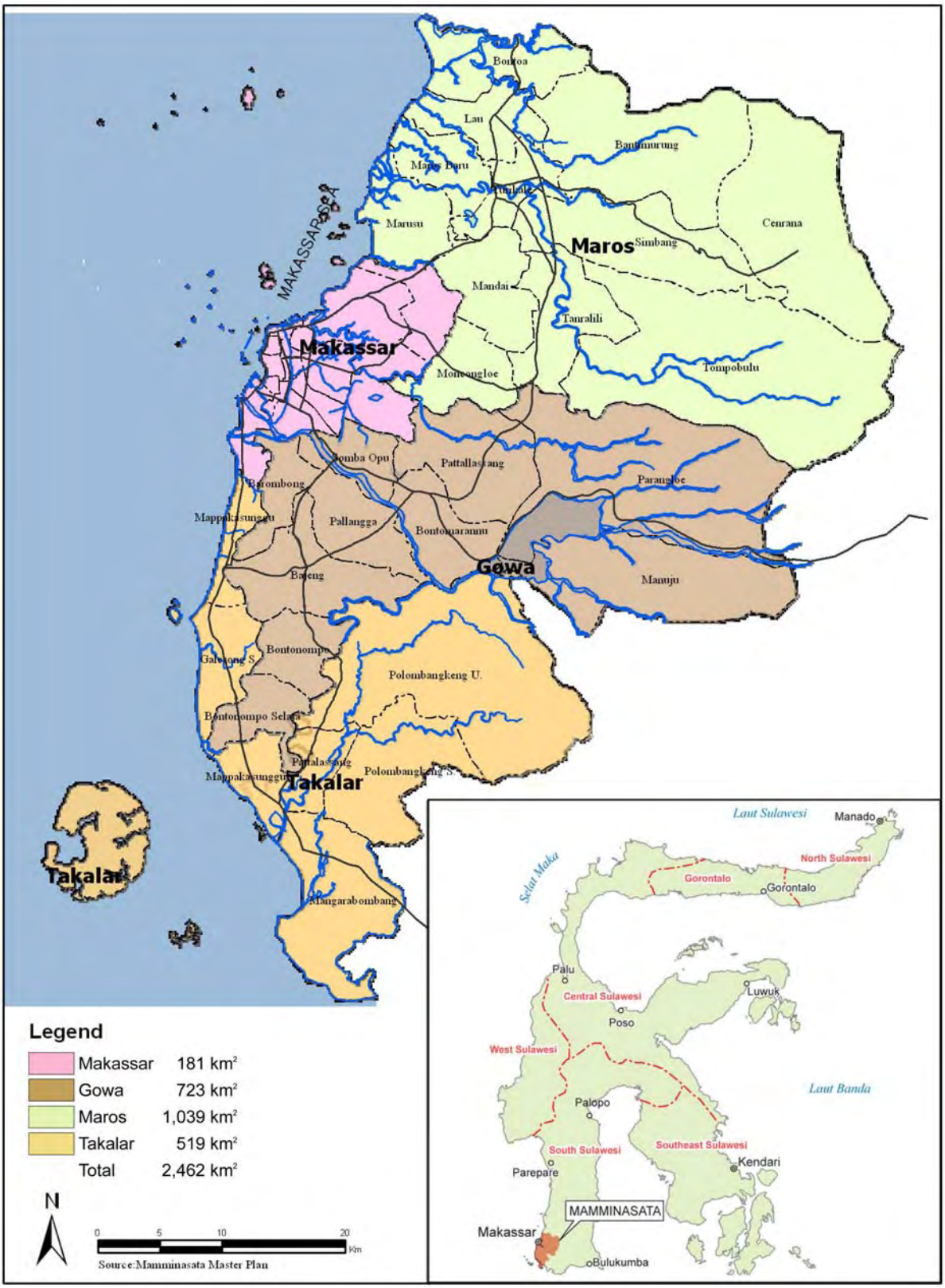
A participatory planning approach has been applied to this Study by means of discussions and exchanges of views with stakeholders at six workshops, seven seminars, and over 30 working group meetings. Likewise, university students joined the seminars and primary/secondary school pupils participated in a painting contest in which they were asked to present images of their towns after 20 years. The participatory approach has also been applied to the execution of some pilot demonstration projects in tree planting, garbage collection and exchange, as well as in environmental education.

The Final Report is composed of (i) Integrated Spatial Plan for Mamminasata, (ii) Sector Study Papers, and (iii) Pre-feasibility Study on some selected priority projects. It is hoped that these reports will serve to facilitate better implementation of the spatial plan with a common target of creating a clean, creative and coordinated metropolitan area in Mamminasata.

The Study Team wishes to express its heartfelt gratitude for the valuable assistance and cooperation received from the counterpart experts and public and private institutions, as well as from the people of Mamminasata, during the execution of the field study in South Sulawesi. This Final Report is the fruit of cooperation and collaboration of all the personnel that joined the Study.

Very truly yours,

Hajime KOIZUMI
Study Team Leader



Study Area Map: Mamminasata Metropolitan Area

INTEGRATED SPATIAL PLAN FOR
THE MAMMINASATA METROPOLITAN AREA,
SOUTH SULAWESI PROVINCE
IN INDONESIA

SUMMARY

Table of Contents

Electronic Version

1. Summary Report
2. Main Report
3. Sector Study Report
4. Pre-Feasibility Study Report

Currency Equivalents
US Dollar 1.00 = Rupiahs 9,700.–
(Average in 2005)
unless otherwise specified.

Summary

Background

1. Indonesia, with a population of 215 million (2003), has attained steady economic growth since the late 1990s. The national average per capita GDP reached Rp.7.26 million in 2002. The population and economy, however, are unevenly distributed by region and province, with a notable concentration on Java island. Major metropolitan areas in Java, like Jakarta and Surabaya, have been developed in a less coordinated manner with notable immigration to such metropolitan areas. To attain more equitable social and economic development over the country, as well as more harmonized development in urban, semi-urban and rural areas, the Government of Indonesia, through the Directorate General of Spatial Planning of the Ministry of Public Works, has been formulating spatial development plans at the regional, provincial and regency levels. This Study intends to serve as a model of spatial planning for future development of metropolitan areas at the provincial level.

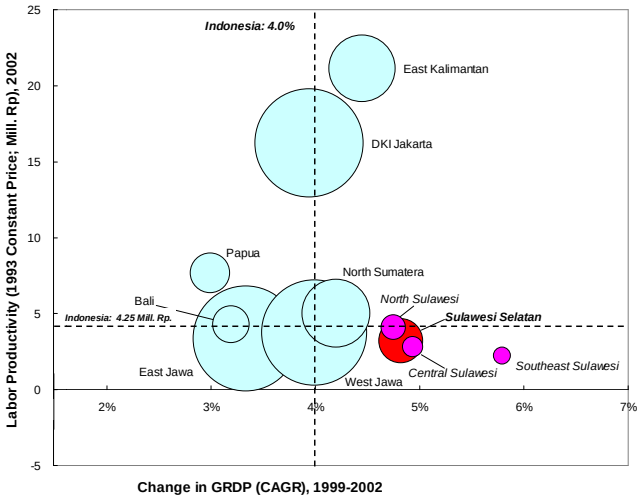


Fig. S-1: Economic Performance in 1999-2002

2. South Sulawesi province (population of about 8.3 million) has attained a higher rate of economic growth than the national average in recent years. The provincial average GDP per capita, however, remains at a level of about 60% of the national average with low labor productivity. While the South Sulawesi population accounts for about 3% of the national total, it contributes only 2% of the national GDP.

Table S-1: Socio Economic Comparison

	South Sulawesi	Sulawesi Region	Indonesia
Population (2003) ('000)	8,253	15,382	215,276
Population share (Sulawesi)	53%	-	-
Population share (Indonesia)	3.8%	7.1%	-
GRDP (2002) (Rp.million)	36,550,293	69,193,213	1,610,011,612
GRDP share (Sulawesi)	52%	-	-
GRDP share (Indonesia)	2%	4%	-
GRDP per capita (2002) (Rp.)	4,412,138	4,487,962	7,262,048

Source: Statistical Year Book of Indonesia 2003, BPS

In order to accelerate the provincial economy, the provincial government decided to formulate a plan to develop a regional center in the Mamminasata Metropolitan area, which encompasses urban, semi-urban and rural areas in Makassar city and the Maros, Gowa and Takalar regencies. JICA has been requested to upgrade the existing spatial plan, setting up a clearer picture for the target year 2020 and recommending strategies for better implementation of the plan. (Refer to Main Report, Chapter 2)

3. The study has been conducted by the JICA team in collaboration with the Indonesia counterpart experts, who are listed in Annex 1. The JICA and Indonesian experts organized five Working Groups for discussions and sector studies. More than 30 working group discussions have been held in the course of the study. Workshops have also been held several times for exchange of views among study members, academic circles, NGOs and other stakeholders. To understand the views of the younger generations, a painting contest by the secondary and high school students has been made. Technology transfer by the JICA team has been made at workshops and seminars. A special training course has also been extended for GIS assisted interpretation and planning. A study trip to Curitiba, Brazil has offered valuable lessons in environment-friendly and human centered urban planning.

Mamminasata Metropolitan Area

4. The Mamminasata Metropolitan area, which is composed of Makassar city, Gowa, Maros and Takalar regencies, has an area of about 2,462 ㎢ with a total estimated population of 2.25 million (2005). The Mamminasata area accounts for 36% of the GDP in South Sulawesi, while Makassar city contributes nearly 77% of the Mamminasta economy. You will understand the significant role that the Mamminasata area would play in economic development of South Sulawesi. Despite such important roles, the development activities in Mamminasata have remained less dynamic.

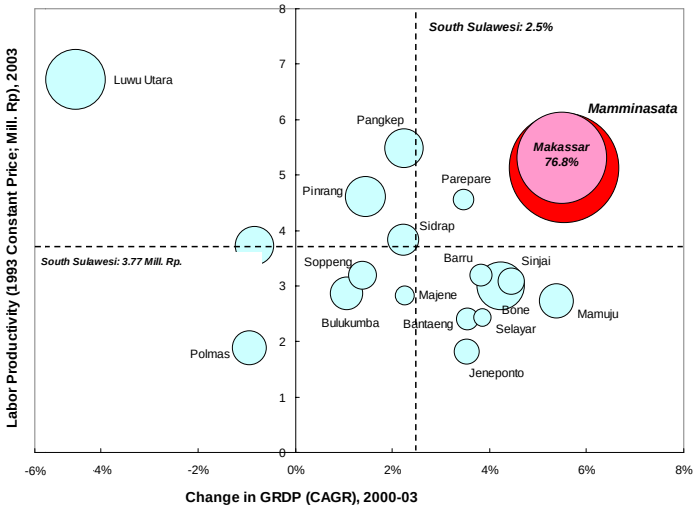


Fig. S-2: Economic Performance of Mamminasata in 2000-2003

Objectives for Mamminasata Spatial Planning

5. Through discussions to reach agreement with stakeholders in the region, the Mamminasata spatial plan has been formulated with four objectives; i.e., (i) to set up a common target and common image for the future of Mamminasata for the benefit of all the people and stakeholders, (ii) to create a dynamic and harmonized Metropolitan area along with preservation of the environment and enhancement of amenities, (iii) to enhance the standard of living for the people, ensuring employment and adequate social services, and (iv) to serve as a model for the future development of other metropolitan areas in Indonesia. The goal adopted is to create a Mamminasata Metropolitan area that is comfortable to live in for generations to come. Every effort of stakeholders must be directed to create a **Clean, Creative and Coordinated Metropolitan Mamminasata**. (Refer to Chapter 3)

Development Frameworks

6. By the year 2020, the Mamminasata population would reach 2.88 million at an annual average increase rate of 1.7%, with the total population increasing by 630,000 in 15 years. The population would become much closer to a typical urbanized pattern with a rectangular shaped population pyramid. With a moderate growth scenario, the framework is set such that GRDP would grow at an annual average rate of 7.1% and reach around Rs.13.9 trillion in 2020. Agricultural contribution to the regional economy would decrease from 13.3% in 2005 to around 7.5% in 2020 despite the steady growth of agricultural production at an average rate of 3% per annum. The contribution of the service sector, on the other hand, would increase from 51% to 63% during the plan period. Due attention should be paid to such a shift in the social and economic structure of the region. (Refer to Chapters 4.1 to 4.3)

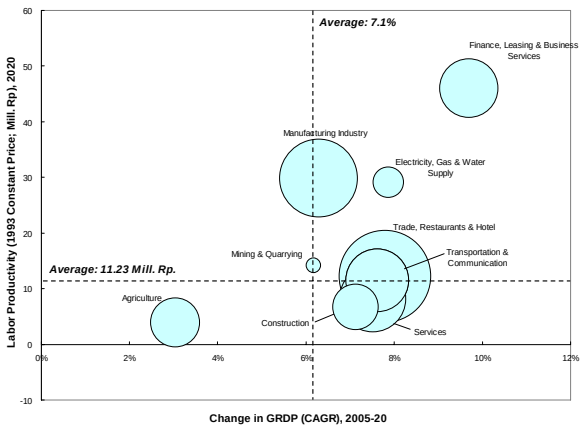


Fig. S-3: Projected Economic Performance of Mamminasata (2005~2020)

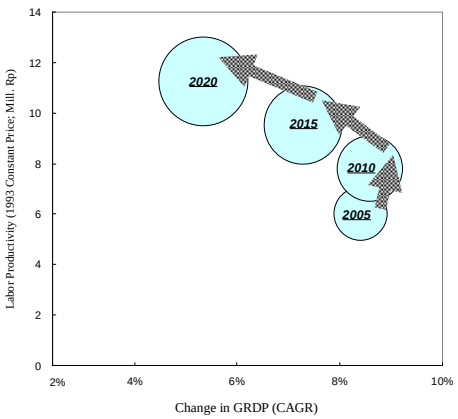


Fig. S-4: Moderate Growth of the Mamminasata Economy

7. Poverty reduction is still an issue to be addressed in Mamminasata. The poverty rate in South Sulawesi remains at around 16% (2002), while in Mamminasata it varies from regency to regency (e.g., 5.6% in Makassar and 23.7% in Maros). A target of reducing the poverty level to 3–14%, depending on the present conditions of the regency, has been adopted. Since the public investments are to be limited to around 3–4% of GDP, according to the BAPPENAS' guideline, more efforts are needed to stimulate the private sector to invest in the creation of employment and economic development, with the resultant reduction of poverty in the region. (Refer to Chapters 4.4 and 4.5)

8. Although the Mamminasata economy is to grow at a relatively high rate and the poverty rate is to be reduced, the development frameworks are set by paying equal or even more attention to the protection of the environment and amenity in the region. This is because green areas and forest areas have been substantially reduced and the urban amenity has deteriorated with increased population and a lack of awareness on the environment. It is proposed that the green area in Makassar is to double from 440 ha in 2005 to 880 ha by 2020. The total green and forest areas in Mamminasata would increase by 25,000 ha in 15 years. A spatial structure should be formed in due consideration of the green areas and environmental protection, in addition to the future land use requirements for urbanization of the increased population. (Refer to Chapters 4.6 and 4.7)

An Image Photo of Green Open Space

Table S-2: Green Area Framework for Mamminasata

		MKS	Maros	Gowa	Takalar	Total
Current *	(%)	2.4	44.5	19.8	19.0	28.7
	(ha)	440	46,620	14,300	10,450	71,810
Future Target	(%)	5.0	57.0	33.0	22.0	38.0
	(ha)	880	59,440	23,900	12,590	96,810
Additional Area Required	**(ha)**	**+440**	**+12,820**	**+9,600**	**+2,140**	**+25,000**

Note: *Current green area includes forest, bushes and grass land identified by the land use map prepared by BPN

Spatial Development Strategy

9. It is widely expected that Mamminasata would serve as a hub for administrative, social and economic development in Eastern Indonesia. In view of the available regional resources, it is proposed that Mamminasata would serve as a logistic and trade hub in the future. In South Sulawesi, the Mamminasata metropolitan area would be developed as a regional center, while other major cities would serve as sub-regional centers. Mamminasata and South Sulawesi are to be developed as clusters (i.e., Mamminasata Cluster and South Sulawesi Cluster), promoting vertical and horizontal integration of the industrial activities. More values are to be added in every step of the value chain, particularly in the processing industries. (Refer to Chapters 5.1 to 5.3)

Fig. S-5: Spatial Structure in South Sulawesi Cluster

10. Along with economic enhancement, more attention is to be paid to the protection of the environment in Mamminasata. Since water and air pollution are progressing with the increased volume of untreated sewerage and solid waste, as well as traffic congestion, increased measures for environmental protection are essential. Public awareness on the environment, reduction-reuse-recycling (3R) of solid waste and proper environmental management are needed to create a cycle-oriented society in Mamminasata. A participatory approach is indispensable for the creation of such a society, as well as for the protection of the environment. Without proper environmental management, Mamminasata could turn out to be an unhealthy and uncomfortable area to live in. (Refer to Chapters 5.3 to 5.7)

Losari beach where solid wastes are floating

Stuck drainage where solid waste is dumped

Spatial Plan for Mamminasata

11. A clear definition of land use zoning is proposed for Mamminasata, classifying the land into urban, semi-urban, productive and protection zones. For the increased population towards 2020, about 7,000 ha of land will be required for residential use. For more value added in processing industries, additional land of about 700 ha will be needed. The green and forest areas, as previously discussed, would reach nearly 97,000 ha, including the reforestation of 25,000 ha. Special attention is paid in the land use zoning to the riparian lands where the eco-system is sensitive and unrecoverable once they are damaged. It is for this reason that the estuary of the Tallo River running to the north of Makassar is designated as a controlled area in the urban planning zone, and use of the land for industrial, commercial and residential development is to be restricted. (Refer to Chapter 6.1)

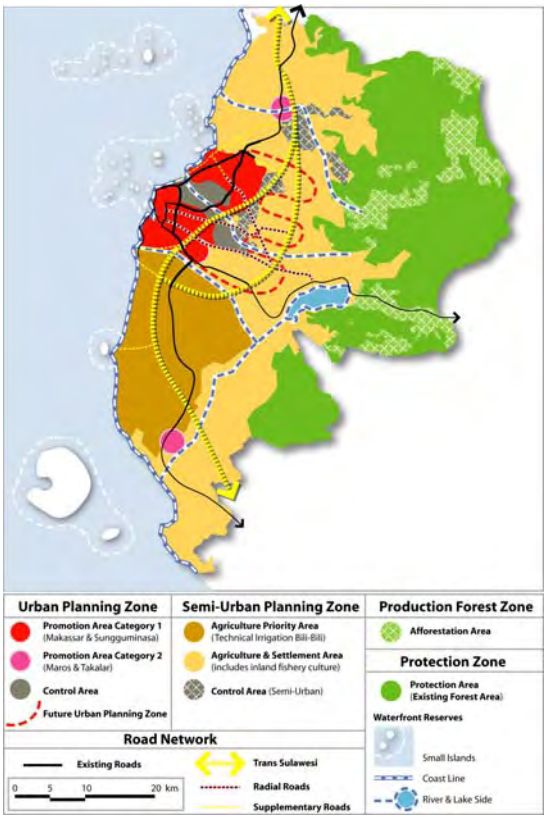


Fig. S-6: 9 Land Use Areas in Mamminasata

12. Makassar city is congested with households and commercial activities with the least green spaces. Traffic congestion has also been aggravated. Under the proposed spatial plan for Mamminasata, the population would be guided to live more in sub-urban planning zones. The Figure shows the current and planned population in Makassar as well as in other regencies. For the increased population, some new towns would be developed to the east of Makassar.

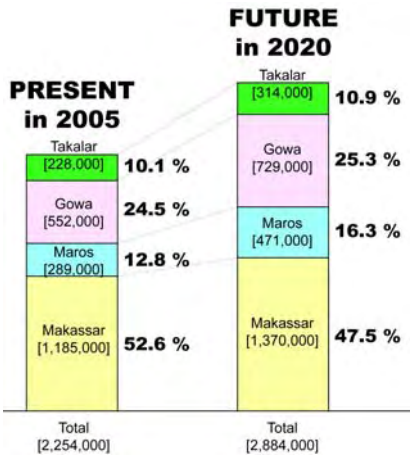


Fig. S-7: Future Population in each Regency Urbanization

Fig. S-8: Development Image of New Urbanization

13. In the downtown area of Makassar, historical buildings, trees and other heritages are being damaged, in addition to the uncontrolled and congested housing and commercial activities. For instance, the Fort Rotterdam and its surrounding area would better be renovated with more green spaces for the amenity and better landscape. Likewise, the land along the major roads would better be developed with higher utilization in land use. Adequate land use regulations would be promulgated to control the land use in urban and semi-urban areas.

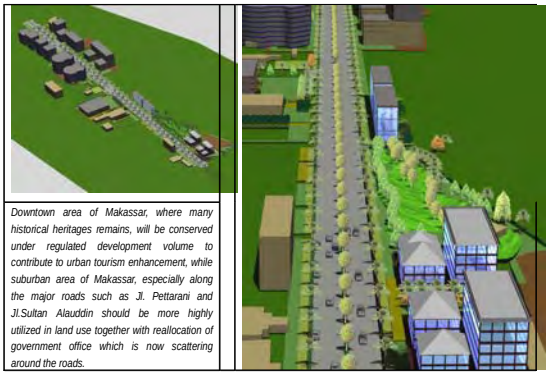


Fig. S-9: Higher Utilization along Major Roads

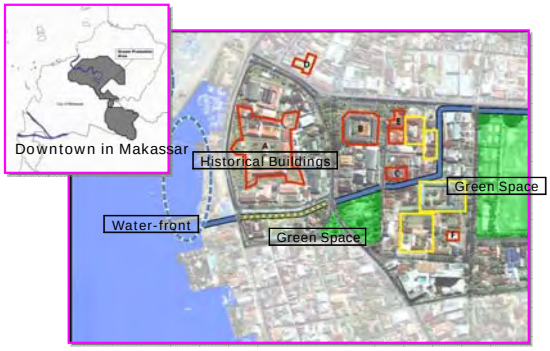


Fig. S-10: Image of Downtown Renovation

14. Urban sprawl is in progress, and Makassar and other urban centers in Mamminasata are becoming environmentally less attractive cities. Some initiatives are being taken by the public and private sectors, such as a project for the beautification of Kasi-Kasi street with greenery and flowers, but the results leave much to be desired. Streets, canal sides, river and ocean fronts are littered with garbage, resulting in water contamination. Non-maintained ditches and drains are lowering the drainage capacity and causing local inundation of low lying urban areas. Since no sewerage treatment is available, contamination will become worse if the public sector and individuals do not take appropriate measures. A pilot project executed in the course of this Study implied that even a small investment in solid waste management would increase public awareness, reduce wastes, and improve the urban environment. (Refer to Chapter 6.2)

Photo: Kasi-Kasi Street

Photo before garbage collection

Photo after garbage collection

Photos showing before and after Clean Canal Pilot Project

15. The administrative and environmental officials in Mamminasata learned valuable lessons from an inspection trip to Curitiba, Brazil, where even with a limited budget environmental protection and increased green space has been achieved through stakeholders' participation. The participatory approach was seen to be effective, and it should be applied to the protection of the environment in Mamminasata so that the people's awareness is enhanced and they assume proper responsibility. Since the environmental regulations are relatively well established, the monitoring system should be reinforced. Further, each regency in Mamminasata should take proper measures for the betterment of the environment, individually and collectively. Biodiversity and ecosystems should be protected to the utmost extent in Mamminasata. (Refer to Chapter 6.3)

Interview with the Former Mayor of Curitiba City, Brazil →

Image Photograph of Green Metropolitan (Urbanscape of Curitiba City, Brazil)

Economic Development Plan

16. Agriculture remains a major economic activity in Mamminasata, though its contribution to the regional economy is gradually planned to decrease. As the agricultural land extends adjacent to the large consumer center of Makassar, the cropping pattern would be better gradually changed from the paddy-paddy-parawija cropping pattern towards the cultivation of crops of higher value, such as vegetables and fruits. Since the cultivated area would be decreased due to urbanization on the irrigated and non-irrigated lands, such a shift in cropping pattern is rational in maintaining a steady growth in agriculture. Farmers are therefore guided to cultivate marketable crops of higher value. Livestock is to be promoted more strategically in view of the fact that the demand for meat and milk products is increasing in line with the elevated living standards, particularly in the urban area. Offshore, coastal, and inland fisheries are also developed with the advanced technologies as potential demand for fish products is high. With the proposed improvements, agriculture in Mamminasata will attain sustainable growth at an annual average rate of about 3%. (Chapter 7.1)

Fig. S-11: Agricultural Land Use in 2020

17. Processing industries in Mamminsasata will continue to depend primarily on the agricultural and mining products made available in South Sulawesi. Because cacao, vanilla, seaweeds, and other local products are exported, they should be processed more to enhance value added in the region. Cacao processing, for instance, is to be improved in line with the value chain. With improvement in the variety and quality of cacao, Mamminsasata could turn out to be one of the world's major producers of cacao-based products. It is also planned for agro-processing industries to be collectively located to form a cluster in selected areas in Mamminasata, taking into account the harvesting seasons of potential products. Other local resource-based industries, like cement, marble, furniture and so on will also be clustered, so that they could form a complex of housing industries. (Chapter 7.2)

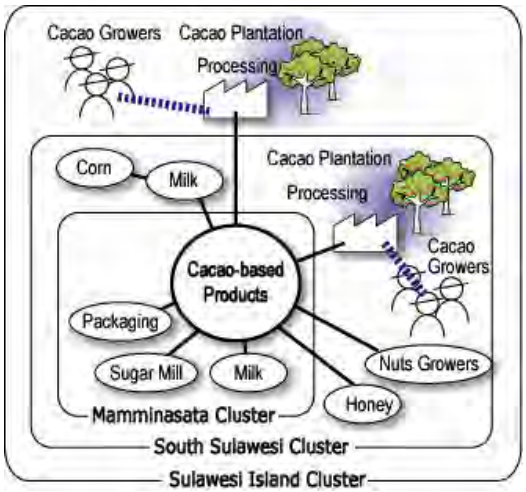
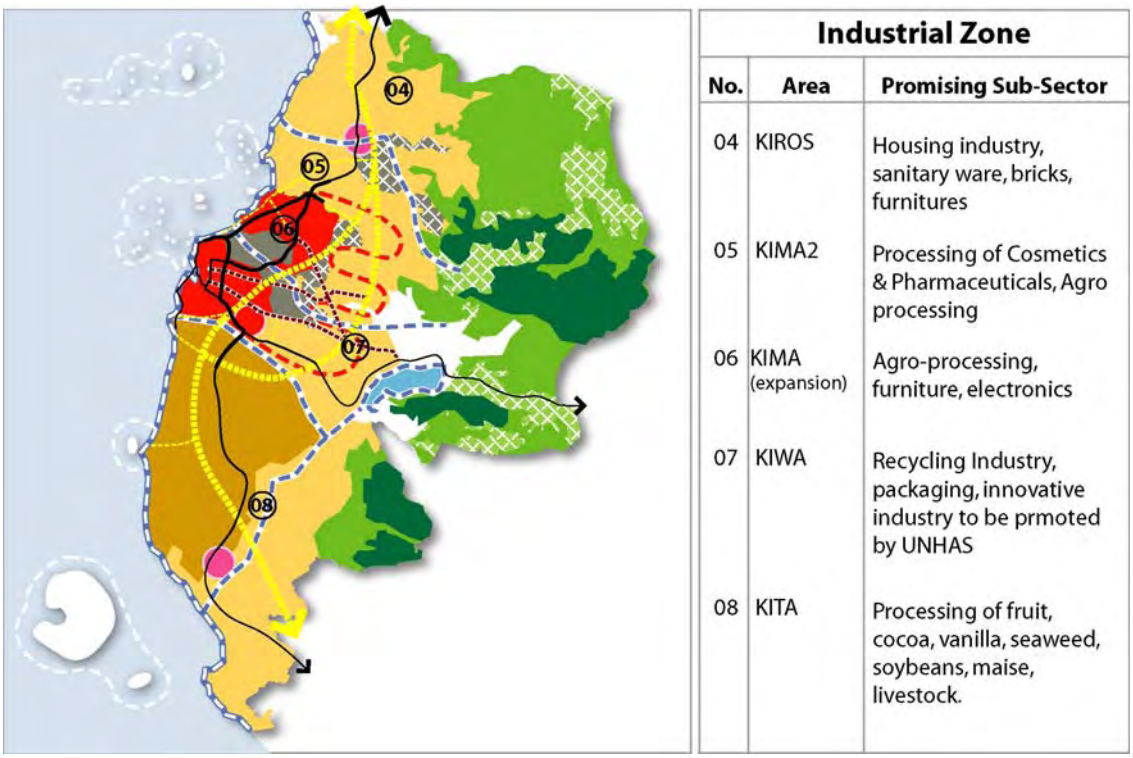


Fig. S-12: An Image of Cacao-based Cluster

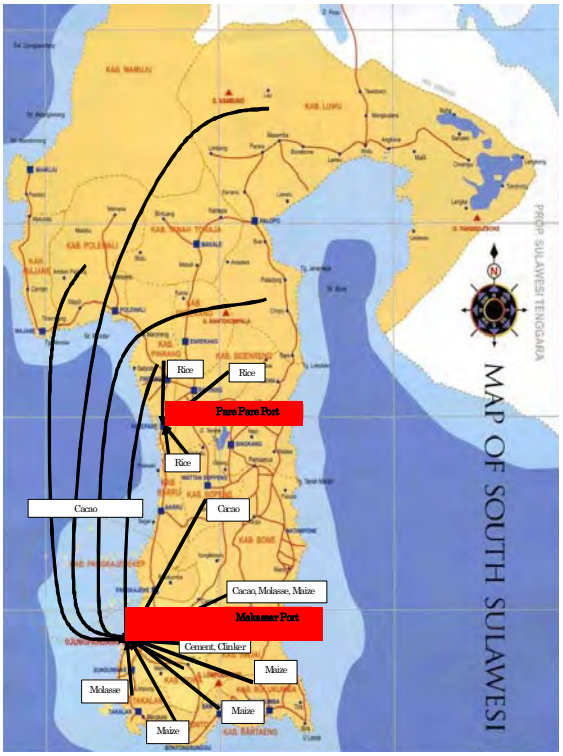


Industrial Zone

No.	Area	Promising Sub-Sector
04	KIROS	Housing industry, sanitary ware, bricks, furnitures
05	KIMA2	Processing of Cosmetics & Pharmaceuticals, Agro processing
06	KIMA (expansion)	Agro-processing, furniture, electronics
07	KIWA	Recycling Industry, packaging, innovative industry to be prmoted by UNHAS
08	KITA	Processing of fruit, cocoa, vanilla, seaweed, soybeans, maise, livestock.

Fig. S-13: Industrial Zoning in Mamminasata

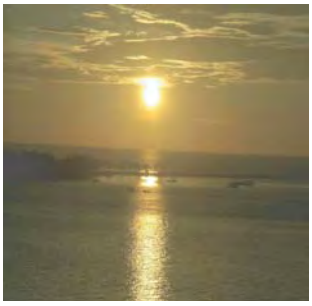
18. Trade should be developed in Mamminasata more strategically in conjunction with the improvement of seaports and airports. Although Makassar has a large number of warehouses, there is little value-adding as raw materials are stored and sold directly to market. One of the reasons for low value adding in trade is the lack of supporting industries, like packaging and labeling, as well as a lack of systems to develop a logistics center. Logistic industries should be strategically developed in line with the improvement in transportation systems. Makassar is also expected to serve as a regional financial center to stimulate the promotion of logistic industries, as well as processing industries. (Refer to Chapter 7.2)



Note: All the routes for commodity transportation indicated in the map use land transportation.

Fig. S-14: Accumulation of Export Goods to Makassar Port

19. Tourism is another industry to be developed in Mamminasata. The Makassar Sunset is a spectacle renowned worldwide. A number of historical and cultural assets in Mamminasata are attractive to both foreign and domestic tourists. Diving around the offshore islands is also renowned. Mamminasata offers both coastal and mountainous attractions within a short distance. Further, Makassar serves as a gateway to the tourist spots of Toraja. Although a drastic increase in the number of foreign tourists is not likely, Mamminasata can count more on the increased number of domestic tourists for MICE (meetings, incentives, conventions and exhibitions). The Makassar Convention Center, now under construction, would greatly contribute to the increase in MICE tourists. In this context, too, Mamminasata should maintain a comfortable environment and amenity in every part of the region. (Refer to Chapter 7.3)



Sunset in Makassar

Image Drawing of
New Convention Center

Urban Infrastructure Improvements

20. Urban infrastructure in Mamminasata has been improved substantially in the last decade, including flood protection and drainage improvement after the completion of the Bili Bili dam and reservoir on the Jeneberang River. Floods in the downstream reaches of the Tallo River, Maros River and Pappa/Gamanti rivers would be mitigated by constructing retarding basins and cut-offs. Further improvement in the drainage system should be implemented mainly through such non-structural measures as rehabilitation of existing ditches and channels, temporary storage of storm water, and legal arrangements. Urban communities are encouraged to assume responsibility for cleaning nearby ditches. (Refer to Chapter 8.1)

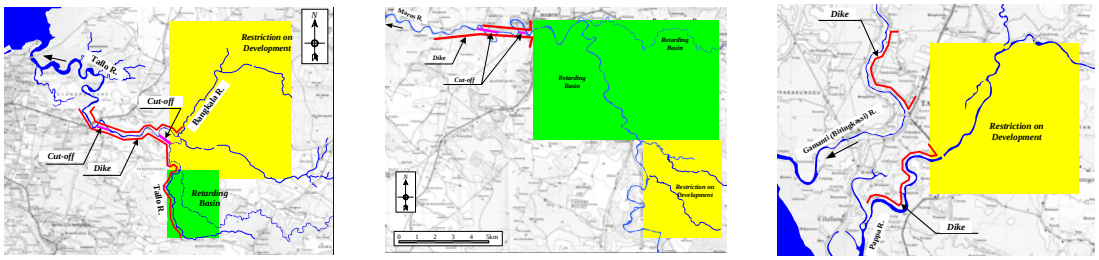


Fig. S-15: Conceptual Plan to River Improvement for Tallo, Maros and Pappa/Gamanti

21. The water supply for the people of Mamminasata is to be improved. The percentage of the population served by treated water is still limited to 70% in Makassar, 10% in Maros, 11% in Gowa and 4% in Takalar. For Makassar and Gowa, expansion of the Somba Opu water treatment plant (from the existing 1,000 m^3/day to 3,000 m^3/day) is needed along with improvement in the high rate of unaccounted-for-water (UFW, at the rate of as high as 48% in Makassar). In Maros and Takalar, the local water supply system should be improved to meet the growing demand for water, as proposed in the pre-feasibility level study (Refer to Chapters 8.2 and 11.1).

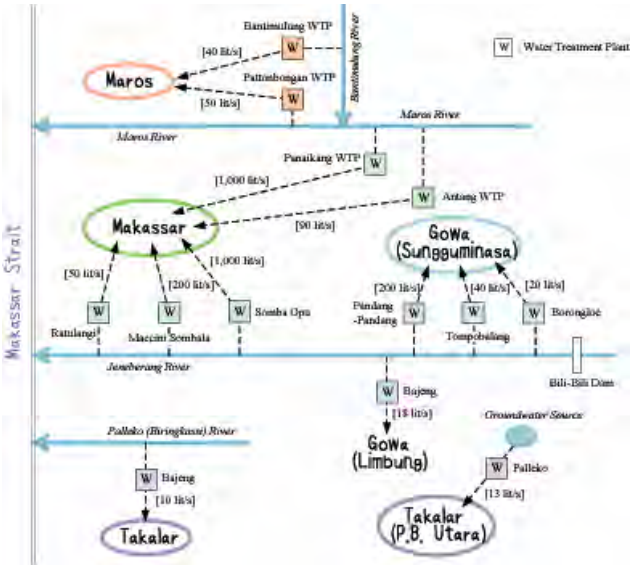


Fig. S-16: Diagram of Treated Water Supply

At the same time, initial steps should be taken to improve sewerage treatment, i.e., (i) an off-site system for areas with a population density of more than 100 persons/ha, (ii) on-site system for the less densely populated urban area, (iii) leaching pits for areas with deep groundwater, and (iv) septic tanks with leaching pits for areas with shallow groundwater. A stage-wise implementation is recommended for the sewerage improvement. (Refer to Chapter 8.2)

Fig. S-17: Long Term Sewerage System Improvement

22. The deficiencies in solid water disposal represent one of the most serious problems to be addressed to recover a **clean** Mamminasata. As noted previously, the streets, drainage canals and ditches are full of garbage, and the existing solid waste landfill site in Makassar is nearly full. Public awareness should be initiated at schools, as experimented. The programs for "community-based garbage separation" and "health exchange program" as demonstrated in the course of this Study should be disseminated systematically. Since a new landfill site is to be developed and Gowa regency is agreeable to open such a new landfill site for Mamminasata, it should be implemented as a project of regional cooperation. A pre-feasibility level study on the construction of this landfill site has been conducted in the course of this Study. (Refer to Chapters 8.3 and 11.2)

Photo Images of Participatory Waste Management

Fig. S-18: An Image of Future Final Disposal, combined with Recycling Function

Economic Infrastructure Improvements

23. The power supply situation is progressively deteriorating because of increased demand, delayed completion of new generating plants, and deterioration of substations and distribution facilities. Some manufacturing industries are closing their factories due to unstable power supply. To ensure stable power supply, the existing power development plan should be reviewed along with a definite schedule for commissioning by independent power producers (IPPs). With the elevated fuel prices in recent years, construction of the planned hydropower stations would make power production less dependent on fuel oil. Likewise, the capacity of transformers should be expanded, particularly at Daya, Tello, Panakkukang and Sungguminasa substations. On the other hand, energy conservation campaign should be promoted as a demand-side management program. Telecommunications in Mamminasata have been improved substantially in recent years. Their services, however, are expensive and unreliable. Further improvements are needed to make Mamminasata a logistics and trade hub in the region. (Refer to Chapters 9.1, 9.2 and 11.3)

Fig. S-19: Future Transmission Grid

24. Traffic conditions in Mamminasata have deteriorated mainly due to the increased traffic volume. Traffic surveys and simulation demonstrate that the congestion would become quite serious along the trunk roads in Mamminasata, especially in and around Makassar, and this would prevent sound economic development and degrade the environment in the metropolitan area.

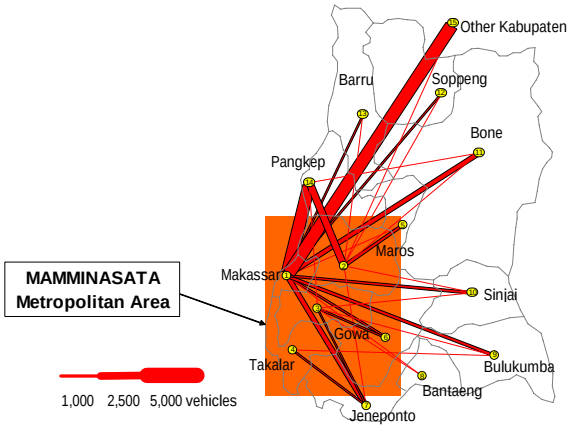
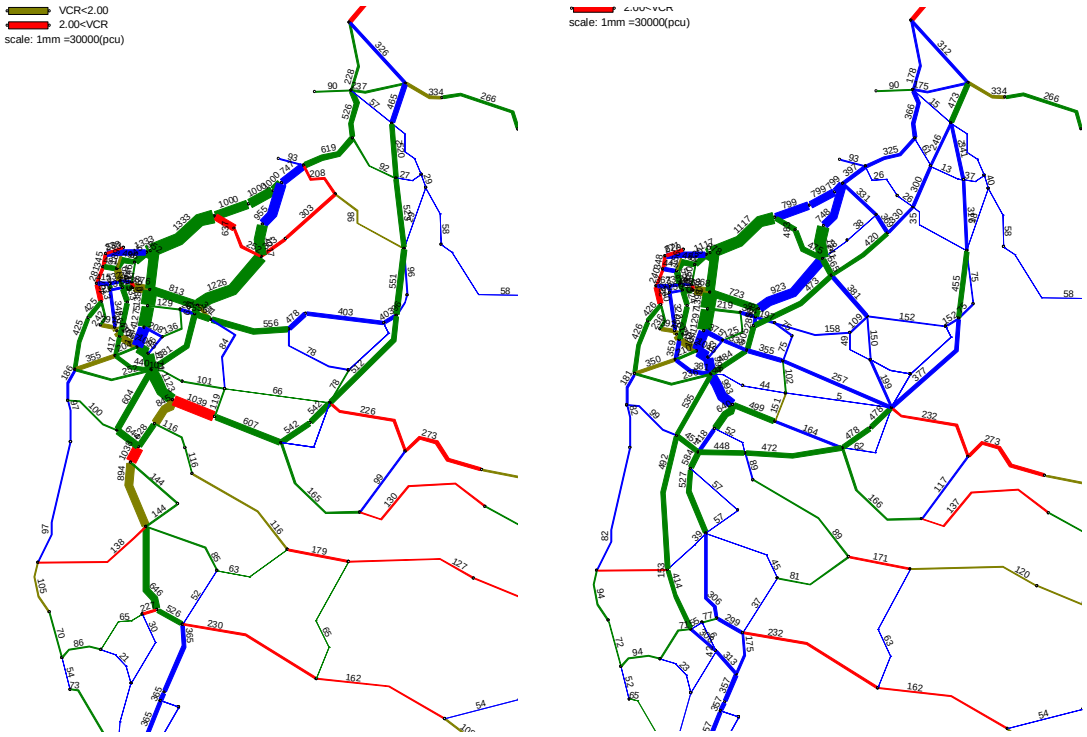


Fig. S-20 Desired Line across Mamminasata



Without Case With Case

Fig. S-21: Traffic Without and With Improvement in 2020

Through the simulation analysis on traffic volume, it has been clarified that the most urgent road improvements are (i) Sutami toll road between Makassar port and Hassanuddin airport (to be implemented by PFI) and (ii) Jl. Perintis together with Jl. Sumoharjo and flyovers (pre-feasibility conducted in the course of this Study). At the same time, a study on the Trans-Sulawesi Road and Mamminasata Bypass should be conducted the soonest. Other short-term improvement projects will include (i) Alauddin road, (ii) Hertasning road extension, (iii) Malino road, and (iv) Takalar access road. Such improvements should be designed to have a better cross section with green-belts. Public transport services should be improved with better bus services and terminals, combined with

Fig. S-22: Overall Road Network Plan [Long Term]

pete-pete and *becak* services for short distances. Traffic demand management is also envisaged in Makassar through changes in the modal mix of transport, proper usage of private cars, more efficient use of vehicles, and effective town planning to minimize traffic load. (Refer to Chapter 9.3 and 11.4)

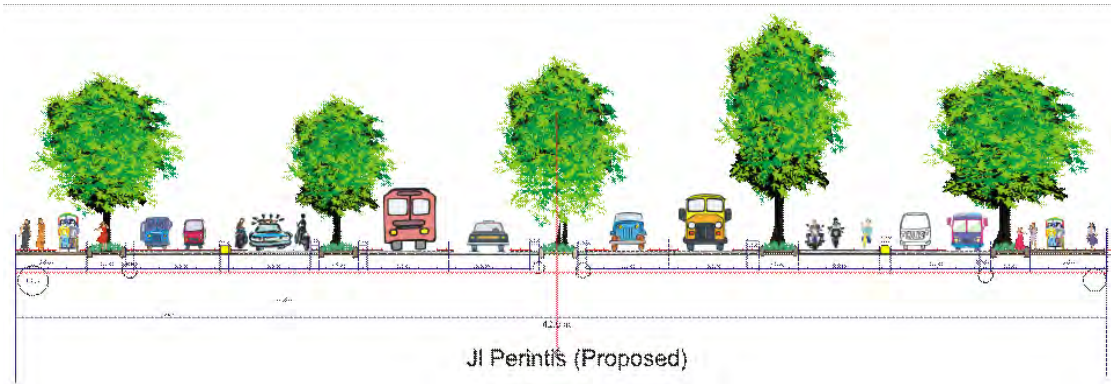


Fig. S-23: Conceptual Design of Cross Section along Jl. Perintis

25. Makassar port has been improved to provide container handling services. With the increased volume of container cargo flow, the port authority (Pelindo IV) is inviting private investors for construction and operation of a new seaport located to the north of the existing port. They intend to attract investors by allowing development of real estate on the land reclaimed for port construction. Although it is uncertain yet if any investor is interested in port-cum-real estate operations, it is suggested that the container terminal productivity at the existing berth be elevated and that financing on the basis of public-private-partnership (PPP) be further studied for investment in port improvements. At the Hassanuddin airport, passengers and cargo handling volumes have been increasing noticeably. Improvement works are initiated with an ambitious design to have a new runway (3,100 m x 45 m), taxiway, parking apron for 17 aircraft, and a passenger terminal building (48,500 ㎡). Nav-aid systems are being improved, too. Improvement in the seaport and airport would have significant impacts on making Mamminasata a logistic and trade hub in Eastern Indonesia. (Refer to Chapter 9.3)

Development Programs

26. A number of projects and programs are recommended for implementation in the short, medium and long terms towards the year 2020. Such programs are grouped into (i) economic development support programs, (ii) urban environment development programs, (iii) economic infrastructure development programs, and (iv) urban management and institutional strengthening programs. Likewise, action plans have been formulated for the proposed implementation in the short term, as well as short and medium term implementation of urban environment improvement and institutional

strengthening. Priority projects/programs to be implemented in the short term are listed in Annex 2. Mamminasata Development Management Agency (BPPM) will assume overall management responsibility for implementation of the action plans. (Refer to Chapters 10.1 and 10.2)

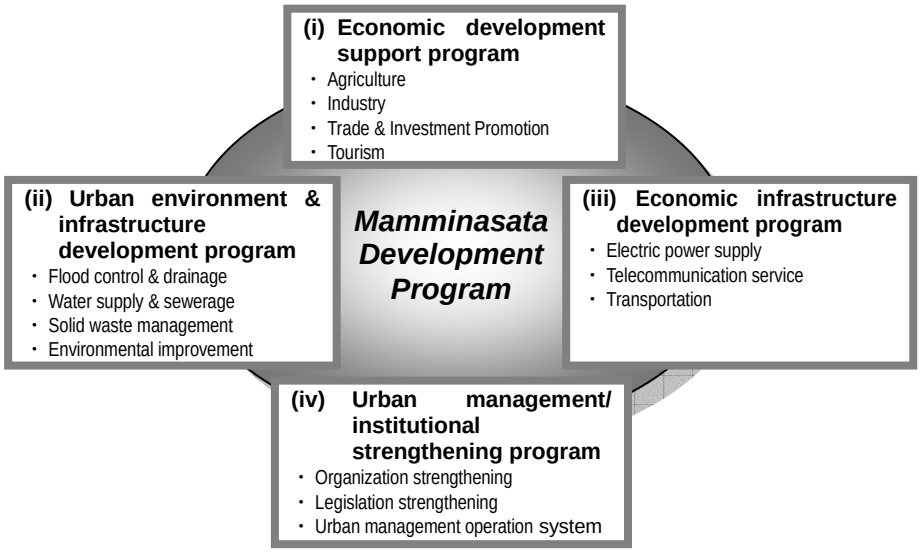


Fig. S-24: Four Development Programs

27. Financial arrangements for implementation of the proposed programs should be properly made by the public and private sectors. Although the budget for development expenditures at the national, provincial and Mamminasata levels are quite limited, it would be possible to manage the public investment within an allowable range on the condition that loans on concessional terms are made available for longer periods and lower interest rates. The private sector should also be encouraged to invest in power generation and toll roads. (Refer to Chapter 10.3)

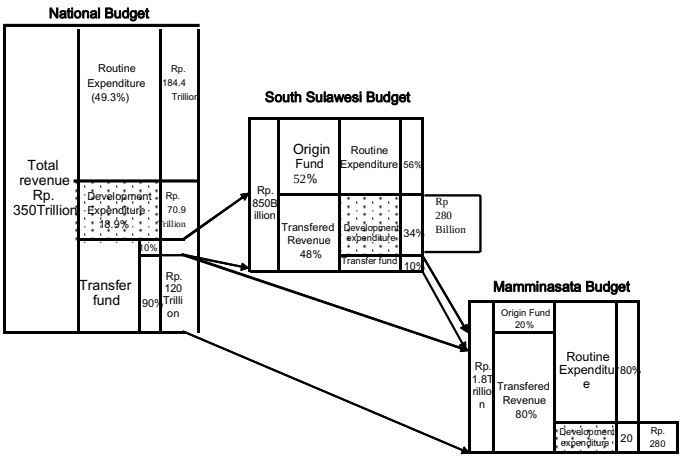


Fig. S-25: Development Budget at National, Provincial and Mamminasata Levels

Table S-3: 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) + IPP	IPP		Improve back margin		Self finance		IPO, 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/Intra trank Transportation	Tariff revision	Tariff table			
	Seaport	PT. PELINDO-IV (SC)	Concession, Long term lease	Improve Container handling efficiency	Repeal informal tariff		Expecting Investmen t 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 S-4: Financing for Semi- and Non-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
Semi- and Non - 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 Earning 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-VIII (SC)						0	
	Distribution	PT PLN-VIII (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		

Pre-feasibility Level Studies

28. In accordance with the Scope of Work for this Study, pre-feasibility level studies have been conducted on four selected priority projects for the implementation of the spatial development plan in Mamminasata. The first project is the improvement of water supply systems in Maros and Takalar. A new Bantimurung water supply system in Maros is proposed for construction with 180 lit/sec[1] of spring water available at Jamalah. It would benefit 31,000 additional households (population of about 155,000) in the northern part of Maros, elevating the piped water supply service ratio of the target area from 11.7% (2004) to 61.0% (2010). In Takalar, groundwater from the deep aquifers will be taken at three locations with a total of 25 lit/sec to serve for 3,950 additional households, with improving the service ratio of the target area from 4.2%

[1] Maximum daily water supply.

(2005) to 50.0% (2010). The total estimated cost for these improvements in the water supply systems in Maros and Takalar will amount to US$ 20.8 million.

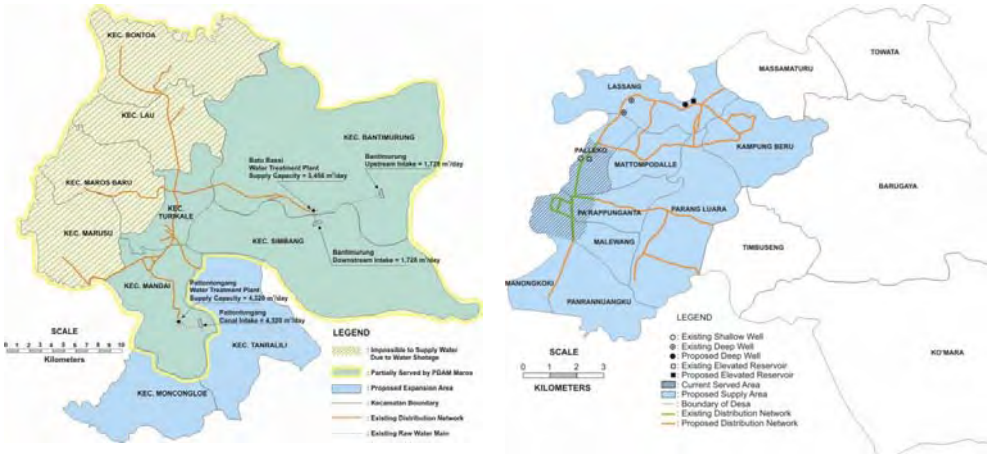


Fig. S-26: Service Area Map in Maros (left) and Takalar (right)

29. The second project is the improvement of landfill site for solid waste management. A preliminary design has been worked out for the proposed new landfill site at Pattallassang in Gowa. A semi-aerobic landfill system is applied, with appropriate facilities for leachate, gas control and other measures for the environmental protection. The project also envisages the location of recycling industries at Pattallassang. After useful life, the landfill site would be used as a recreational park or sports ground. The total cost of the landfill site construction is estimated to be about US$ 35.9 million.

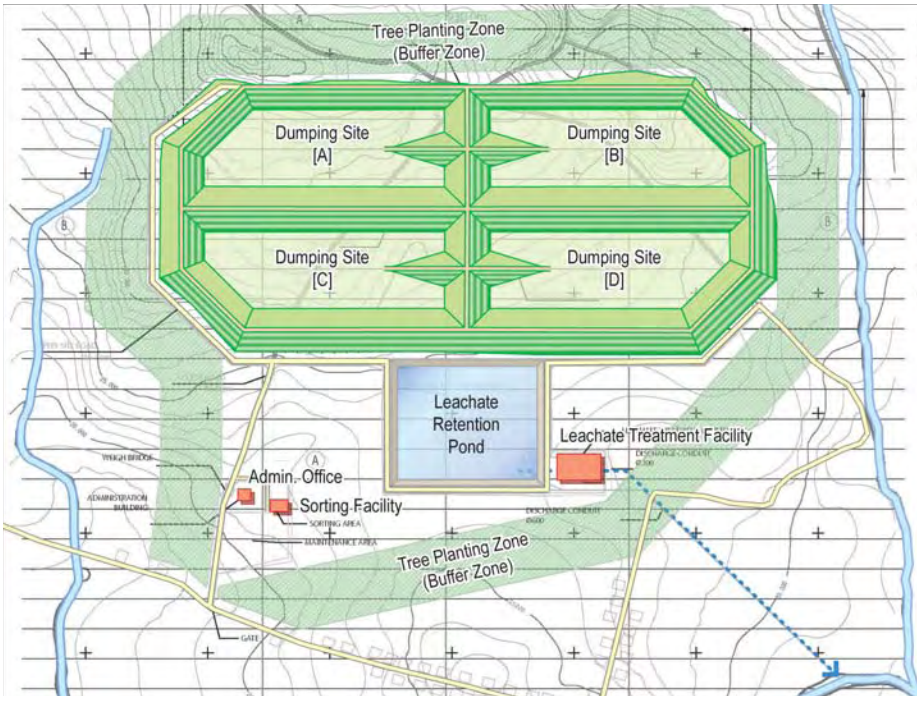


Fig. S-27: Layout Plan of Pattallassang Landfill Site

30. The third project is the expansion of substation capacity and rehabilitation of electricity distribution system. Although some improvements have been recently made, additional augmentation is needed at Panakkukang, Tanjung Bunga, Maros and Sungguminasa substations with a total capacity of 180 MVA. Likewise, replacement and extension of medium/low voltage distribution lines are required to ensure stable power supply in Mamminasata. The total estimated cost for the substation expansion and distribution rehabilitation project will be about US$ 12.3 million.

31. The fourth project is the improvement of Perintis-Urip road to have 42 m in road width. To solve the traffic congestion along the trunk roads in Mamminasata, Perintis-Urip road should be improved to keep a reasonable traffic volume-capacity ratio even after the completion of Ir. Sutami toll road. Besides, the improvement of Perintis-Urip road is expected to contribute to a shift in land use along this road from the current random use to the well induced high and medium dense land use as illustrated in the following figure. Preliminary design of the proposed improvement has been prepared, including the related facilities and relocation of public utilities (e.g., water pipe, power lines and telecommunication cables). The total estimated project cost will amount to US$ 61.2 million, including the land acquisition and relocation cost of US$ 20.1 million. A preliminary economic evaluation indicates that the economic internal rate of return (EIRR) would be 30.6% and the improvement work is economically feasible and justifiable.

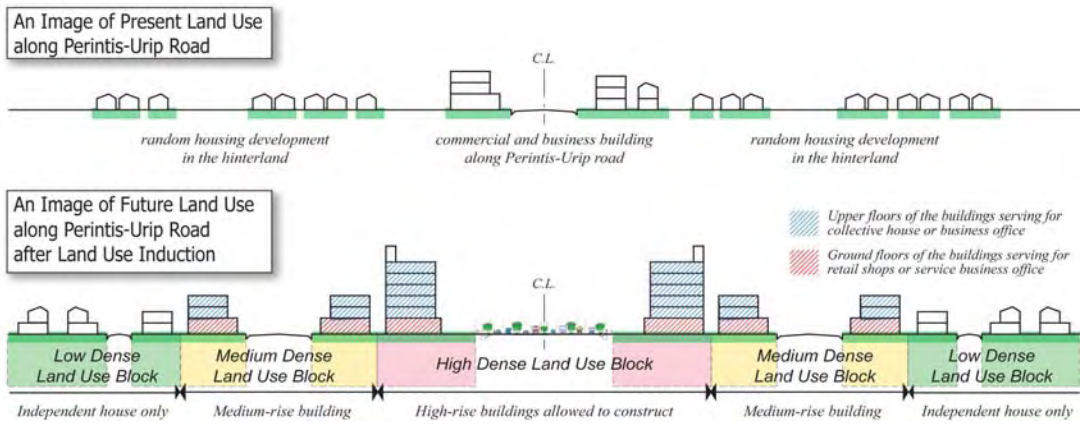


Fig. S-28: Preliminary Image of Present and Future Land Use along Perintis Road

32. As summarized in the following table, the total construction cost of the four priority projects will amount to US$ 110.1 million. External financial assistance might be sought in financing the implementation of these projects in a package.

Table S-5: Total Construction Cost for Four Priority Projects

Project Name	Construction Cost	
	US$ million	(Rp. billion)
1. Improvement of water supply systems in Maros and Takalar	20.8	(183)
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 dollar 1.00 = Rupiahs 8,760 (as of May 2006)
The costs indicated in the above table don't include the costs related to land acquisition and relocation.

Institutional Strengthening

33. Although the Mamminasata Metropolitan Development Cooperation Board (BKSP-MM) has so far taken the initiative for spatial planning, the actual implementation of the proposed programs should be coordinated and managed under the effective legal settings by a stronger management body. In this context, it is desirable that a Presidential Decree be promulgated for the implementation of the Mamminasata Metropolitan Area Spatial Plan. Likewise, legislation for urban management should be set out for land use control in urban and semi-urban planning zones, as proposed in a draft guideline for the land use control in Mamminasata in Annex 3.

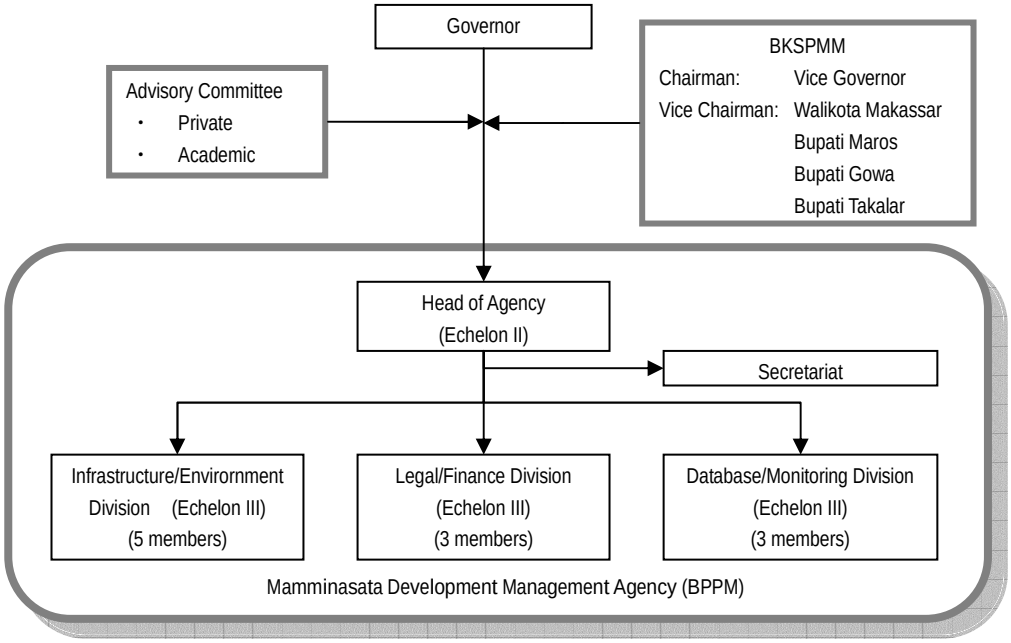


Fig. S-29: Organization Structure of BPPM (proposed)

34. Organizational strengthening should be put into practice by establishing the Mamminasata Development Management Agency (BPPM). The outline of the establishment of BPPM is presented in Annex 4. Although it will take some time for establishment, steps should be taken to organize it and promote capacity building of

appointed management experts. Human resource development is the key to successful implementation and management by BPPM and other authorities concerned. Dependency on external human resources should be gradually lowered with the progress of effective capacity development programs. (Refer to Chapter 12.2)

Overall Recommendations

35. The economic targets set under the development frameworks are attainable if and when the proposed programs are implemented successfully. It should be remembered that all stakeholders should have a common vision and should assume respective responsibility for the implementation of the proposed programs. Everybody and every institution should take initiative and collaborate with each other to create a comfortable metropolitan area to live in for coming generations. (Refer to Chapters 13.1 and 13.2)

36. The district spatial plans and action plans should be elaborated by the Makassar, Maros, Gowa and Takalar regencies, respectively, referring to the proposed Mamminasata spatial plan so that their plans are well **coordinated**. If this does not occur, both district spatial plans and the Mamminasata spatial plan will fail. A database should be commonly used for easy reference among districts. Each district should at the same time reduce routine expenditures and increase the budget for development expenditures in the district. (Refer to Chapter 13.2)

37. Collaboration and partnership with the private sector is of vital significance for the successful implementation of the Mamminasata spatial plan and the district spatial plans. Likewise, partnership with the academic sector should be promoted, and the wisdom of the public, private and academic sectors should be collectively mobilized to realize a **creative** metropolitan Mamminasata. Collaboration with local NGOs is also promoted, particularly for the creation of a **clean** Mamminasata. The environmental issues are to be addressed by all stakeholders in the region. (Refer to Chapter 13.2)

38. Measures should be immediately taken for implementation of the short-term action programs proposed under this Study. Such programs require budgetary arrangements at the national, provincial and regency levels. External financing on concessional terms should also be sought for the implementation of the proposed programs. To this end, the provincial government and BKSP-MM should coordinate with the central government and international financing institutions. (Refer to Chapter 13.2)

39. The implementation of the Mamminasata spatial plan should be periodically monitored and lessons should be learned by all stakeholders. Since the social and economic conditions 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. (Refer to Chapter 13.2)

ANNEX

Annex 1

List of Study Members

Ministry of Public Works

Name	Position
Mr. Achmad Hermanto Dardak	Director General, Directorate General of Spatial Planning
Mr. Setia Budhy	Secretary for Directorate General of Spatial Planning
Mr. Bintarto	Director of Eastern Indonesia Spatial Planning
Mr. Edison	Head of Sub-Directorate of Urban and Metropolitan Spatial Planning
Mr. Shafik Ananta Inuman	Head of Section of Metropolitan Spatial Planning

Mamminasata Summit Meeting

Name	Position
Mr. Syahrul Yasin Limpo	Vice Governor, Provincial Government of South Sulawesi
Mr. Agus Arifin Nu'mang	Vice Chairman, Regional House of Representative in South Sulawesi
Mr. S. Ruslan	Chairman of Regional Development Planning Agency, BAPPEDA South Sulawesi Province
Mr. Ilham Arief Sirajuddin	Mayor of Makassar City
Mr. Ichsan Yasin Limpo	Head of Gowa District
Mr. Nadjamuddin Aminullah	Head of Maros District
Mr. Ibrahim Rewa	Head of Takalar District
Mr. I. Adnan Mahmud	Chairman of Makassar Regional House of Representative
Mr. Mallingkai Maknun	Chairman of Gowa Regional House of Representative
Mr. Burhanuddin	Chairman of Maros Regional House of Representative
Mr. Nafsah Baso	Chairman of Takalar Regional House of Representative
Mr. Syafruddin A. Pattiwiri	Head of Spatial Planning and Settlement Office, South Sulawesi Province
Mr. Syarif Burhanuddin	Head of Sub-Dinas Spatial Planning and Program
Ms. Sri Wedari Harahap	Head of Section of Province and Area Spatial Planning

List of National Experts

Name	Position
Mr. M. Anas Dahlan	Infrastructure Service, BAPPEDA South Sulawesi Prov.
Ms. Yurnita	Spatial Planning Service, South Sulawesi Prov.
Mr. Muh. Masri Tiro	Area Development Service, Makassar City
Mr. Hasbi Nur	Control and Monitoring Division, BAPEDALDA Prov.
Mr. Shafik Ananta Inuman	Head of Section of Metropolitan Spatial Planning

List of JICA Study Team Members

Name	Position
Hajime KOIZUMI	Team Leader / Regional Development & Spatial Planning
Hirohide KONAMI	Capacity Development Advisor -- Urban Management
Keiro HATTORI	Capacity Development Advisor – Urban Environment Management
Takuya OKADA	Deputy Team Leader / Urban & Land Use Planning
Akifumi WATANABE	Deputy Team Leader / Organizational & Human Resources Development
Akihisa KOJIMA	Deputy Team Leader / Transportation Planning
Koki KANEDA	Road Planning
Kiminari TACHIYAMA	Traffic Demand Forecasting
Koichi ARAKAWA	Traffic Study
Keishi ADACHI	Economy & Finance
Kensuke SAKAI	Drainage, Water & Sewerage Planning
Satoshi HIGASHINAKAGAWA	Waste Management Planning
M. TANIFUJI / M. KURODA	Housing & Public Facilities Planning
Takeshi YAMASHITA	Power & Telecommunications Planning
Ayako ISHIWATA	Regional Industrial Promotion Planning
Yuki ISHIKAWA	Agricultural and Fishery Promotion Planning
Go KIMURA	Tourism Promotion Planning
Hiroto TSUGE	Investment & Trade Promotion
Sachiyo TAKATA	GIS & Land Use
Daikichi NAKAJIMA	Topographic Mapping
Atsushi FUJINO	Social Development
Dorothea AGNES Rampisela	Social Consideration & Participatory Planning
S. TERAMATSU / Y. KODA	Environmental Consideration & Planning
Takayasu NAGAI	Road Design
Hiroaki TAKAHASHI	Road Structure and Bridge Design
T. KAWAGOE / S. YAMAMOTO	Water Resources and Water Supply Planning

Annex 2

Priority Projects/Programs to be Implemented in Short Term

For the implementation of the proposed development program, priority projects and/or programs to be implemented in short term are selected and proposed in the following manner.

(i) Projects/programs that are proposed for implementation in 2006 - 2010),

(ii) Projects/programs that will contribute to the Mamminasata Development Strategy, particularly to the urban environment improvement and basic economic infrastructure,

(iii) Projects/programs that will contribute to institutional strengthening, particularly to the organization establishment and legislation for land use management, and

(iv) Project that will be integrated to attain the same objectives for development.

Priority projects are proposed to attain five major targets for integrated development of Mamminasata as listed in the following.

List of Projects/Programs

Sector	Projects/Programs
1. Economic development	1.1 Agricultural productivity enhancement and diversification
	1.2 Enhancement of value added in processing
	1.3 Investment and trade strengthening
	1.4 Cluster development of selected commodities
	1.5 Improvement in tourism attractions
2. Urban environment and infrastructure improvement	2.1 Improvement in municipal water supply
	2.2 Wastewater management
	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

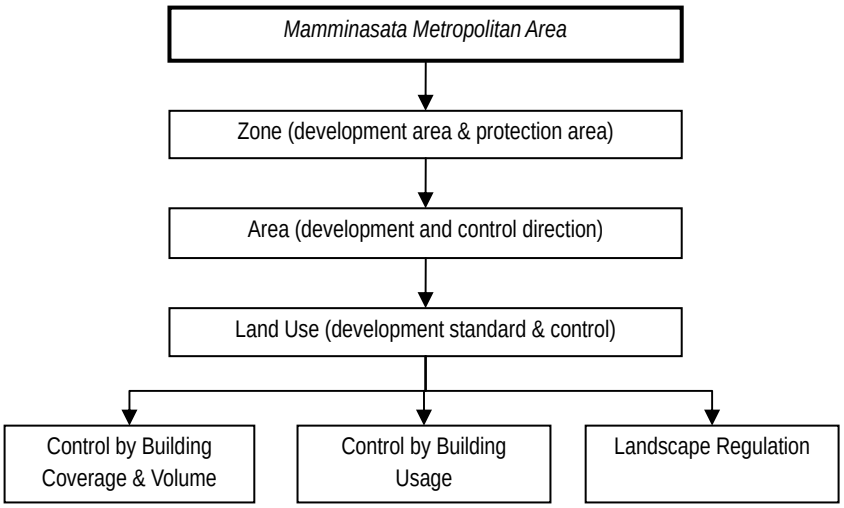
Action Plan	Definition	Central	Province	Kabupaten
Economic Development				
1.1 Agricultural productivity enhancement and diversification	To increase farmers' income by increasing agricultural productivity through (i) improve crop yield, (ii) applying intensive land use (iii) introducing mixed and integrated 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 (i) Increase in quality and introduction of new crops (ii) Increase in productivity (iii) Product diversification (iv) Strengthening of association/organization		✓ ✓ ✓ ✓	 ✓ ✓
1.2 Enhancement of value added in processing	To strengthen capacity of industrial support institution and to strengthen linkage among stakeholders so that support function to manufacturers are efficiently conducted (i) Linkage among institutions are strengthened (ii) Human resource development to support manufacturing activity (iii) Existing institutions are fully utilized and O&M is properly conducted		✓ ✓	
1.3 Investment and trade strengthening	To increase attractiveness of Mamminasata as investment site by providing investment incentives and also to strengthen the linkage between producers and market (consumers) (i) Investment incentives are available (tax, award) (ii) Linkage between producers and market is strengthened		✓	
1.4 Cluster development of selected commodities	To strengthen the regional and sector linkage to increase value added of local resources and to promote maximize utilization of the local resources (i) Regional coordination is strengthened (ii) Up-stream and down-stream coordination is strengthened (iii) Quality improvement		✓	
1.5 Improvement in tourism attractions	Improve attractiveness of Fort Rotterdam and its surrounding area for tourists and the residents. Improve attractiveness of Fort Rotterdam and its surrounding area as "cultural and historical area" in the city	✓		✓
Urban Environment and infrastructure improvement				
2.1 Improvement in municipal water supply service	Objective is to increase water supply coverage in the Mamminasata Area as whole, utilization of Sompa Opu WTP to water supply in Sungguminasa, and strengthen water supply management capacity of PDAM. (i) Expansion of Capacity of Smba Opu WTP (phase 2) (ii) UFW improvement (iii) Increase piped water supply capacity of Maros, Gowa, and Takalar (iv) Improved water supply management and operation (PDAM)	✓		
2.2 Wastewater management	Objective of the wastewater treatment management is to improve water quality in canals and ocean and also to increase community awareness on cleaning canals. (i) Off-site sewerage system (ii) Urban amenity (green space, park) (iii) Redevelopment of the urban area	✓	✓ ✓ ✓	 ✓ ✓

2.3 Solid waste management	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			
	(i) Development of final disposal site (PTA) for Makassar and Gowa	✓	✓	
	(ii) Reduction of final disposal			
	(iii) Increase in community awareness on solid waste management		✓	✓
	(iv) Urban amenity (green space, park)		✓	✓
2.4 Greening and riparian environment improvement	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			
	(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)		✓	✓
Economic Infrastructure Improvement				
3.1 Mamminasata artery road improvement	Objective is to improve artery road in Mamminasata to mitigate traffic congestion and to accelerate economic activity			
	Improvement of selected road in the Mamminasata area			
	(i) Jl. Perintis (F/S, construction) (national road)	✓		
	(ii) Jl Heltasing(F/S, construction) (provincial road)		✓	
	(iii) Jl. Abdullah Daeng Sirua (F/S, construction) (Provincial road)		✓	
	(iv) Trans-Sulawesi (F/S, construction) (BOT)	✓		
	(v) Mamminasa bypass (F/S, construction) (National road)	✓		
3.2 Traffic management improvement	Objective is to improve traffic management and improve public transportation system			
	(i) Bus transportation service		✓	
	(ii) Introduction of traffic management (pete pete, becak, cars, street vendors)			✓
3.3 Power transmission and distribution improvement	Objective is to increase power transmission capability		✓	
	(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)			
Institutional Strengthening				
4.1 Organization strengthening	Establish a permanent organization with full time qualified staff for Mamminasata development implementation		✓	
	(i) New organization (Mamminasata Development Management Agency: BPPM) are established			
	(ii) BKSP is re-organized			
	(iii) Advisory committee is formed (private and academic)			
4.2 Legislation strengthening	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		✓	
	(i) Presidential Decree for "Spatial Plan for Mamminasata Metropolitan Area" is stipulated			
	(ii) "Zoning Regulation" (Provincial Regulation) is stipulated			
	(iii) "Transport Management and Control" is stipulated			
	(iv) Other legislation necessary concerning urban management is stipulated			
4.3 Information management strengthening	Establish maps and database that can be a base for urban management and control		✓	
	(i) GIS database			
	(ii) Map			

Annex 3

Guideline proposed for Land Use Control in Mamminasata Metropolitan Area

The Spatial Plan for the Mamminasata Metropolitan Area has worked out a land use plan showing the development direction of the metropolitan area. In order to follow the proposed land use plan, control standards have to be clearly provided. Control measures are proposed for (i) zoning and land use classification, (ii) building coverage ratio and building volume, and (iii) building usage. A land use hierarchy and control measures are illustrated in the following figure.



The spatial plan shows the land use from the viewpoint of the development direction and image of the future metropolitan area. This guideline, on the other hand, is prepared to provide the definition of land use and the control measures including the following.

(i) Land use hierarchy (zone, area, land use),

(ii) Building coverage and volume control,

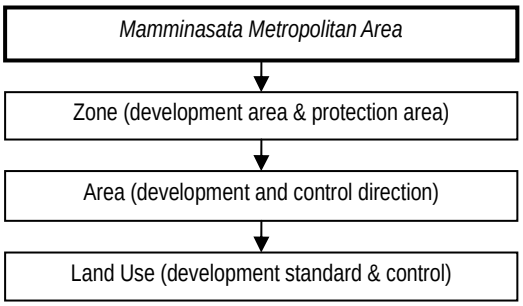
(iii) Building usage control by land use, and

(iv) Landscape regulation to cover specific area of specific interest.

1 Land Use (Zoning) Control

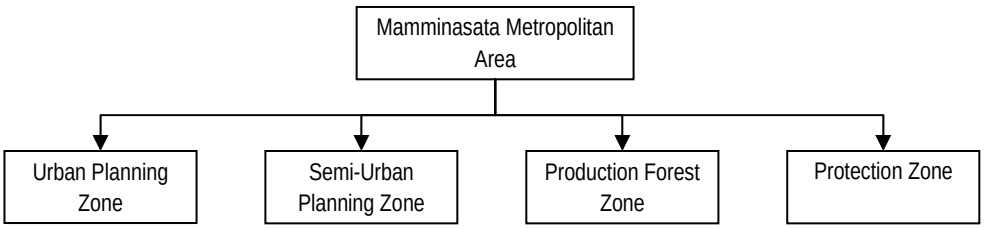
1.1 Land use hierarchy

Since urbanization has already been in progress, it is difficult to control urban development by designating zoning simply by land utilization, such as residential use, commercial use, industrial use and so forth. In order to control urbanization, it is important to show the development direction and specify control measures. Urban development is managed through three urban classification, namely (i) zone, (ii) area, and (iii) land use.



(1) Zone

Development (cultivation) area and protected area are designated in the Mamminasata Metropolitan Area. The development area is classified into three categories, i.e., (i) urban planning zone, (ii) semi urban planning zone, and (iii) production forest zone belongs to cultivation area. The protection zone is the conservation zone designated under the National Spatial Planning Law (Law No. 24/1992).



A general zoning guideline is prepared summarized in the following table.

(i). Urban Planning Zone (cultivation area)	City or urban area with population concentration and providing working place where needs integrated development and to be conserved. The area needs urban development such as residential area, industrial area and other urban function.
(ii). Semi Urban Planning Zone (cultivation area)	The area outside Urban Planning Zone where some building construction has already started or expected to start in the near future. The area has risk of negative impact on environment and urban development if the area is left alone without proper land use plan

(iii). Production Forest Zone (cultivation area)	The existing forest area that can be utilized as economic activities.
(iv). Protection Zone (conservation area)	Environmentally important area (forest, water) and designated for protection purpose. Development activities are strictly limited

(2) Area

"Area" is designed to show the development direction as well as the control direction. Types of area shall depend on characteristics of the zoning and development direction. A general guideline is proposed as shown in the following table.

(i). Promotion Area [Cat 1]	Already urbanized area with high population concentration and urban development has to be well controlled to avoid further deterioration of urban environment. Improvement of urban amenity and efficient land utilization is the priority concern for the land use control
(ii). Promotion Area [Cat 2]	Area where urbanization has begun recently. Since urbanization level is still low, proper control shall be applied for urbanization.
(iii). Control Area	Area of low utilization such as swamp, inundation/flood prone area, green open space. Development activities area strictly regulated.
(iv). Agricultural Priority Area	Irrigation area which is used for agricultural activities. Development activities are strictly regulated for the purpose to protect agricultural production.
(v). Agricultural and Settlement Area	The area where urbanization has not begun and utilized either as agriculture or no utilization. Urbanization with control measures are directed in this area. New town, industrial zone, education/R&D development are planned in this area.
(vi). Afforestation Area	The hilly area surrounded by forest area and presently grass land and create production forest with intensive afforestation
(vii). Protected Forest Area	Existing forest area where should be protected. Development activities area strictly regulated.
(viii). Water Front Reserves	River, lakes, ocean area. Development activities area strictly regulated

(3) Land use

Land use is set for residential, commercial, industrial, open and green area, development control. Since the area is already urbanized and used for a variety of purposes, it is important to promote efficient land use for creation of a comfortable urban environment. For the purpose of controlling the urban land use, the line of land use should be drawn by block or area with small cluster.

Residential Use

Residential area is for use as a residential area and a place to support life.It also covers a place to conduct community activity within a limited environment. Therefore, residential area and shelter area shall fulfill the environmental norms which are healthy, secured, and well harmonized. Besides, the settlement area should be free from noise, dirt, air, smell, and other pollution.

Residential area does not mean that only housing development is allowed. Any activity needed for creation of attractive living condition, such as commercial activities and pubic facilities is made available. This area also should be able to support the viability of socialization process from the existing cultural value in a particular community, and be secured as well as easy access to service center and offices. Within the residential area, other facilities are also required, such as the education, health, shopping, recreational facilities. Types of housing shall be specified depending on the type of residential area to be provided.

Objective	▪ Provide land for developing settlement area with various density in all urban area; ▪ Accommodate various type of settlement in order to encourage settlement provision for all levels of society; ▪ Reflect patterns of development required by society at the settlement area today and in the future. ▪ Residential area can be divided in to (i) Exclusive residential area and (ii) Residential dominant area. The former aims to provide fine residential area and the condition is more strict.

Typical Types of Houses

Detached housing area	Individual unit housing with spacious placement to develop individual house unit by accommodating various mapping size and types of housing construction as well as attempt to increase the quality of its environment, character and life situation. (building coverage ratio: 20~50%)
Row housing Area	Individual unit housing with row type in small mapping constructed along with environment access road; this zone is a transitional opportunity between individual unit housing and high-density (building coverage ratio: 75% or higher)
Apartment housing area	Multiple individual unit housing with various density

Commercial Use

Commercial and service area is an area which will expectedly attract businesses and contribute additional value added to one particular urban area. This area should have a good access to housing location and easy marketing.

For the comfort of visitors, commercial and service area should fulfill the environmental norms which are healthy, secured, harmonized, and "attractive" as well as business-oriented. Therefore, the regulation on this area should meet the terms of dimension, intensity and design which will expectedly be able to attract as many visitors as possible. Sufficient facility and infrastructure should be provided for water, waste disposal, road network are other conditions. The land use in the commercial area can be classified as shown in the following table.

Objective	▪ Provide land to accommodate workers of shop, service, recreation and community service; ▪ Provide clear regulation for commercial and service area which covers dimension, intensity and design in reflecting various patterns of development required by society

Types of Usage in Commercial Area

Government use	Provide area which accommodates workers in a limited number, mainly giving service for citizens and also for national and international interest
Office use	Office provides area to accommodate workers in a limited number, retail activity is only back-up and house development with medium to high intensity is allowed; this zone is applied to center for big events or special area where commercial activities are rejected.
Shopping use	Shopping serves trade, shopping and services activities; this zone may contain settlement development whose orientation is commercial activity and apartment; industrial/manufacturing use is restricted to medium intensity within small to medium scale.
Central area (tourism related area)	Local and tertiary center, which are provided for shopping and local service activities, consists of retail shops and private service companies with extensive choice, which fulfill recurrent need. This kind of activity requires comfortable location close to all housing area, relatively prevents unwanted effects for nearby housing. Therefore, this zone is scattered around city; centers for primary and secondary urban shopping provide shopping places which are occasionally visited by member of family and services needed by businessmen who are spread largely, and possess a large number of shops which basically generate traffic.

Types of building that can be established in this area are:

- Commercial business building (retail and wholesaler): shop, small shop, wholesale place, etc;
- Office building: private/government office, trade, etc;
- Lodging building: hotel, guest house, motel, hostel, inn, etc;
- Storehouse building: parking lot, show room, warehouse;
- Conference building: hall, conference;
- Tourism building (closed room): cinema, playground.

Industrial Use

Industrial area is an urban productive area. This area is expected to give value-added to a certain urban area. At the same time, it is necessary to control the impact of industrial activity on the urban environment, differentiating the industrial activities from other urban activities.

Attention is to be paid to the accessibility of labor and raw materials, as well as marketing of finished-goods. Therefore, location close to road network and ports is an important factor. It is also important to pay attention to the impact of industrial activities on the environment.

Objective	▪ Provide space for industrial and manufacturing activities, maintaining a balance among economically-utilized lands and enhance the growth of job opportunity; ▪ Promote flexibility for new industries and re-develop industrial projects; ▪ Ensure high-quality industrial development, and protect industrial use as well as non-industrial use

Types of Industrial Area

Industry exclusive area	Provides space for industrial activities with extensive land use by prioritizing basic sector of manufacture; this zone aims to increase the use of industrial land efficiently on minimal development standard, provide safety for nearby property and society in general; this zone also restricts the existing non-industrial use in order to be able to provide sufficient land for big-scale industrial use
Semi - industrial area	The area where any types of activities are allowed except for the activities that are hazardous to environment.

Open Area and Green Area

Open space area has its norms according to respective functions, which is to maintain/protect the environment covering natural and artificial resources. As an open space area, it can also be utilized as recreational spots.

Objective	▪ Zone which aims to maintain/protect land for recreation other than education building, and to enjoy its visual beauty. ▪ Preserve and protect endangered and sensitive land; ▪ It is applied to land whose main function is park or open space or individual land of which its development should be limited to apply open-space policy as well as protect health, safety and welfare of public

Types of Open/Green Area

Protected green open space area	It aims to protect natural resources and as well as sensitive land; this zone only allows the use which may help preserve natural character of land The condition of the area is summarized below (*). ・ Land slope above 40%; ・ In case of land sensitive to erosion, that is Regosol, Litosol, Orgosol and Renzina, the land slope is above 15%; ・ Water infiltration area with altitude of 1000 meters above sea level; ・ Can be river demarcation/lake demarcation/water spring demarcation with specification as follows: ➢ River demarcation in urban area is an area along river which is presumably sufficient for constructing inspection road or minimum 15 meters; ➢ Lake demarcation is a land along the lake whose width is proportional with physical shape and condition between 50 – 100 m from the highest point to land. This area has important benefit to maintain life of the lake.
Artificial green open space area	It is applied to park and public facilities which aims to extend city lung, reduce city's lack of fresh air and provide various kind of recreation needed by society. The condition of the area is summarized below (*). ・ It mainly functions as park, playground, and sport field, as well as give fresh to city (light and fresh air), and neutralize air pollution as city lung; ・ The location and need are adjusted with environmental unit of housing/activity being served; ・ The location is made in such a way so that it is able to become bound factor.
Water management open space area	It aims to control development in flood area to protect health, safety and public welfare as well as reduce the danger of flood at area identified as flood control area which is pointed by local government; this zone aims to preserve the natural character in flood area with the intention of reducing public fund expenditure for the cost of flood control project and protect function and value of flood control area in relation to preservation or refill of ground water, water quality, flood flow counter measure, attempt of wild animals and habitat protection. The condition of the area is summarized below (*). ・ It has high capability to absorb rain water, therefore it plays as an aquifer that is used for water source; ・ It has rain fall > 2000 mm/year and land permeability is > 27.7 mm/hour.

Note: * Manual in Arranging Zoning Regulation in Urban Area prepared by Directorate General of Spatial Planning, Ministry of Regional Infrastructure and Settlement

Following table shows a proposed size of parks by the number of residents.

Regulations on Parks

Land Use	Facility/Items	Development Target
Open area	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)

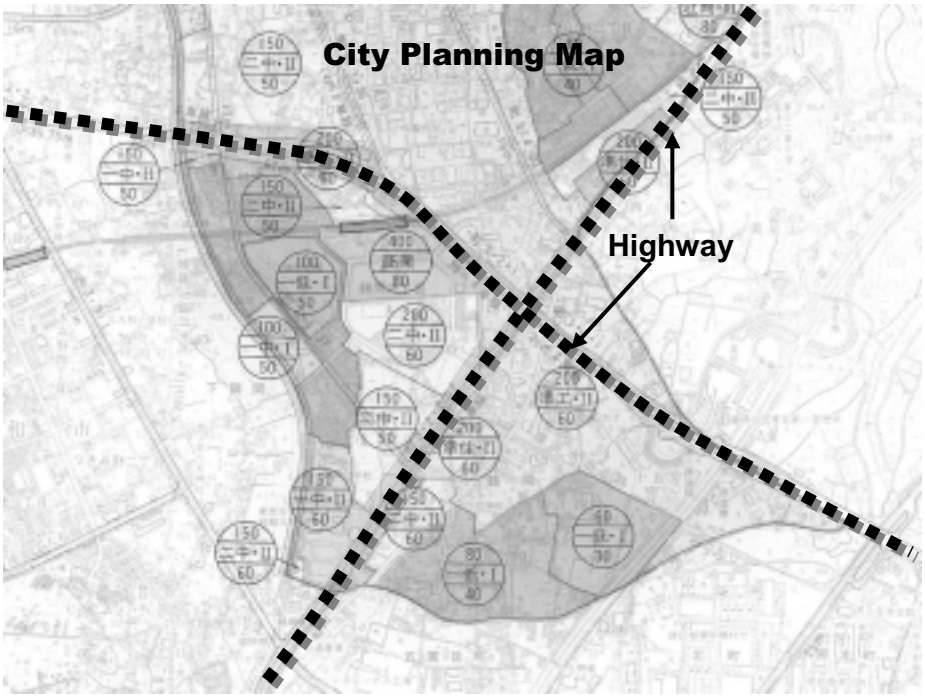
1.2 Building Coverage/Volume Control by Land Use

Building coverage and volume control is important to keep the volume of buildings balanced in urban area. Building coverage ratio (a ratio of building floor at ground level against land area) is important to secure the living environment such as ventilation, sunshine, and lightening. In addition, the building coverage ratio is important to prevent fire from spreading. A space between buildings will minimize the risk of fire spreading.

Building volume is also important to control height of buildings. The larger the volume, the higher the building will be. Commercial area can allow high building volume to enhance land use efficiency. Residential area or beach area, on the other hand, shall keep a building volume low to maintain the environment.

Guidance on Building Coverage and Volume (sample)

Land Use Area	Building Coverage Ratio (%)	Building Volume (%)
Residential Area (low height)	30, 40, 50, 60	50, 60, 80, 100, 150, 200
Residential Area (high height)	30, 40, 50, 60	100, 150, 200, 300, 400, 500
Commercial Area	60, 80	200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300
Industry Area	50, 60,80	80, 100, 150, 200



Note: upper number: volume, lower number: building coverage ratio, middle sign: land use

Sample of Building Coverage and Volume Control

1.3 Types of Building Allowed

Types of building use shall also be defined by the land use. Residential area is the most controlled area. Semi-industrial area, on the other hand, is less controlled area so that almost all types of buildings are allowed. A general guideline of building use is proposed as summarized in the following table.

Building Use by Land Use (Provisional)

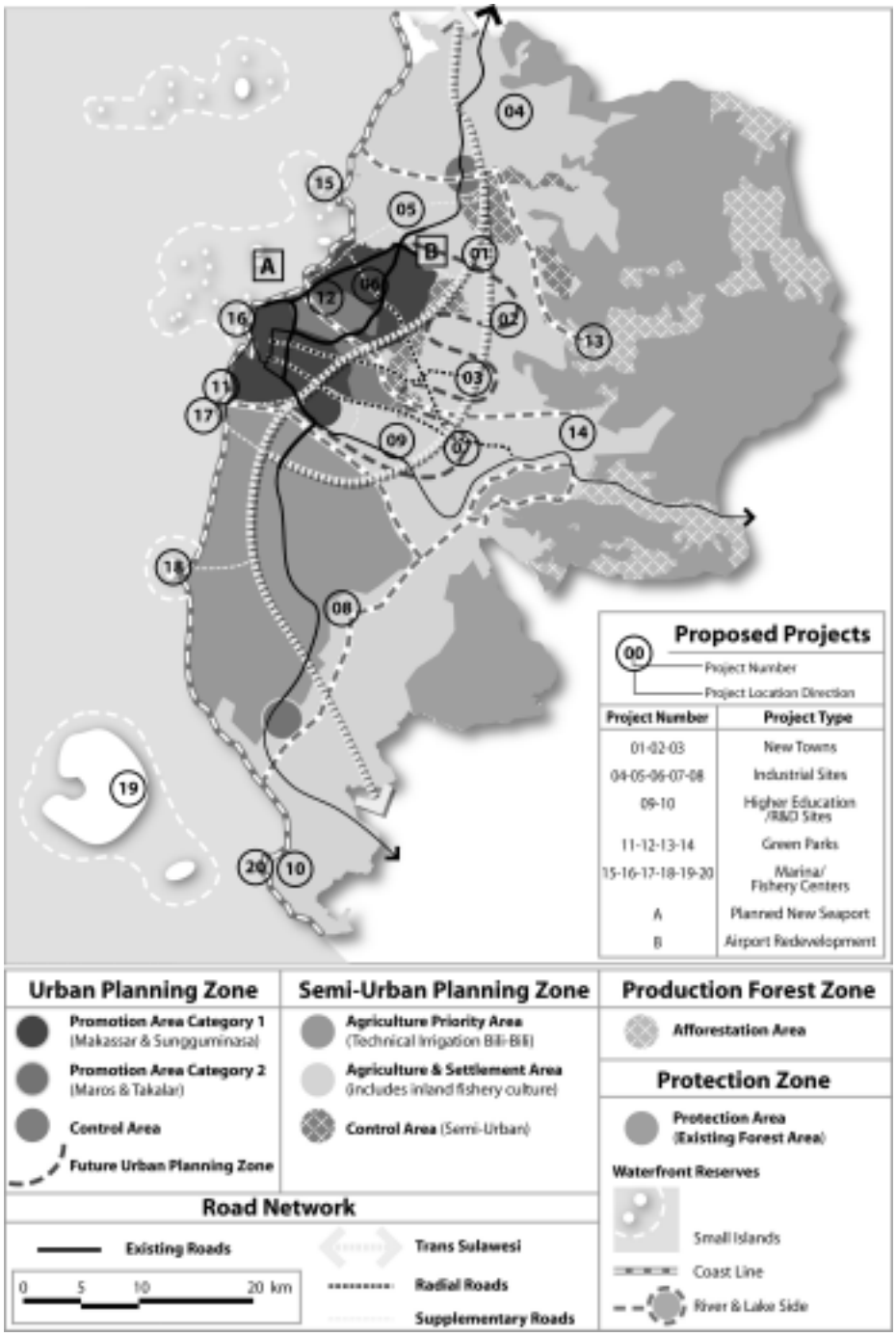
Building Use \ Land Use		Residential Area (exclusive)	Residential Area	Commercial Area (exclusive)	Commercial Area	Industrial Area (exclusive)	Semi-Industrial Area
Residential facility	Detached housing, Row housing, Apartment housing	○	○	○	○	X	○
Education	Kindergarten, primary school, junior high school, high school	○	○	○	○	×	○
	University, vocational school	×	○	○	○	×	○
Religious	Mosque, church, temple	○	○	○	○	○	○
Welfare	Clinic	○	○	○	○	○	○
	Hospital	○	○	○	○	×	○
Commercial	Theater	×	×	○	○	×	○
	Hotels	×	×	○	○	×	○
	Shops (small scale, rumah took)	○	○	○	○	○	○
	Shops (large scale, independent building)	×	×	○	○	×	○
	Amusement (karaoke, night club)	×	×	○	○	×	○
	Amusement (indoor facility)	×	×	○	○	×	○
	Warehouse	×	×	○	○	×	○
Sports	Golf, bowling	×	×	○	○		○
Public	Government building	×	×	○	○	×	○
Industry	Factory (attached to house)	○	○	○	○	×	○
	Factory (small scale)	×	×	○	○	○	○
	Factory (not harm to environment)	×	×	○	○	○	○
	Factory (harm to environment)	×	×	×	×	○	×
Hazard warehouse	Chemical, oil, gas	×	×	×	×	○	×

Note: ○: allowed, ×: not allowed

1.4 Control in the Mamminasata Metropolitan Area

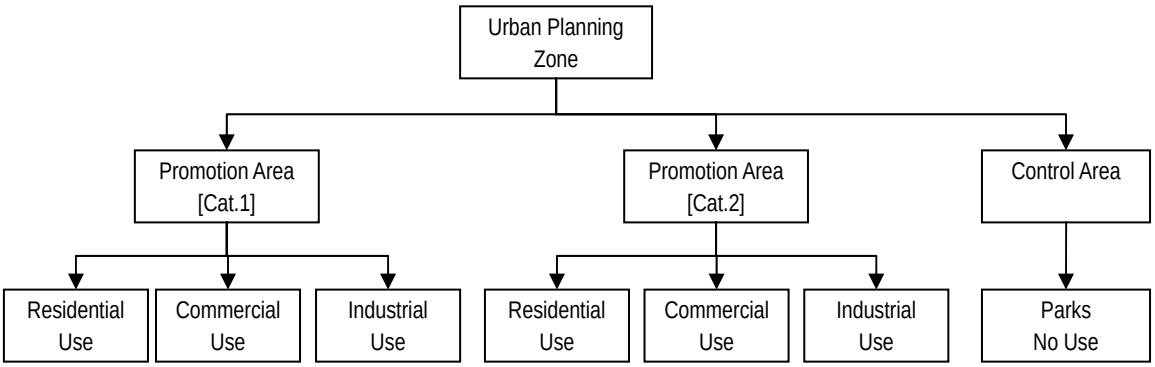
(1) Land Use Plan and Control structure

Based on the hierarchy of urban control and its definition, the land use plan in the Mamminasata Metropolitan area is proposed as shown in the following figure.

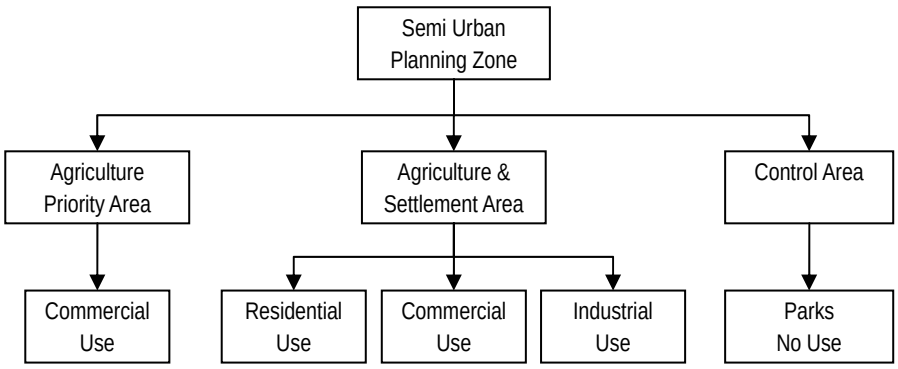


Proposed Land Use Zoning

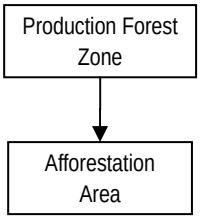
A control structure of the Spatial Plan for Mamminasata Metropolitan area is shown in the following diagrams.



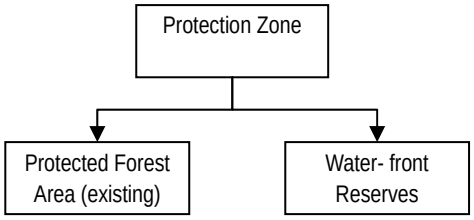
Control Structure in Urban Planning Zone



Control Structure in Semi-Urban Planning Zone



Control Structure in Production Forest Zone



Control Structure in Protection Zone

The overall development direction and control measure is summarized in the Annex.

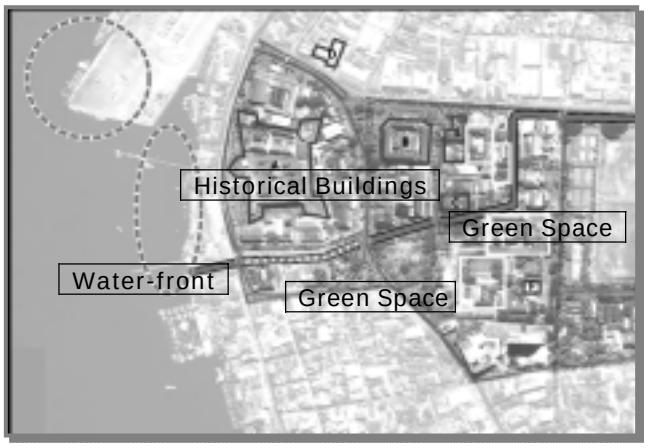
(2) Regulations for Urban Planning Zone

Makassar is designated as the Urban Planning zone Promotion Area (Cat. 1) and the 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 the excellent urban amenity.

Promotion Area (Cat. 1)

In a *promotion area category 1* in the *urban planning zone*, most development activities are allowed but type, scale and infrastructure conditions are regulated for industrial development.

Since the downtown area has many historical heritages, it is appropriate to develop the area for the enhancement of urban tourism. This area is, in principle, developed under a rather strict land use regulation, with a lower building coverage and floor ratio, to retain the urban-scape in attractive conditions, even though it is not so effective from the economical point of view in land use.



Development Image of Downtown Renovation (Promotion Area [Cat.1])

Promotion Area (Cat. 1): Commercial area

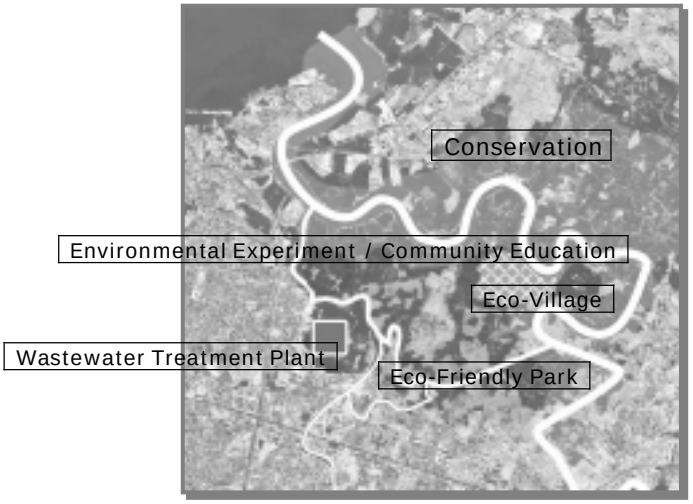
A model plan of combination of downtown renovation and high utilization of land in the suburbs are presented, as sample image, where conservation of downtown area and higher utilization along a major road is drawn.

Downtown area of Makassar, where many historical heritages remains, will be conserved under regulated development volume to contribute to urban tourism enhancement, while suburban area of Makassar, especially along the major roads such as Jl. Pettarani and Jl.Sultan Alauddin should be more highly utilized in land use together with reallocation of government office which is now scattering around the roads.

Figure: Development Image of Higher Utilization in Land Use along a Major Road

Control area (open space, green area)

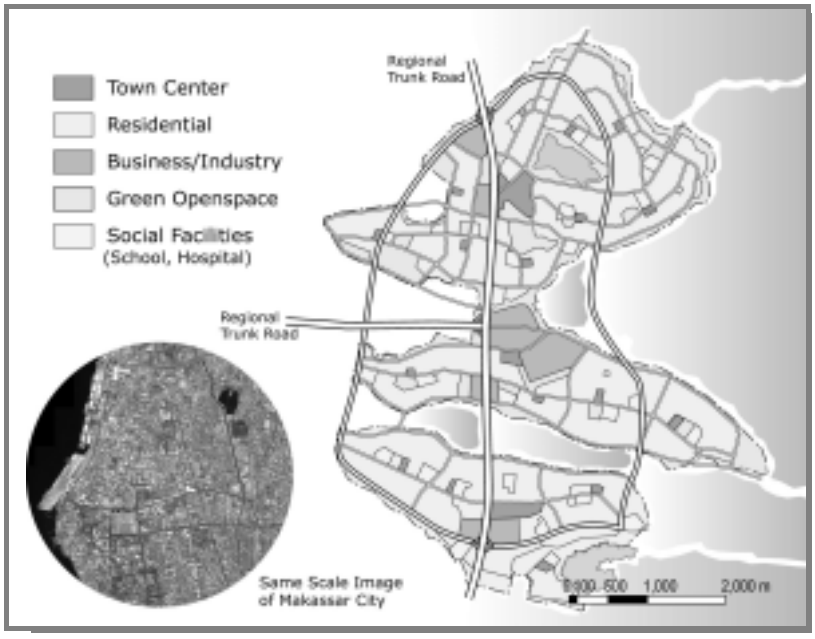
In a *control area* in the *urban planning zone*, most development activities are regulated except for educational or social purposes up to a certain development scale.



Development Image of Swamp Area Conservation (Control Area)

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

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



Development Image of New Urbanization Area

(4) Transportation Management

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

Legislation for Transportation Management

Items	Description
Road Structure	・ Promote user friendly road structure. ・ Efficient road structure for automobiles and pedestrians. ・ Landscape (trees, design) has to be defined.
Traffic management	・ 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	・ Control the parking along the streets which disturb traffic flow.
Road signs	・ Clear road sign not only for the local people, but also for tourists. Design and location have to be appealing.
Barrier free	・ Structure of road and traffic management that concerns socially handicapped people.
Exhaust control	・ Control exhaust from vehicle.

It is also important to adopt a new method of road construction, particularly the regulation on land usage, because once the road plan is announced, the people would buy land, making the land acquisition and road construction difficult.

2 Institutional Arrangement

Even though general direction and control measures for urban development are specified in the land use and building usage, some area specific rules need to be applied for the improvement of the living condition for specific interests. Hence, additional institutional arrangements are required.

(1) Town Development Guideline

A Town Development Guideline is designed to prevent unwanted development and to create an ideal town environment by applying tougher restriction on the development activities. The guideline also aims at preventing dispute between developer and residents prior to construction. The guideline is prepared by provincial government at the city and town levels. It will cover the following.

- Landscape design (color, design, height of building)
- Environmental concern (natural, cultural, historical environment).

- Public announcement prior to development application (particularly for large scale development)
- Public consultation from developer to residents

(2) Building Agreement

Building Agreement on Foreface (Sample Image)

A Building Agreement aims at supplementing the minimum standard set by the Building Code which can not cover specific areas and specific needs. The Building Agreement is applied to a specific area to satisfy specific needs of the residents. The agreement is based on the Civil Law, and need to go through legal procedure (approval from the government and public announcement) so that after the agreement is reached, not only the signer but also any party that possess the land later on has to follow the agreement. In the process of formulation of the agreement, community, developer and the government have to coordinate together under the government initiative.

(3) Special land use

Land use and building utilization standard is not sufficient to control and follow the spatial plan, particularly in the metropolitan area. Special area needs to be designated to realize special interest such as landscape, greenery and culture. Some special areas are proposed as summarized in the following table.

Sample of Special Land Use

Type of Special Land Use	Objectives	Items to be Controlled
Vertical development promotion area	Facilitating efficient land utilization by promoting vertical development and maintaining public open space	Utilization, volume
Landscape conservation area	Conserving the artificial landscape in the urban area which contains the architecture that has beauty	Control architecture (land, structure) that disturb/ruin the landscape
Natural landscape conservation area	Conserving the natural landscape in the urban area	Architecture, land structure, color of architecture, advertisement board
Urban greenery conservation area)	Conserving the green area in the urban area	Architecture, land structure, color of architecture, advertisement board
Cultural and historical architecture conservation area	Maintain and conserve the cultural and historical landscape which is composed of traditional architecture and possessing traditional architecture value	Architecture, land structure, color of architecture, renovation and structural change of architecture, advertisement board

Annex 4

Establishment of Mamminasata Development Management Agency

The most critical issue in Mamminasata is the protection of the eco-system and environment. In the event that further deterioration occurs, it will require much higher costs to recover, and some eco-systems may turn out to be un-recoverable. Urban amenities should also be addressed, as the people wish to live in a more comfortable environment and with amenities in their urban and rural lives. Wastes from social and economic activities should be properly managed.

The district spatial plans have been and are being formulated rather independently and they are less harmonized in the sense of regional spatial development. Most infrastructure in Mamminasata is to be planned, designed and implemented to contribute to the overall benefits of the people in the region. A basic principle requiring consensus is that such infrastructure is implemented not for the benefit of respective district but for the benefit of all the people in Mamminasata.

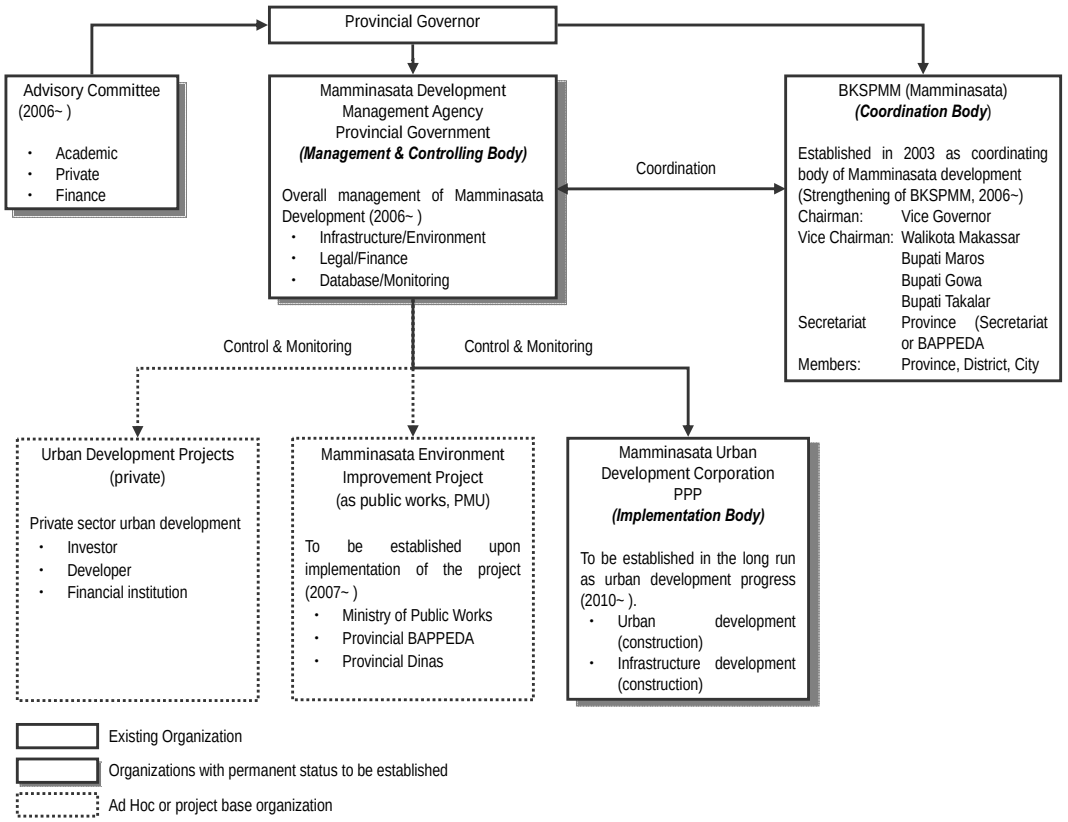
In order to promote Mamminasata development, a permanent office with qualified staff with proper authority shall be established.

1 Establishment

(i) Mamminasata Development Management Agency (BPPM) is established as functional organization in the South Sulawesi government structure for the purpose of managing and controlling Mamminasata urban development.
(ii) Presidential Decree is the base of the establishment of the Agency.
(iii) The agency is established as provincial regulation.

2 Position, Main Duties and Tasks of Organization

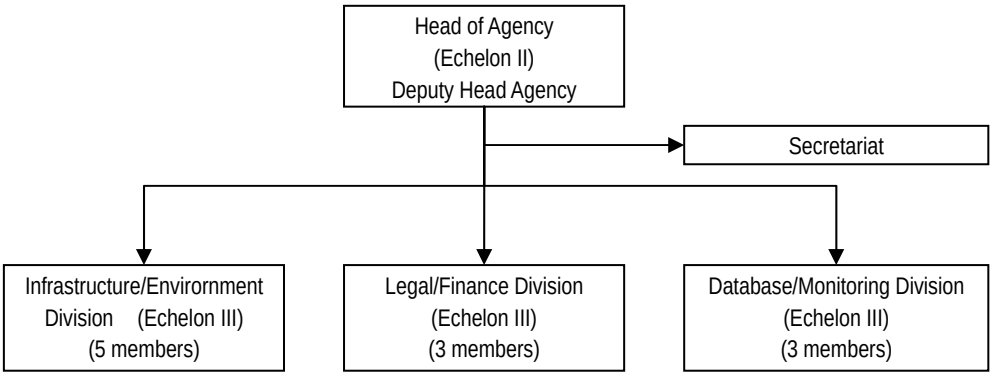
(i) The area of responsibility of the agency is any matter related to Mamminasata urban development. (It will be defined as strategically important matters and inter-regional matters)
(ii) The Agency is positioned as functional organization in South Sulawesi government.
(iii) Major duties are to manage and control Mamminasata urban development through coordination with BKSPMM and other stakeholders. Organizational setting is illustrated in the figure below.
(iv) Main tasks the agency is (a) overall management of action program to be specified in the Presidential Decree, (b) infrastructure and environmental management, (c) legal and financial management, and (d) information system management as well as monitoring and control.



Organizational Setting for Mamminasata Urban Development

3 Organizational Structure

Mamminasata Development Management Agency (BPPM), which is lead by Head of Agency, is composed of three (3) divisions, namely Division of Infrastructure and Environment, Division of Legal and Financial Affairs, and Division of Database Management as shown in the following.



Organizational Structure of Mamminasata Development Management Agency (BPPM)

Duties and function of BPPM are proposed as follows.

Head of Agency

(i) The Chief of Agency has the duty to lead, coordinate, mediate and facilitate in the implementation of the Mamminasata urban development.

(ii) In conducting his/her duties as mentioned in paragraph (i) of this section, the Chief of Agency has the following functions:

a. Determine technical policies in the areas concerning the urban development.
b. Implement coordination with BKSPMM including call for meeting as requires.
c. Implement coordination and cooperation with other agencies related to Mamminasata urban development.
d. Implement coordination with Project Management Unit and private developers.
e. Empowerment of agencies and employees within BPPM in order to achieve sustainable urban development.

Secretariat

(i) Secretariat is lead by a secretary who has duty to provide technical and administrative services to all organizations within working area of BPPM.

(ii) In conducting his/her duties as mentioned in paragraph (i) of this section, the secretary has the following functions:

a. Implement coordination, synchronization, and integration of activities within the agency.
b. Implement coordination in planning and formulation of technical policies.
c. Implement coordination in the formulation of legal products related to the responsibility of the agency.
d. Implement coordination and cooperation with working partners related to Mamminasata urban development.
e. Implement Guidance and Administrative Services, Organization Administrational Matters and Employee Management, Financial Matters, Equipment and Office Supply Matters.
f. Implement other duties assigned by the Chief of Agency according to his/her line of duty.

Division of Infrastructure and Environment

(i) Division of Infrastructure/Environment is headed by Chief of Division who has the duties to implement part of the agency's responsibilities in areas of infrastructure development and environmental consideration.

(ii) In conducting his/her duties as mentioned in paragraph (i) of this section, the Division of Infrastructure and Environment has the following functions:

a. Formulate technical policies concerning infrastructure development in order to achieve efficient infrastructure system in Mamminasata.
b. Formulate technical policies concerning environment and amenity in order to promote environmentally friendly urban area.
c. Control and monitoring of infrastructure development (physical structure).
d. Control and monitoring of urban environment.
e. Implement coordination and cooperation with other agencies related to Mamminasata urban development.
f. Implement other duties assigned by the Chief of Agency according to his/her line of duties.

Division of Legal and Financial Affairs

(i) Division of Legal/Finance is headed by Chief of Division who has the duties to implement part of the agency's responsibilities in areas of legislation and finance of urban development.

(ii) In conducting his/her duties as mentioned in paragraph (i) of this section, the Division of Legal and Financial Affairs has the following functions:

a. Prepare legislation necessary for urban management and control.
b. Execute and monitor execution of legislation.
c. Formulate project finance policy and guidance.
d. Promote public and private partnership.
e. Implement coordination and cooperation with other agencies related to Mamminasata urban development.
f. Implement other duties assigned by the Chief of Agency according to his/her line of duties.

Division of Database and Monitoring

(i) Division of Database and Monitoring is headed by Chief of Division who has the duties to implement part of the agency's responsibilities in areas of database and monitoring.

(ii) In conducting his/her duties as mentioned in paragraph (i) of this section, the Division of Database and Monitoring has the following functions:

a. Establish and update database for urban information.
b. Collect and update socio-economic data.
c. Conduct survey for urban development
d. Manage and update maps.
e. Conduct monitoring and evaluation of urban development.
f. Implement coordination and cooperation with other agencies related to Mamminasata urban development.
g. Implement other duties assigned by the Chief of Agency according to his/her line of duties.

4 Staffing

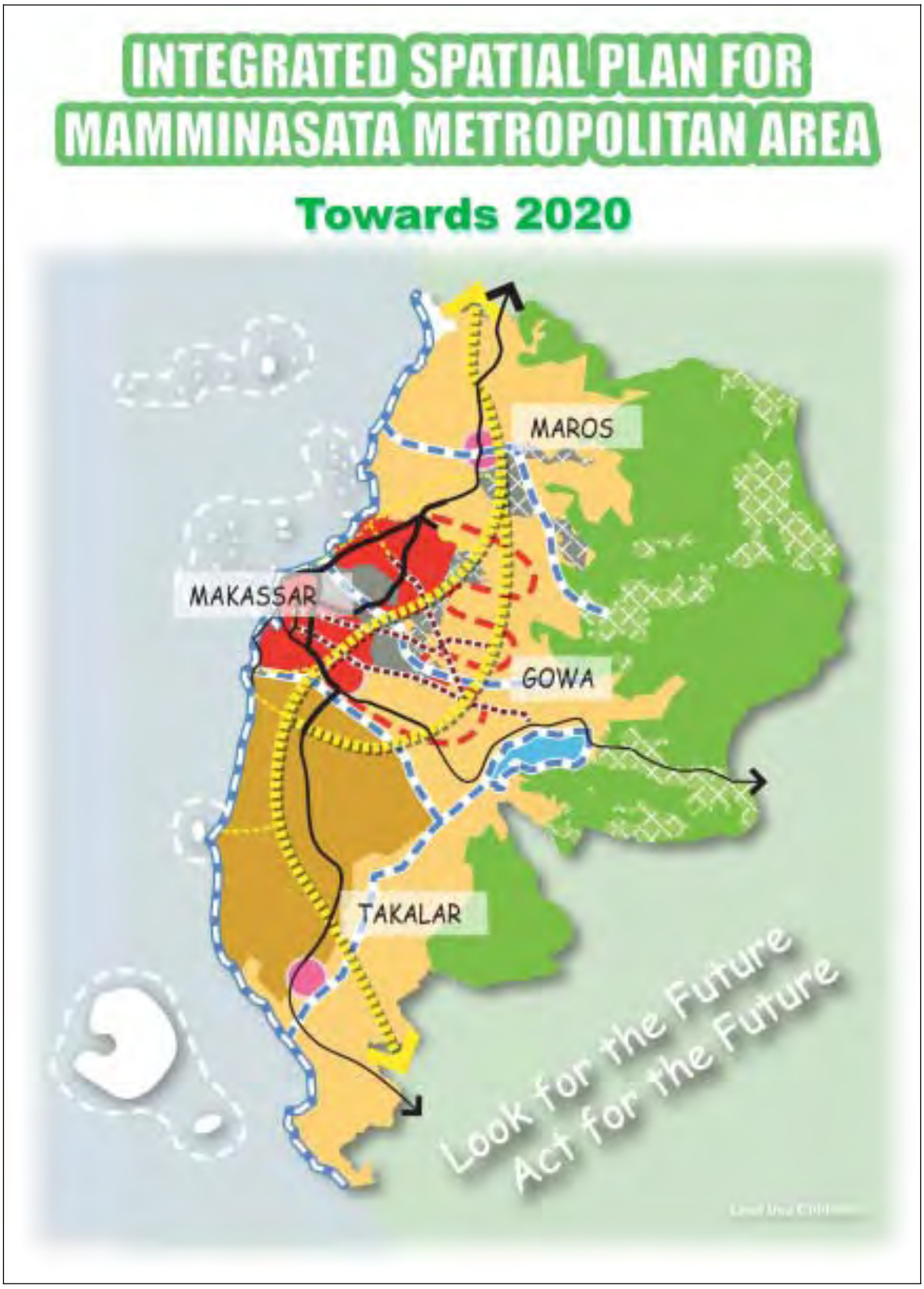
(i) Full time staff with public officer status are employed and properly assigned to the Agency.
(ii) Recruitment of staff can be selected from government officials as well as from private sector.
(iii) Specialists required for the Agency, among others, are urban management, finance, environment, infrastructure, and legal.
(iv) Salary of the staff is paid from provincial budget (APBD).

5 Training

(i) Staff shall be provided with proper training.
(ii) OJT shall be the main method of training.

Annex 5

Pamphlet of Integrated Spatial Plan for Mamminasata



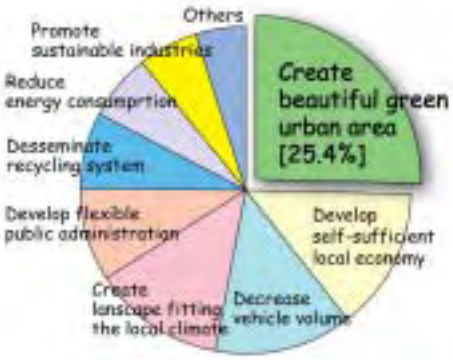
Look for the Future

Better Amenity for Future Generations

Mamminasata Metropolitan area is developed for our future generations. We must plan and create a more comfortable Metropolis for them to live in and to engage in the social and economic activities.

Primary and secondary school children show their future images of the modern Metropolis full of urban amenity (See paintings of children in Mamminasata)

Paintings of Children in Mamminasata
"Kotaku di Tahun 2020"



Questionnaire Survey Result
"Best Attraction in Spatial Planning"

University students, on the other hand, recognize that more green spaces and better amenity are required in the Metropolis while activating the regional economy (See the questionnaire survey result at the international seminar).

Larger Demand for Residential Space

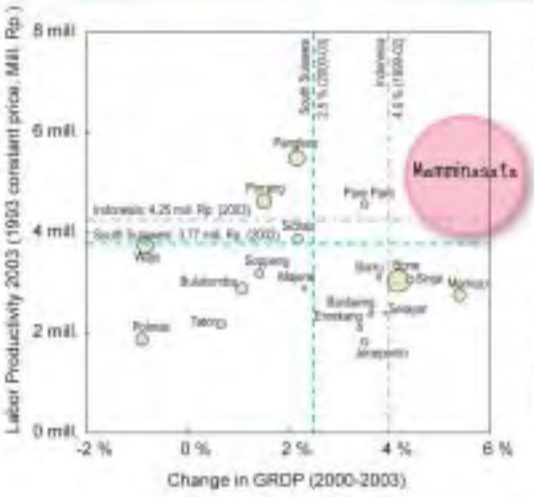
Mamminasata population will increase rapidly from 2.25 million in 2005 to 2.88 million in 2020 at the annual average growth rate of 1.7%. It will generate a large demand for residential spaces as well as creation of employment opportunities in Mamminasata.

Population and employment must be orderly distributed in the region.

Growth in Population towards 2020

1

More Active Economic Performance



Mamminasata leads the South Sulawesi economy, contributing for nearly 70% of GDP in the province.

Productivity of economic activities must be enhanced, though an economic growth rate would be lowered to some extent towards 2020.

Mamminasata is a regional center in South sulawesi. It can't be developed alone, but it should be networked with various sub-regional centers.

Such a network will be established with the transportation, electric power transmission and other linkages generally in a form of ring circulating around the Penninsula.

Future Structure of Regional Economy in South Sulawesi

2

Act for the Future

Regional Development Objectives

To act for the future and for the future generations, we set our objectives of Mamminasata development as follows:

To set up a common target and image of the future of Mamminasata (2020) for the benefit of all the people and stakeholders in Mamminasata

To create a dynamic and harmonized Metropolitan area along with the preservation of the environment and the enhancement of amenities throughout the Mamminasata area

To enhance the standard of living for the people in Mamminasata, ensuring employment and adequate social services, activating the economy and mitigating the risks

To serve as a model for the future development of regional Metropolitan areas in Indonesia

More Green Spaces for Better Urban Amenity and the Sustainable Environment

Urban amenity and the environment is enhanced with more green spaces. Makassar City will double the green spaces towards 2020.
Mamminasata people and public authorities will promote tree planning in houses and public spaces (parks, roads, etc.)

<Green Area Expansion Target> unit: Ha

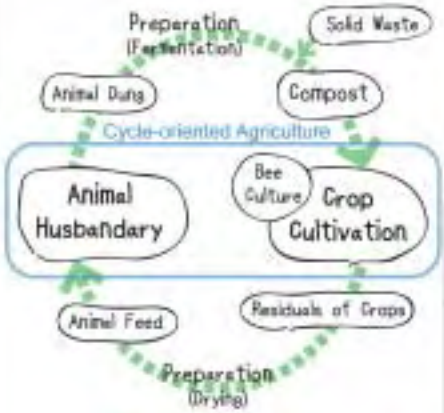
Zoning	Urban	Semi-Urban	Wetland	Afforestation	Total
Makassar	40	400	20	–	460
Maros	–	800	70	12,000	12,870
Gowa	190	1,400	–	8,000	9,590
Takalar	–	300	30	1,750	2,080
Total	230	2,900	120	21,750	25,000

3

More Sustainable Regional Environment

Better Waste Management

Disposal of Solid Waste along Drainage Canal Before Cleaning Activities, "Green Exchange"



An Conceptual Diagram of Cycle-oriented Agriculture

Mamminasata people must be conscious about disposal of solid waste. It should not be disposed of in public spaces.

A better collection and transportation system will be established to maintain a "clean" Metropolitan area in Mamminasata.

An Image of Future Final Disposal combined with Recycling Function

For better waste management, Mamminasata regencies will cooperate in setting up a sanitary landfill site common to the Mamminasata people.

"Reduce", "Reuse" and "Recycle" (3R) by the Mamminasata people will create a cycle-oriented society in the region

4

Act for the Future

Conservation of Swampy Area

Conservation of urban environment is one of the highest priority in the Mamminasata Spatial Planning. To realize this concept, swampy area in the lower reach of Tallo River is proposed be prioritized.

This swampy area conservation will contribute to expanding green spaces in Makassar and turning it into the center of waterfront green land for the Makassar and Mamminasata people.

Conservation of Heritages and Downtown Renovation

Mamminasata has cultural and historical heritages and they should be conserved for the future generations. While, disorderly developed and congested downtown should be renovated to create better amenity and the environment.

An example is the re-development of the Fort Rotterdam and its surrounding blocks in Makassar.

5

Better Urban Amenity

New Urbanization for the increasing population

Urban population will increase by nearly 200,000 respectively in Makassar, Gowa and Maros towards 2020 and new urban centers are required to be developed. To the east of Makassar, a few urban centers will be developed and they will be linked with Makassar and other regencies by roads and other networks.

On the other hand, better utilization of the land will be planned not only for residential but commercial and industrial uses.

An Image of New Urbanization

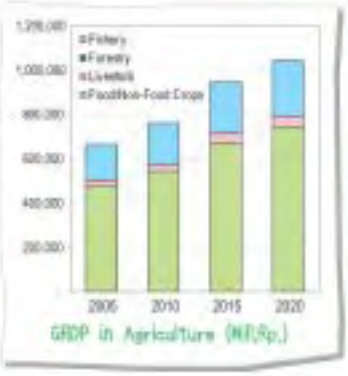
While conserving the cultural and historical heritages in the downtown, suburban area of Makassar, especially along the major roads, such as Jl. Pettarani and Jl. Sultan Alauddin, should be more highly utilized in land use together with reallocation of government offices now scattering along the roads (See the Development Image of Higher Utilization in Land Use along a Major Road).

An Image of Higher Utilization in Land Use along a Major Road

Act for the Future

More Productive Agriculture

About 57% of the economically active population in Mamminasata are engaged in agriculture, contributing 32% of GRDP (2004). As farm lands are extending around the urban and semi-urban centers, crop cultivation and marketing system should be enhanced to create more value added in the agricultural sector.



Livestock and fisheries should also bepromoted actively in an integral manner.

Diversified Tourism Attractions

Tourism industry should also be promoted in Mamminasata.
Makassar will not only serve as a tourism gateway in Eastern Indonesia, but it will offer a variety of attractions in and around Mamminasata.

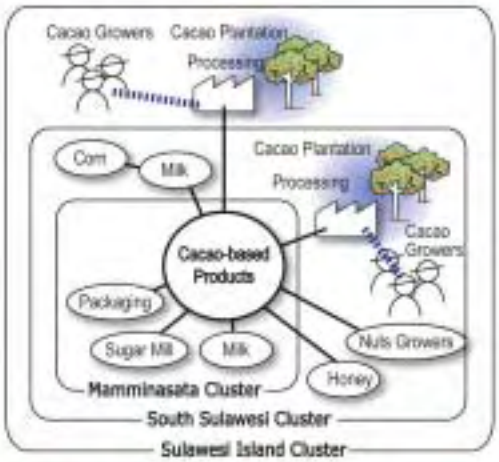
7

More Value Added in Regional Economy

More Value Added in Industries

Manufacturing should be strategically planned to shift from the primary processing to the high value added industrialization through specialization and diversification.

An Image of Industrial Development Scenario



An Image of Cacao-based Cluster in South Sulawesi

An example is the industrialization of cacao products.

Currently most cacao is exported in beans, and it should be more processed in Mamminasata forming a cacao-based cluster to enhance the value added in the region.

Image Drawing of New Convention Center

Sunset view from the Losari Beach is a spectacular renowned in the world. Mamminasata offers both coastal and mountainous attractions.

A new convention center will also enhance convention tourism.

Sunset View

8

Act for the Future

Better Service in Water Supply and Improvement in Sewerage Treatment

The service level of piped water supply in Mamminasata is still relatively low, and it should be improved both in urbancenters and semi-urban towns. Expansion of supply capacity will be programmed for Makassar, as well as Maros, Gowa and Takalar. Improvement should not remain in supply facilities but extended to service management, including improvement in collection of water charges.

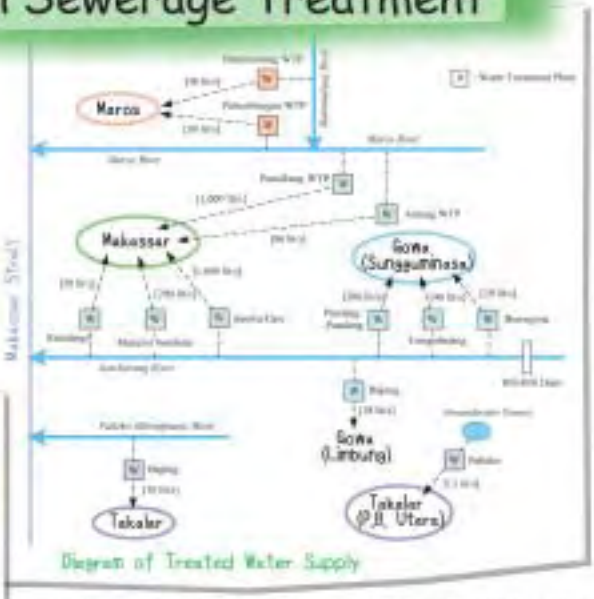


Diagram of Treated Water Supply


Long Term Sewerage System Improvement

Urban amenity and the environment is currently damaged by untreated sewerage, and it should be improved gradually by installing sewerage treatment facilities in urban centers. It should better be improved together with the drain systems, particularly in Makassar.

Stable Power Supply

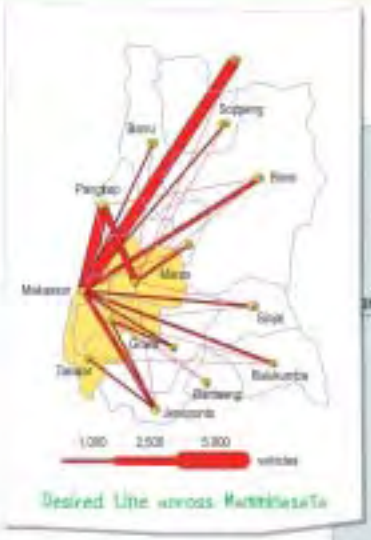
Power supply should be stabilized,maintaining the regional environment. A transmission grid will be established for stable power supply not only in Mamminasata but in other sub-regional centers in South Sulawesi.


Future Transmission Network

9

Demand-oriented Service Delivery

Better Regional Road Network



With the expanded regional economic activities, road network in Mamminasata and South Sulawesi should be improved, mitigating the aggravating congestions in Makassar in particular.

Perintis road, Mamminasata bypass, Trans-Sulawesi road and other network expansion will have to be implemented for new urbanization, industrialization and balanced regional development in South Sulawesi.

10

BKSPMM
(Badan Kerjasama Pembangunan Metropolitan Mamminasata)
PROPINSI SULAWESI SELATAN