



JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

REPUBLIC OF INDONESIA

MINISTRY OF PUBLIC WORKS

DIRECTORATE GENERAL OF HIGHWAYS

**THE STUDY ON ARTERIAL ROAD NETWORK
DEVELOPMENT PLAN FOR SULAWESI ISLAND
AND
FEASIBILITY STUDY ON PRIORITY ARTERIAL
ROADS IN SOUTH SULAWESI PROVINCE**

**FINAL REPORT
VOLUME 2 : FEASIBILITY STUDY
SUMMARY**

MARCH 2008

NIPPON KOEI CO., LTD.
KRI INTERNATIONAL CORP.
ALMEC CORPORATION

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COMPOSITION OF FINAL REPORT

- Volume 1: Master Plan Study (Summary and Main)
- Volume 2-1: Feasibility Study (Summary and Main)
- Volume 2-2: Feasibility Study (Drawings)
- Volume 2-3: Feasibility Study (EIA & Public Consultation)

CURRENCY EXCHANGE RATE

Following currency exchange rates were adopted in this report unless otherwise stipulated.

(1) Indonesia Rupiah vs. US Dollar
Selling rate of Bank Indonesia on May, 16 2007
USD 1= IDR 9,322

(2) Indonesia Rupiah vs. Japanese Yen
Selling rate of Bank Indonesia on May, 16 2007
JPY 1 = IDR 77.55

Preface

In response to the request from the Government of Republic of Indonesia, the Government of Japan decided to conduct the Study on Arterial Road Network Development Plan for Sulawesi Island and the Feasibility Study on Priority Arterial Roads in South Sulawesi Province, and entrusted the Study to the Japan International Cooperation Agency (JICA).

JICA sent the Study team, headed by Mr. Hiroki SHINKAI of Nippon Koei Co., Ltd. and organized by Nippon Koei Co., Ltd., KRI International Corporation, and ALMEC Corporation to Indonesia four times from December 2006 to March 2008.

The Study team had a series of discussions with the officials concerned of the Directorate General of Highways (Bina Marga), Ministry of Public Works and Regional Planning and Development Agency (Bappeda), South Sulawesi Province and conducted related studies. After returning to Japan, the Study team conducted further studies and completed this final report.

I hope that this report will contribute to the promotion of the plan and to the enhancement of amity between two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Indonesia, especially the counter part agencies of Directorate General of Highways, Ministry of Public Works and Regional Government of South Sulawesi Province for their close cooperation throughout the Study.

March, 2008

Takashi KANEKO

Vice President

Japan International Cooperation Agency

March 2008

Mr. Takashi KANEKO
Vice President
Japan International Cooperation Agency
Tokyo, Japan

Letter of Submittal

Dear Sir,

We are pleased to submit to you the report on the Study on Arterial Road Network Development Plan for Sulawesi Island and Feasibility Study on Priority Arterial Roads in South Sulawesi Province in Indonesia. The report compiled all findings obtained through the study from December 2006 to March 2008 in Indonesia conducted by Nippon Koei Co. Ltd., KRI International Corporation and ALMEC Corporation in accordance with the contract with Japan International Cooperation Agency (JICA).

The Study consists of the master plan study on road network development covering 6 provinces in Sulawesi Island and the feasibility study on priority arterial roads in South Sulawesi Province.

The master plan formulates the comprehensive road network system based on the analysis of existing and future socio/economic framework, environment and road conditions in Sulawesi and proposes the realistic and practical implementation plan, taking into consideration possible financial plan aiming at the year of 2024.

The feasibility study on the high priority 5 project roads, including Trans Sulawesi Mamminasata Road from Maros to Takalar, concludes that the projects will be technically and economically feasible and acceptable from the environmental aspects and will contribute to the enhancement of economic development of South Sulawesi. Therefore, the Study team recommends earlier implementation of the projects.

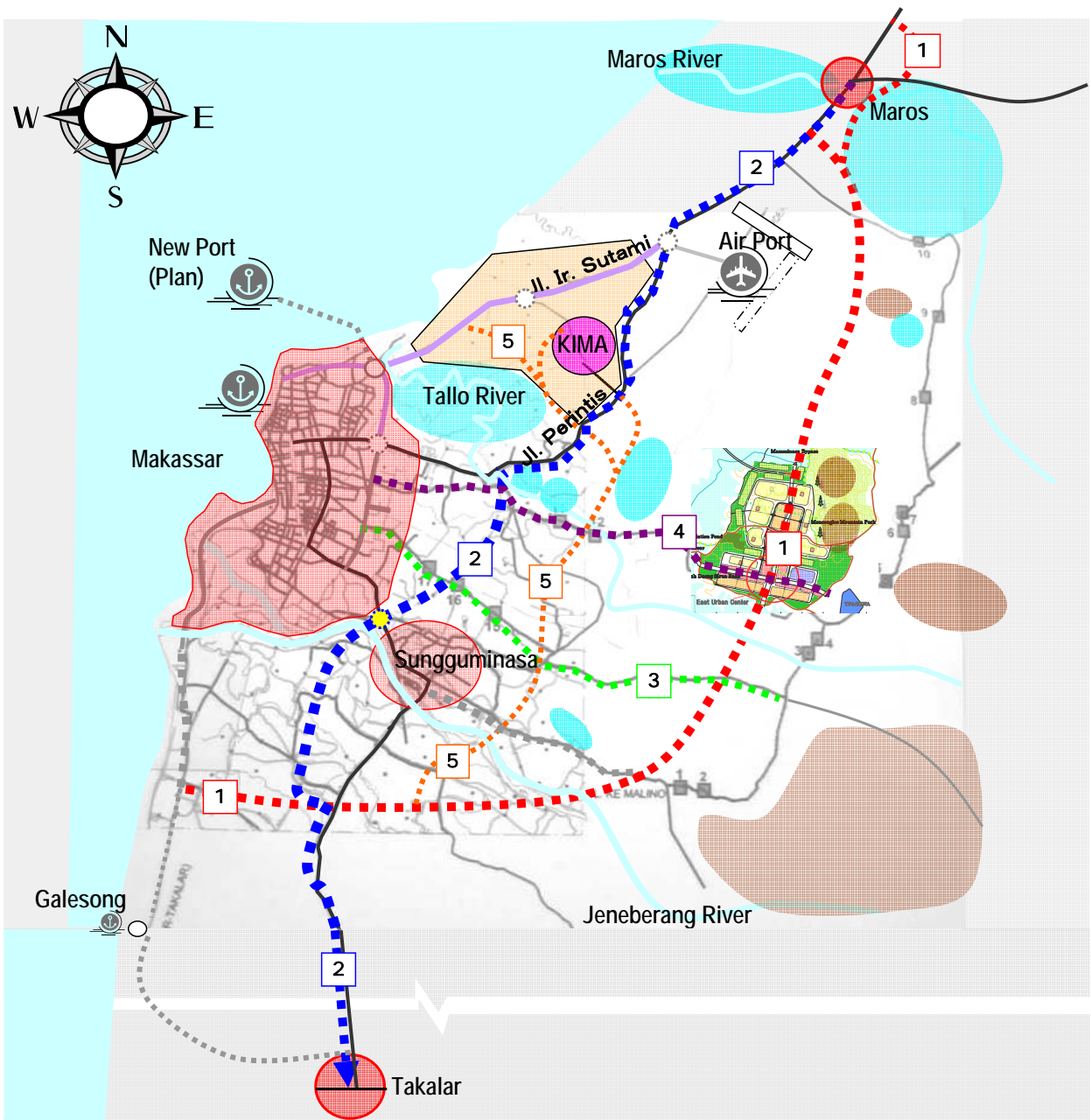
We wish to express our sincere gratitude to your agency, including the JICA experts concerned, and also wish to express our deep appreciation to the government of Indonesia, especially the counterpart agencies of the Directorate General of Highways of Ministry (Bina Marga), Public Works and Regional Planning and Development Agency (Bappeda) of South Sulawesi Province for their close cooperation and assistance extended to us during the study.

We hope this report will contribute to the development of the Republic of Indonesia.

Very truly yours,

Hiroki SHINKAI

Leader of the Study Team



		No.	Name of Road Links	Length (km)
F/S	.....	1	Mamminasa Bypass	49.1
	.....	2	Trans-Sulawesi Road Mamminasata Section	58.0
	.....	3	Hertasning Road	4.9
	.....	4	Abdullah Daeng Sirua Road	15.3
Pre-F/S	.....	5	Outer Ring Road	20.4
			Total:	147.7

- Mountain
- Hill (4000ha), appropriate for a satellite city (New Residential Area Development)
- Wet low land
- Rivers
- Dense Urban Area

The Study on Arterial Road Network Development for Sulawesi Island and Feasibility Study on Priority Arterial Road Development for South Sulawesi Province

LOCATION MAP (F/S)

- Toll Road (JI Tol Ir Sutami)
- Existing National Roads
- Existing Other Roads
- Other Planned Roads

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FINAL REPORT

VOLUME 1 : FEASIBILITY STUDY

SUMMARY

LIST OF ABBREVIATIONS

A

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Office
AC	Asphalt Concrete
ADSRP	Abdullah Daeng Sirua Road Project
AMDAL	Analisis Mengenai Dampak Lingkungan Hidup
ANDAL	Analisis Dampak Lingkungan (Environmental Analysis)
APBD	Anggaran Pendapatan dan Belanja Daerah (<i>Local Budget of Income and Expenditure</i>)
APBN	Anggaran Pendapatan dan Belanja Nasional (<i>National Budget of Income and Expenditure</i>)
ASEAN	Association of Southeast Asian Nations
ASTM	American Society for Testing and Materials

B

BALAI BESAR	Regional Office of DGH
BAPEDALDA	Badan Pengelolaan dan Pengendalian Dampak Lingkungan Daerah (<i>Environmental Impact Management Agency</i>)
BAPPEDA	Badan Perencanaan Pembangunan Daerah (<i>Regional Planning and Development Agency</i>)
BAPPEDAL	Badan Pengendalian Dampak Lingkungan
BAPPENAS	Badan Perencanaan dan Pembangunan Nasional (<i>National Planning and Development Agency</i>)
B/C	Benefit/Cost Ratio
BINA MARGA	Directorate General of Highways
BKSPMM	Badan Kerja Sama Pembangunan Metropolitan Mamminasata

(Mamminasata Metropolitan Development Cooperation Body)

BMS	Bridge Management System
BOT	Built-Operate-Transfer
BP	Bypass
BPN	Badan Pertanahan Nasional <i>(National Land Agency)</i>
BPS	Badan Pusat Statistik <i>(Central Bureau of Statistics)</i>

C

CBD	Central Business District
CBR	California Bearing Ratio
CCC	Celebes Convention Center
CESA	Cumulative Equivalent Standard Axle

D

DAK	Dana Alokasi Khusus <i>(Special Allocation Fund)</i>
DAU	Dana Alokasi Umum <i>(General Allocation Fund)</i>
DCP	Dynamic Cone Penetrometer
DGH	Directorate General of Highways
DINAS	Regional Infrastructure Agency
PRASWIL	
DINAS PU	Dinas Pekerjaan Umum <i>(Regional Public Works)</i>

E

EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
EIRTP	Eastern Indonesia Region Transportation Project
ESAL	Equivalent Standard Axle

F

FIRR	Financial Internal Rate of Return
FS or F/S	Feasibility Study

G

GDP	Gross Domestic Product
GMTDC	Gowa Makassar Takalar Development Center
GOI	Government of Indonesia
GOJ	Government of Japan
GRDP	Gross Regional Domestic Product

H

Ha	Hectare
HCM	Highway Capacity Manual
HRP	Hertasing Road Project

I

IBRD	International Bank for Reconstruction and Development
IC	Interchange
IEE	Initial Environment Examination
IHCM	Indonesian Highway Capacity Manual
IMF	International Monetary Fund
IRMS	Integrated Road Management System

J

JBIC	Japan Bank for International Cooperation
JC	Junction
Jembatan	Bridge
JICA	Japan International Cooperation Agency
JKT	Jakarta
JL	Jalan (Road / Street)

K

K A-ANDAL	Kerangka Acuan – ANDAL
KAB or Kab.	Kabupaten (Regency)
KANWIL	Kantor Wilayah (Regional Office)
KEC, or Kec.	Kecamatan (District)
KIROS	Kawasan Industri Maros (Maros Industrial Estate)

KIMA	Kawasan Industri Makassar (<i>Makassar Industrial Estate</i>)
KITA	Kawasan Industri Takalar (<i>Takalar Industrial Estate</i>)
KIWA	Kawasan Industri Gowa (<i>Gowa Industrial Estate</i>)

L

LRT	Light Rail Transit
-----	--------------------

M

MB	Mamminasa Bypass
MBP	Mamminasa Bypass Project
MCA	Multi Criteria Analysis
MDGs	Millennium Development Goals
MOC	Ministry of Communication
MOT	Ministry of Transport
MoU	Memorandum of Understanding
MPW	Ministry of Public Works
MRR	Middle Ring Road
MRT	Mass Rapid Transit
MST	Muatan Sumbut Terbulat (Maximum Axle Load)
Mt.	Mountain (Gunung)

N

NPV	Net Present Value
-----	-------------------

O

OD	Origin/Development
O/D	Origin/Destination
ODA	Official Development Assistance
OR	Outer Ring

P

P2JJ	Perencanaan dan Pengawasan Jalan dan Jembatan (Design and Supervision Road/Bridge)
PC	Pre-stressed Concrete
PC	Public Consultation

PCC	Portland Cement Concrete
PCU	Passenger Car Unit
PDAM	Perusahaan Daerah Air Minum (Regional Water Supply Company)
PIU	Project Implementation Unit
PMU	Project Management Unit
PPP	Public Private Partnership
Pre-FS	Pre-feasibility Study
PRASWIL	Infrastructure Agency
PT	Perseroan Terbatas (<i>Company Limited</i>)
PU	Department of Public Works

Q

R

RC	Reinforced Concrete
Rd.	Road
RDS	Road Design System
RKL	Rencana Pengelolaan Lingkungan
RKP	Rencana Kerja Pemerintah (<i>Government Action Plan</i>)
ROW	Right of Way
RPJM	Rencana Pembangunan Jangka Menengah (<i>Mid-term Development Plan</i>)
RPJMN	Rencana Pembangunan Jangka Menengah Nasional (<i>Mid-term Nasional Development Plan</i>)
RPL	Rencana Pemantauan Lingkungan
Rp	Rupiah (Indonesian Currency)
RSP	Regional Spatial Plan

S

SITRAMP	The Study on Integrated Transportation Master Plan for Jabotabek
SPT	Standard Penetration Test

T

TEU	Twenty-foot Equivalent Unit
TOR/EIA	Terms of Reference EIA
TPA	Tempat Pembuangan Akhir (<i>Land Fill Site</i>)
TSMR	Trans-Sulawesi Mamminasata Road
TSMRP	Trans-Sulawesi Mamminasata Road Project
TTC	Travel Time Cost

U

UPTD	Unit Pelaksana Teknis Dinas (<i>Technical Implementor Unit Agency</i>)
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V

VAT	Value Added Tax
VDF	Vehicle Damage Factor
VOC	Vehicle Operation Cost

W, X, Y, Z

EXECUTIVE SUMMARY

(1) Background

The development of Eastern Indonesia (KTI) has been one of the priority policies of the GOI to reduce the disparity between Western Indonesia (KBI) and KTI. To support the regional development in KTI, strategic importance of infrastructure has been identified as one of the priority measures for linking different regions and for poverty reduction.

The GOI requested the GOJ to provide technical assistance in carrying out the Study on Arterial Road Network Development Plan for Sulawesi Island and Feasibility Study on Priority Arterial Roads in South Sulawesi Province. In response to this request, the GOJ conducted the Study in line with “The Northeastern Indonesia Regional Development Program” and “The South Sulawesi Province Regional Development Program” undertaken by JICA.

The Study has been implemented with the following objectives:

- i) To formulate the Sulawesi Island arterial road master plan;
- ii) To prepare an action plan for implementation of the arterial road development; and
- iii) To conduct Feasibility Study on Priority Arterial Roads in South Sulawesi Province.

(2) Study Roads

The Study covers the following four (4) feasibility roads and one (1) pre-feasibility study roads in the Mamminasata Metropolitan Area.

Table S.1 List of Feasibility Study Road

No.	Name of Road/Road Section	Length (km)	Function	Administrative Status	
1	Mamminasata Bypass	49.1	Arterial	- #	
F/S	Trans-Sulawesi Road Mamminasata Section (Total: 58 km)	Maros-Middle Ring (Perintis Kemerdekaan Road)	19.6	Arterial (Primary)	National
		Middle Ring Road	7.3	Arterial (Secondary)*	- **
		Middle Ring Road Access	8.6	Arterial (Secondary)*	- **
		Middle Ring Road Access-Takalar	22.5	Arterial (Primary)	National
3	Hertasning Road (Section D Only)	4.9	Arterial (Secondary)*	Province	
4	Abdullah Daeng Sirua Road (Excluding Section B)	15.3	Arterial (Secondary)*	Makassar/ - #	
Pre-F/S	5	Outer Ring Road	20.4	Arterial	- #
Total:		147.7	km		

Notes: * Proposed function
 ** Proposed to be national road in future (strategic road)
 # Proposed to be provincial road (strategic road)

(2) Future Development Plan for Mamminasata Metropolitan Area

Mamminasata's economy highly depended on *the manufacturing industry and trade, restaurant & hotel sectors* as of 2005 and these would still remain the mainstays in GRDP share even towards 2020.

Table S.2 GRDP Projection: Moderate Scenario

(1993 constant price, million Rp.)

Industry	2005		2010		2020		CAGR (%)
	GRDP	(%)	GRDP	(%)	GRDP	(%)	
Agriculture	665,608	13.3	760,568	10.1	1,043,014	7.5	3.0%
Mining & Quarrying	43,315	0.9	60,255	0.8	106,426	0.8	6.2%
Manufacturing Industry	1,046,325	20.9	1,420,147	18.8	2,616,181	18.8	6.3%
Electricity, Gas & Water Supply	139,965	2.8	214,245	2.8	436,259	3.1	7.9%
Construction	331,526	6.6	748,859	9.9	931,910	6.7	7.1%
Trade, Restaurants & Hotel	1,188,170	23.8	1,862,851	24.7	3,664,500	26.4	7.8%
Transportation & Communication	572,739	11.5	876,742	11.6	1,724,664	12.4	7.6%
Finance, Leasing & Business Services	366,918	7.3	622,097	8.2	1,472,730	10.6	9.7%
Services	643,829	12.9	979,567	13.0	1,910,794	13.7	7.5%
Total	4,998,395	100.0	7,545,331	100.0	13,906,478	100.0	7.1%

Source: Integrated Spatial Plan for Mamminasata Metropolitan Area (Main Report)

There are about 180 medium and large enterprises in Mamminasata, many of which are located in the existing KIMA (*Kawasan Industri Makassar*) industrial estate. KIMA was opened in late 1988 between Hasanuddin International Airport and Soekarno Hatta Seaport. Its original area was 192 ha and the current plan is 703 ha.

The Mamminasata Metropolitan Development Cooperation Board (MMDCB) recently has renewed a future development plan for the area, under the cooperation of JICA. There are five industrial areas and two new urbanization areas envisaged in the plan as strategic development areas as illustrated in Table S.3 and Figure S.1.

Table S.3 Outline of Future Industrial Areas and Urbanization Areas

Area Type	Name of Area	Location	Remarks
Industrial Area	① KIROS	Maros	Housing Industry, Sanitary Ware, Bricks, Furniture
	② KIMA2	Makassar, Maros	Processing of Cosmetics and Pharmaceuticals, Agro-processing, Warehouse
	③ KIMA (expansion)	Makassar	Agro-processing, Furniture, Electronics, etc.
	④ KIWA	Gowa	Recycling Industry, Packaging, Regional Final Disposal Site (TPA)
	⑤ KITA	Takalar	Processing of Fruit, Cocoa, Vanilla, Seaweed, Soybeans, Maize and Livestock
New Urbanization Area	⑥ To be named	Gowa, Maros	Residence, Business, Governmental Offices
	⑦ To be named	Takalar	Residence, Business

Source: JICA Mamminasata Study



Note: ① — ⑦ are correspond to the numbers in Table S.2.

Figure S.1 Mamminasata Metropolitan Area Development Plan

(4) Traffic Demand Forecast

The traffic volume on most sections of arterials road including the F/S roads will increase about 2 times in year 2023 from the present. The F/S and Pre-F/S will play an important role to meet the traffic demands in the future. Figure S.2 shows the present traffic and the year 2023 traffic with project case in the Mamminasata Metropolitan Area.

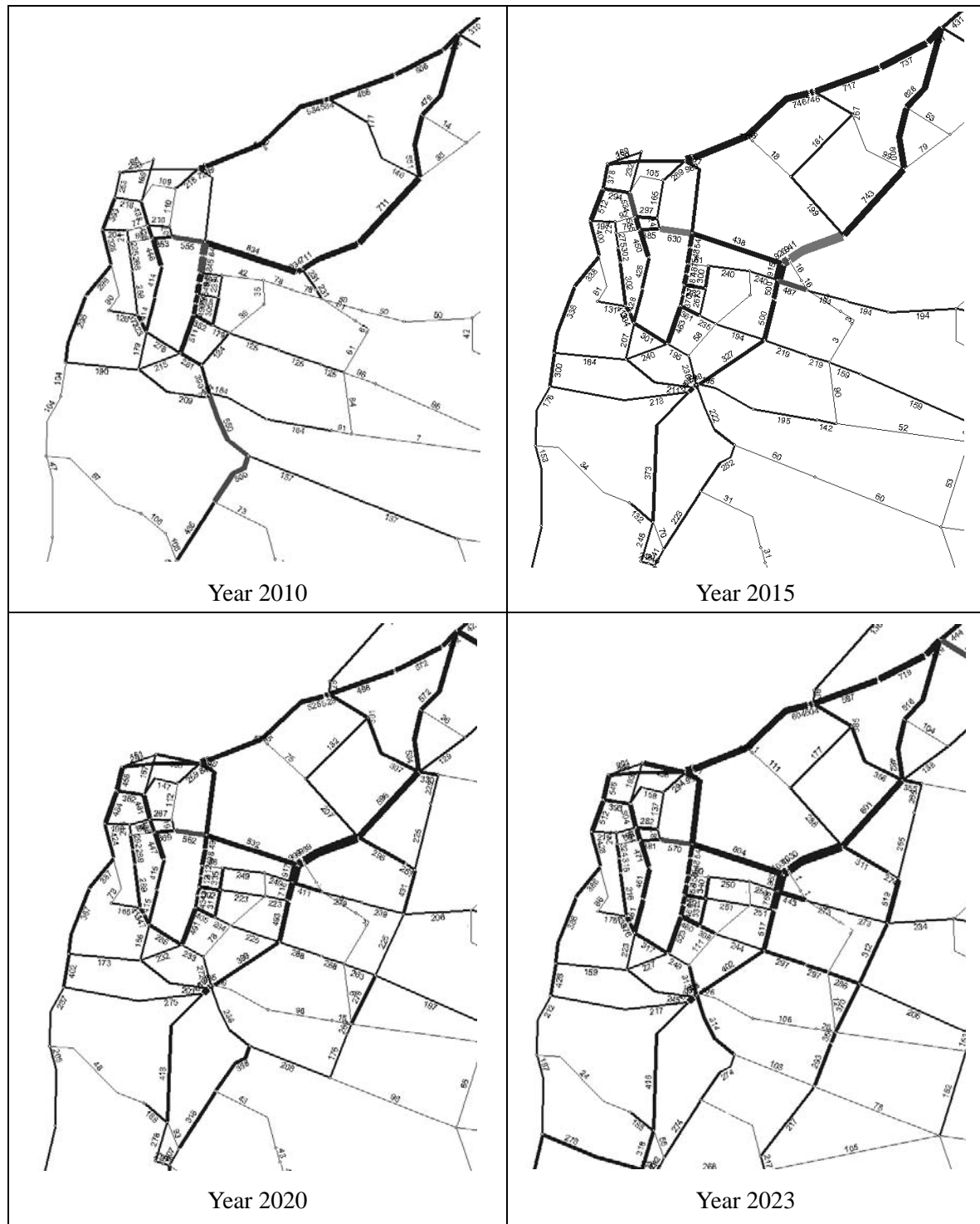


Figure S.2 Traffic Demand Forecast in Mamminasata Metropolitan Areas (With Project Case)

(5) Road Route of Trans-Sulawesi Mamminasata Road

The originally planned route of the Trans-Sulawesi Mamminasata Section was a new road running in parallel with the existing Trans-Sulawesi route (national road) in the Mamminasata Plan.

However, the north and south sections were modified, taking difficulty in land acquisition and resettlement, traffic flow, topography (Tallo River basin and swamp) and required road function into consideration, to use the existing national roads (Figure S.3). The middle section comprised of the Middle Ring Road and its southern extension over the Jeneberang River, which is the same as the original route of the south section between Sungguminasa and Takalar Town in the Mamminasata Spatial Plan was a new route running in parallel with the existing national road.

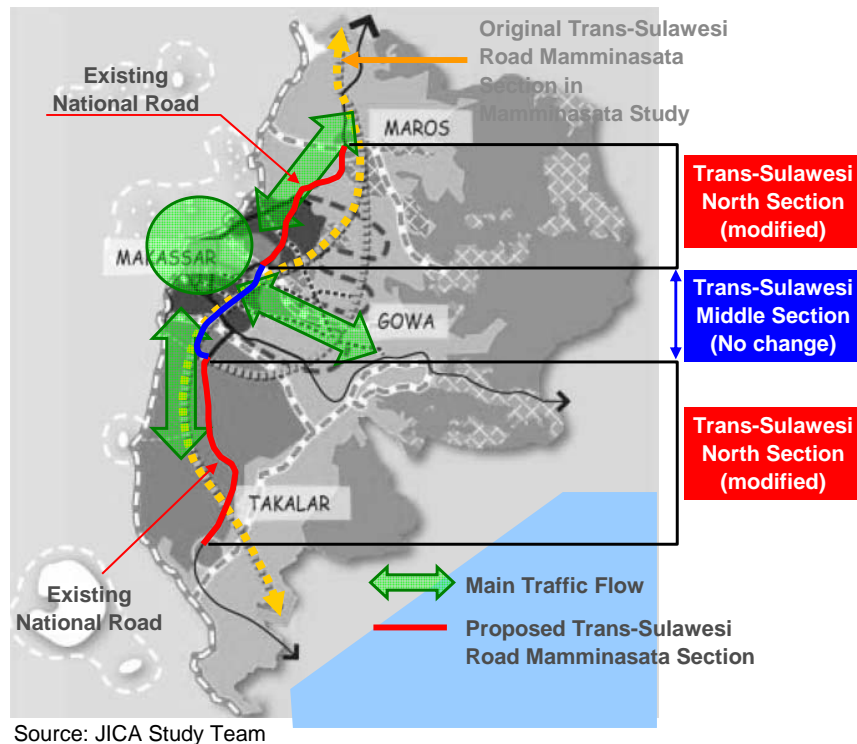


Figure S.3 Modification of Route of Trans-Sulawesi Mamminasata Section

(6) Location of Satellite Towns and Position of Mamminasa Bypass

The Study Team set up an appropriate location of Satellite Town at the west foot of Mt. Moncongloe, at the boarder of Maros and Gowa Regencies. The original location of the Mamminasa Bypass was along the existing Kabupaten road passing behind Mt. Moncongloe. But it was moved to the front of mountain in the Inception Report stage (Figure S.4).

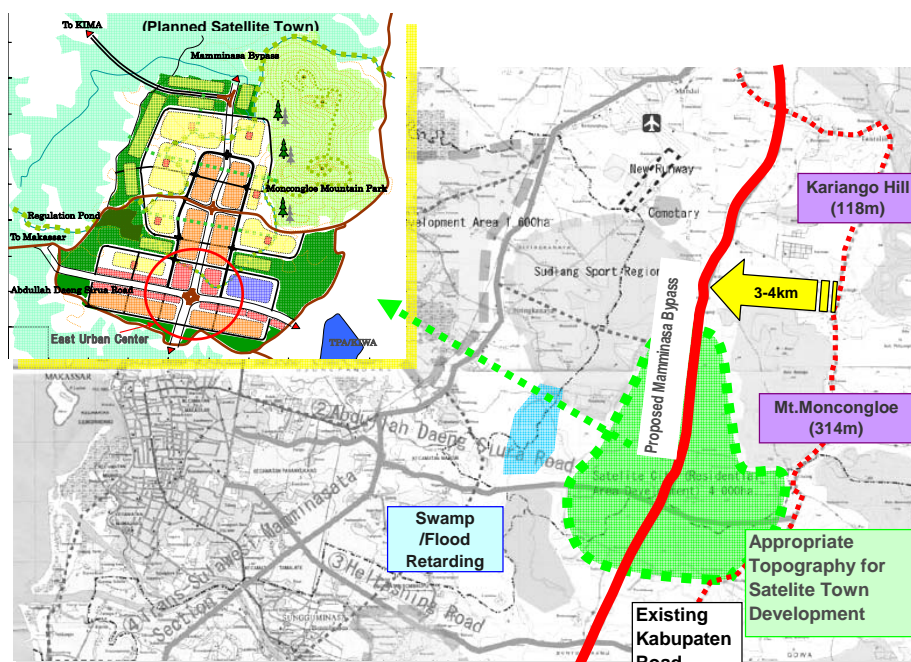


Figure S.4 Location of Proposed Satellite Town and Mamminasa Bypass

(7) Development Concept of the F/S Roads

1) Trans-Sulawesi Road Mamminasata Section (Maros – Takalar)

The development concept of the Trans-Sulawesi Mamminasata Road from Maros to Takalar through the middle ring road is the existing national road widening and new road construction as summarized in the following table.

Table S.4 Development Concept of Trans-Sulawesi Mamminasata Road

No.	Section	Classification				Traffic Volume		Number of Lanes		Development Plan	ROW Width (m)	Current Status of ROW Acquisition	Planned Interchanges (IC)
		Length (km)	Function	Administrative Status	Type / Class	2006	2023	Exsting	Plan				
A	Maros - Jl.Tol.Ir.Sutami IC	8.7	Arterial (Primary)	National	Types II / Class I	23000-30000	53000-54000	4	6	Widening	42	Not yet	Jl.Ir.Sutami
	Jl.Tol.Ir.Sutami IC-Middle Ring Road (Jl.Perintis)**	10.9	Arterial (Primary)	National	Types II / Class I	29000-62000	60000-100000	4	6-8	Widening	42	On-going	
B	Middle Ring Road	7.3	Arterial (Secondary)*	*	Types II / Class I	-	46000-52000	-	6	New Road	40-42	On-going	Jl.Sultan Alauddin
C	Middle Ring Road Access	8.6	Arterial (Secondary)*	*	Types II / Class I	-	47000	-	4	New Road	40	Not yet	-
D	Middle Ring Road Access-Takalar	22.5	Arterial (Primary)	National	Types II / Class I	13000-36000	30000-47000	2	4	Widening	30	Not yet	-
Total:		58.0											

Notes: * Proposed status after construction
 ** DGH started 6-lane widening and complete it by 2010

2) Mamminasa Bypass

The development objective of Mamminasa Bypass is to induce a new satellite town at about 15 km east of Makassar City, at the Kabupaten Gowa and Maros border. The development concept of

Mamminasa Bypass is to construct a new 4-lane road with a wide median (10 m for a widening space in the future) as in the following table.

Table S.5 Development Concept of Mamminasa Bypass

Section	Length (km)	Classification			Traffic Volume 2023(pcu)	Number of Lanes		Development Plan	ROW Width (m)	Bridge
		Function	Administrative Status	Type / Class		Existing	Plan			
South	16.7	Arterial * (Secondary)	Provincial **	Type II / Class I	20000 - 44000	-	4	New Road	40	Jeneberang River (L=154m)
Middle	19.7	Arterial * (Secondary)	Provincial **	Type II / Class I	15000 - 23000	-	4	New Road	40	-
North	12.6	Arterial * (Secondary)	Provincial **	Type II / Class I	11000 - 33000	-	4	New Road	40	Maros River (L=126m)
Total:		49.1 km								

Notes: * Proposed function
 * Proposed administrative status is provincial strategic road

3) Hertasning Road and Abdullah Daeng Sirua Road

Both Hertasning and Abdullah Daeng Sirua roads are radial roads of the Makassar Metropolitan Areas. The planned road is a 4-lane highway with median.

(8) Costs Estimate and Economic Evaluation

The estimated economic cost (excluding VAT and inflation) are as given the following table.

Table S.6 Project Cost of the F/S Roads

Target Road	Length (km)	Economic Cost (Rp. Million)
R1: Mamminasa Bypass	48.6	854,521
R2: Trans-Sulawesi Mamminasata	47.3	
- Non-Toll		1,175,761
- Toll Expressway*		1,382,835
R3: Hertasning Road	4.9	76,310
R4: Abdullah Daeng Sirua Road	14.6	271,692

Note: * For a review for possibility of the project implementation by PPP.

Economic viability is very high for all F/S roads. Trans-Sulawesi Mamminasata Road (non-toll and phasing construction case) and Hertasning Road indicate the higher EIRR of 30.2% and 33.8% respectively. NPV of Trans-Sulawesi Mamminasata Road is the highest among FS Roads.

Table S.7 Economic Evaluation Results for F/S Road

Target Roads	Evaluation Indicators		
	EIRR	NPV (Rp. million) (*)	B/C (*)
R1: Mamminasa Bypass	22.4%	171,550	1.97
R2: Trans-Sulawesi Mamminasata Road			
- (Non-Toll) 2013 simultaneous open	28.5%	768,273	2.30
- (Non-Toll) Phasing	30.2%	721,063	2.45
- (Toll Expressway)	26.7%	648,842	2.07
R3: Hertasning Road	33.8%	122,258	3.51
R4: Abd. Daeng Sirua Road	31.0%	110,466	1.96

Source: JICA Study Team

(*) Discount Rate = 15%

(9) Financial Evaluation for the Middle Ring Road Section of Trans-Sulawesi Road

A comparison of toll revenue and project cost of the toll expressway shows that Financial Internal Rate of Return (FIRR) will be at 6.5% without any subsidies or other financial support from the Government. In general, a toll road project with such a low financial return should be implemented under the conventional public investment as indicated in the following table.

S.8 Financial Viability and Category of Financing Scheme

		Economic Feasibility		
		Good EIRR>18%	Marginal 12% - 18%	Bad EIRR< 12%
Financial Viability	Good FIRR>20%	BOT*	BOT*	-
	Marginal 10%-20%	PPP**	PPP**	-
	Bad FIRR<10%	Public Finance	Public Finance	-

Note: As FIRR of the project was estimated at 6.5%, it is categorized into Public Finance.

In order to attract a private sector to investment, it is necessary to achieve the minimum 20% of FIRR through the Government subsidy on the initial investment. However, the necessary Government subsidy is estimated at 72.0% (Rp. 523,078 Million) of the total investment cost including the Land Acquisition. As this percentage of government subsidy is too high comparing with the normal PPP scheme, the project is recommended to be implemented under public finance.

(10) Environmental Considerations

EIA (AMDAL) report including environmental management and monitoring plans on the Trans-Sulawesi Mamminasata Road Project was approved by the Governor of South Sulawesi Province in September 2007. EIA (AMDAL) report including environmental management and monitoring plans on the Mamminasa Bypass, Hertasing Road and Abdullah Daeng Sirua Road was completed and under approval procedure.

(11) Implementation Plan for the F/S and Pre-F/S Road Projects

Trans-Sulawesi Mamminasata Road

The Trans-Sulawesi Mamminasata Road Project should be implemented in two phases: Phase 1 for Sections B and C (Middle Ring Road and its southern extension), and Phase 2 for Section A (Maros-Jl.Tol.Ir.Sutami IC) and Section D (Sungguminasa – Takalar) to provide sufficient time. Figures S.5 and S.6 show planned implementation plan and schedule.

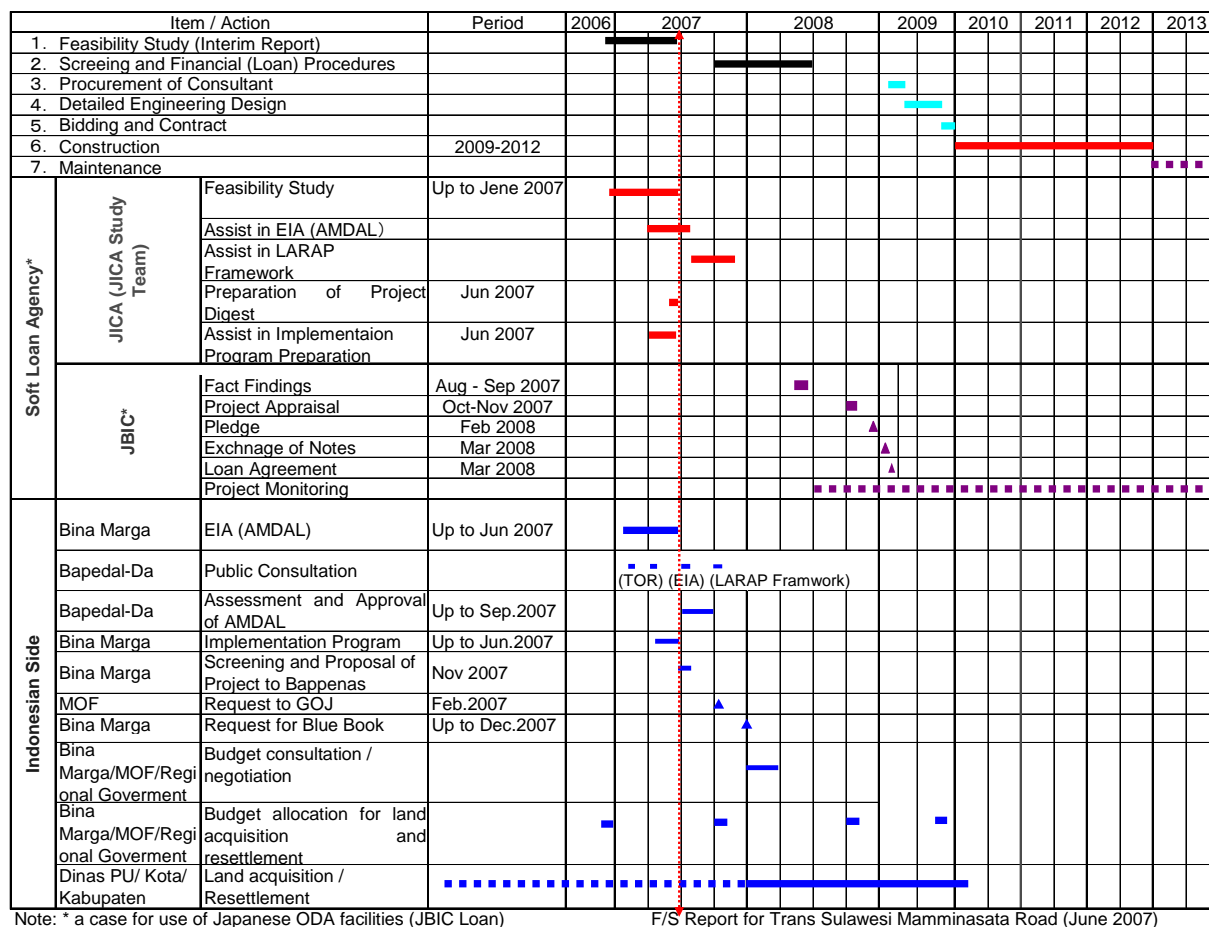


Figure S.5 Implementation Schedule and Action Plan for Trans-Sulawesi Mamminasata Road Project Phase 1 (Case for Japanese ODA Facility)

Mamminasa Bypass, Hertasning Roads, Abdullah Daeng Sirua Road and Outer Ring Road

All these FS roads (Mamminasa Bypass, Hertasning Roads and Abdullah Daeng Sirua Road) and Pre-F/S road (Outer Ring Road) will be implemented and completed by the year 2023. The implementation schedule of projects will differ by priority of sub-section of each road link, financing sources and availability of budgets. As to the anticipated or assumed financial sources and implementation schedule, refer to Section 10.5 of Summary Report.

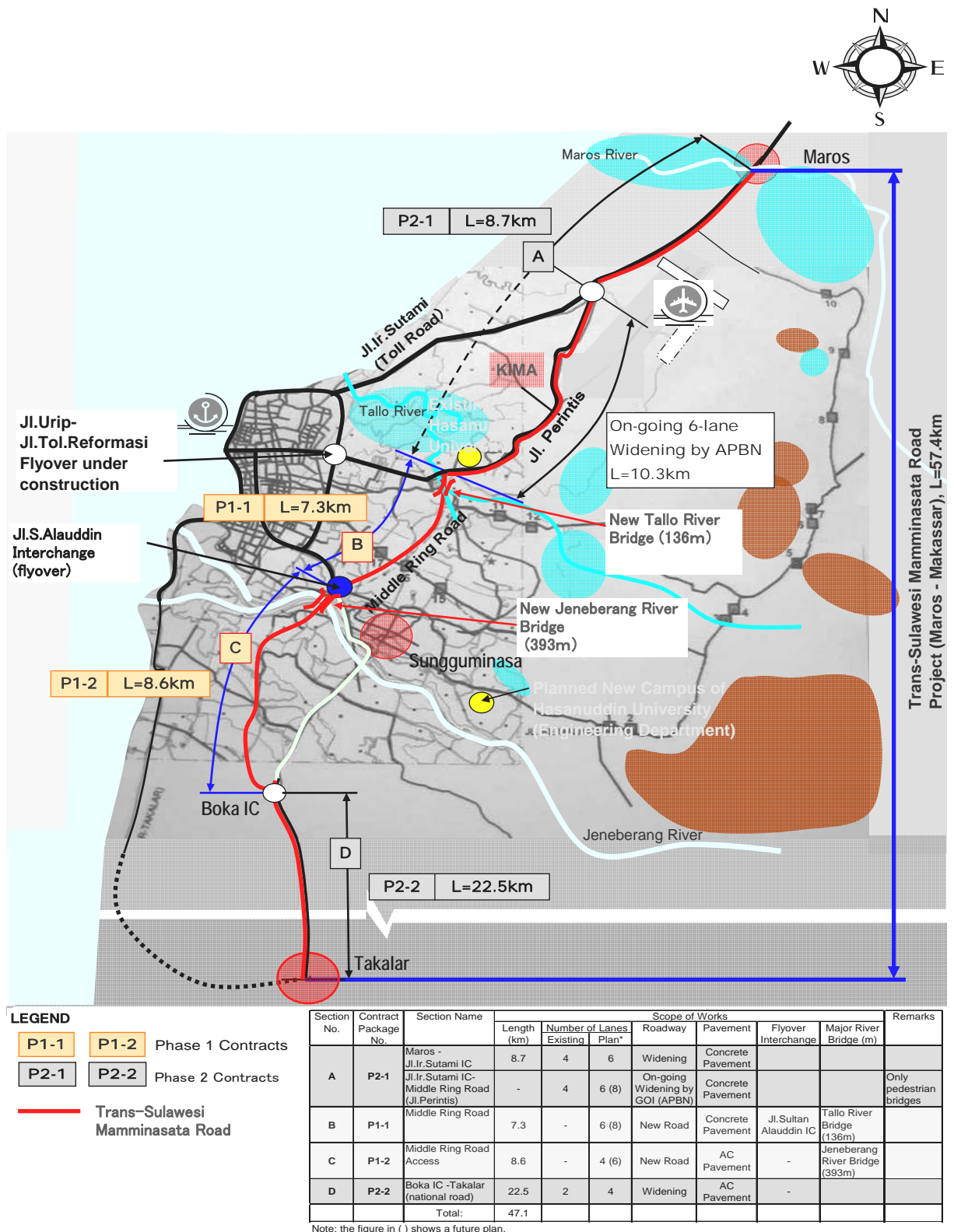


Figure S.6 Implementation Plan B for Trans-Sulawesi Mamminasata Road

(12) Conclusion and Recommendations

1) Trans-Sulawesi Mamminasata Road

The Study Team identified that the Trans-Sulawesi Mamminasata Road (TSMR) is the highest priority road link among four the F/S roads. The F/S for the Trans-Sulawesi Mamminasata Road (the TSMR) has shown that the TSMR Project is highly viable in both technical and economic aspects (EIRR: 28.5-30.2%). Therefore, it is recommended that the Project be implemented at an earliest date for the benefit of national and regional economy by public financing. It will directly contribute to the development of the Mamminasata Metropolitan Area by:

- improving the present urban road network
- coping with the increasing traffic demand
- enhancing regional development.
- supporting logistic flow for inducing trade, investment and industrial development.

It also will indirectly contribute to:

- expanding development to the whole eastern regions of Indonesia
- reducing poverty and regional development gaps.

The current progress of ROW acquisition for the Middle Ring Road (Section B) is approximately 60-70%. The Project should be implemented in two phases: Phase 1 for Sections B and C (Middle Ring Road and its southern extension), and Phase 2 for Section A (Maros-Jl.Tol.Ir.Sutami IC) and Section D (Sungguminasa - Takalar) to provide the sufficient time for land acquisition and resettlement.

2) Mamminasa Bypass

The feasibility study for Mamminasa Bypass has shown that the Project is viable on both technical and economic aspects (EIRR: 22.4%). The Study Team identified that Mamminasa Bypass is the second highest priority road link among four F/S roads. Mamminasa Bypass should be constructed as a new road. The appropriate route is at passing through appropriate topography and location where a new satellite town can be developed.

The north section of Mamminasa Bypass should be planned as a bypass for Maros Town while avoiding a planned flood retarding basin of the Maros River. The southern route should be connected to Jl.Tj.Metro Bunga where many development projects have been in progress or under planning. It will directly contribute to the development of the Mamminasata Metropolitan Area by:

- inducing a new satellite town at the east of Makassar City and the west foot of Mt.

Moncongloe, where flood free 4,000 ha of land could be available for regulated urban development.

- enhancing regional development, especially contributing to the development of KIWA (planned new industrial area of Gowa Regency).

The MB Project should be implemented in phases. The middle part of Mamminasa Bypass should be constructed in the first phase since it is an arterial road for a planned new satellite town.

A separate study should be conducted for establishment of a satellite town development plan. The private sector should be encouraged to participate in the required infrastructure construction, including access road for the new satellite town development.

The regional governments should control housing and other development on the route of Mamminasa Bypass and the planned new town area to secure the land for these developments.

3) Hertasning Road

The Hertasning Road construction project is an ongoing development project by South Sulawesi Government. It is divided into four sections, Sections A, B, C and D. Section A has already been completed and Section B is under construction. The detailed design for Section C has been completed. Implementation of the Hertasning Road Project (the HRP) should be continued under South Sulawesi Province as a provincial strategic road since it is an arterial road of the Mamminasata Metropolitan Area.

Hertasning Road has the following functions:

- Direct access road from the east suburbs to the Makassar City center as one of the radial roads.
- A main access road to TPA (new final waste disposal area planned at Pattallassang in Gowa Regency).
- Enhancement of regional development, especially contributing to the development of KIWA (new industrial area of Gowa Regency).
- A short cut route for the Bili-bili Dam and Malino.

A stage construction approach might be applied for Sections C and D of HRP taking tight budget required for both ROW acquisition and construction into consideration. The 1st Stage is widening of the existing 4.5m travelway (carriageway) to a 7.0 m standard road. The 2nd stage is further widening from 2-lanes to 4-lanes with a median.

4) Abdullah Daeng Sirua Road

The Abdullah Daeng Sirua Road construction project is an on-going project of Makassar City.

This is the direct access road from the Makassar City center to the planned new satellite town and the new industrial area of Gowa Regency (KIWA).

As the F/S for the Abdullah Daeng Sirua Road has verified that the Project is viable on both technical and economic aspects, the project should be continued for the benefit of national and regional economy with a financial assistance of the central government.

5) Outer Ring Road

The Outer Ring Road is one of the important links in the Mamminasata Metropolitan Area arterial road network and its expected functions are as follows:

- Ring road to contribute to harmonizing urban development
- Logistic route for the coming in and out traffic from/to the southern area of the South Sulawesi Province to/from KIMA, Makassar Port, new industrial areas along Jl.Tol.Ir.Sutami
- Connection between the north educational center and the south educational center.

The northern section between Jl.Tol.Ir.Sutami and Jl. Perintis Kemerdekaan through New Industrial Area (Kawasan Pergudangan dan Industri Parangloe Indah) is under construction by a private investor and be completed as it planned. The route of on-going north section should keep a 500-700 m buffer zone between the Tallo River and the on-going north section to avoid negative effects to the river environment.

As the project is vital on both technical and economic aspects, it is recommended to conduct a feasibility study for implementation including EIA for its implementation.

6) Recommendation on Establishment of Coordination Committee for Project Implementation of the F/S Roads

The Study Team understands that good cooperation and coordination between the central governments (Bappenas, MOF and MPW) and regional governments (South Sulawesi Province, Makassar City and Regencies of Maros, Gowa and Takalar) are very important for implementation of the F/S road projects as these are part of the arterial road network for the Mamminasata Metropolitan Area.

The Study Team recommends establishment of a “Project Implementation Committee for Arterial Road Network Development for the Mamminasata Metropolitan Area”. The committee, comprised of the representatives of concerned central and regional governments, holds periodic meetings for monitoring progress of the project implementation, discusses on problems and measures to solve and takes required actions for smooth implementation of the projects.

1. INTRODUCTION

1.1 Background

In Indonesia, the quality of life and social welfare has been significantly improved due to the recent development policies, while regional disparity has appeared as a new problem. Particularly between Western Indonesia (KBI) and Eastern Indonesia (KTI), the disparity is quickly getting serious being one of the major issues for the Government of the Republic of Indonesia (hereinafter referred to as “GOI”) to tackle. The development of KTI has been advocated in the past National Development Plans and also in the new National Mid-Term Development Plan 2005-2009. To support the regional development in TKI, strategic importance of infrastructure has been identified as one of the priority measures for linking different regions and for poverty reduction.

Under these circumstances, the Government of Japan (hereinafter referred to as “GOJ”) has introduced the South Sulawesi Regional Development Program to orientate the development of entire KTI. In the light of this initiative, development of intercity roads as well as urban radial/circumferential roads is proposed in South Sulawesi Province to accelerate the economic development in a balanced manner.

For entire Sulawesi, a master plan for arterial road development is needed to support the sustainable economic development of the island. The plan should include an investment plan with a balance between new construction and maintenance of existing facilities considering the limited resources, and efficient and effective policies for transport network development.

Addressing to the above, the GOI requested the GOJ to provide technical assistance in carrying out the Study on Arterial Road Network Development Plan for Sulawesi Island and Feasibility Study on Priority Arterial Roads in South Sulawesi Province (hereinafter referred to as “the Study”). In response to this request, the GOJ has conducted in close cooperation with the relevant authorities concerned of the GOI.

The Study was conducted in line with “The Northeastern Indonesia Regional Development Program” and “The South Sulawesi Province Regional Development Program” undertaken by JICA, which are expected contributing to acceleration of economic and social development (poverty alleviation). The F/S on Priority Arterial Roads in South Sulawesi Province is one of the South Sulawesi regional programs undertaken by the GOJ as illustrated in the following figure.

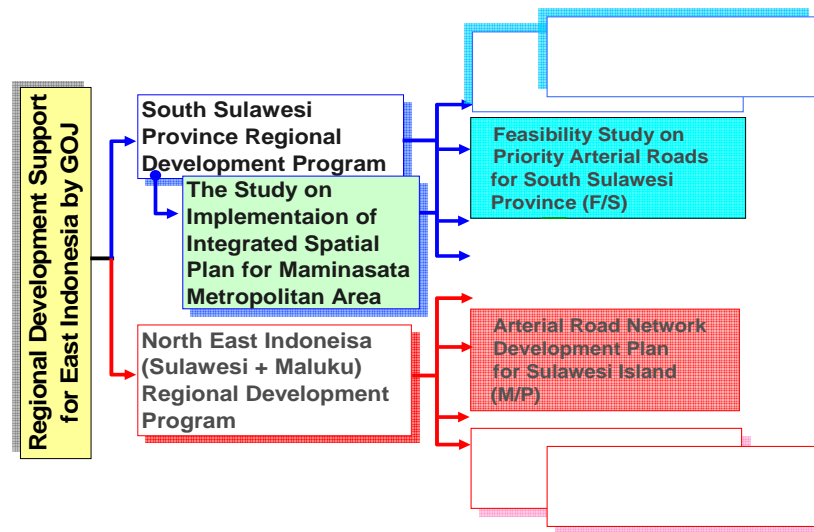


Figure 1.1 Concept of Regional Development Support for East Indonesia by GOJ

1.2 Study Objectives

The major objectives of the Study are:

- i) To formulate the Sulawesi Island arterial road master plan.
- ii) To prepare an action plan for implementation of the arterial road development.
- iii) To conduct Feasibility Study on Priority Arterial Roads in South Sulawesi Province.

In particular, the Study is expected to contribute to the acceleration of economic and social development (poverty reduction) in the region.

1.3 Study Area and Study Roads

The study area for the feasibility study covers the South Sulawesi province with a focus on the Mamminasata Metropolitan Area. The feasibility study route and road sections, which were selected from the proposed priority roads in the Integrated Spatial Plan for Mamminasata Metropolitan Area and agreed in this inception stage after site reconnaissance and discussions with the central and provincial government agencies concerned, are as follows:

- i) Mamminasa Bypass
- ii) Trans-Sulawesi Road Mamminasata Section (Maros-Takalar through Perintis Kemerdekaan Road and Middle Ring Road)
- iii) Hertasing Road
- iv) Abdullah Daeng Sirua Road

In addition to the above four roads, a pre-feasibility study was conducted on the Outer Ring Road as proposed by the South Sulawesi government and Makassar City and agreed between the Directorate General of Highways and JICA on 28th December 2006.

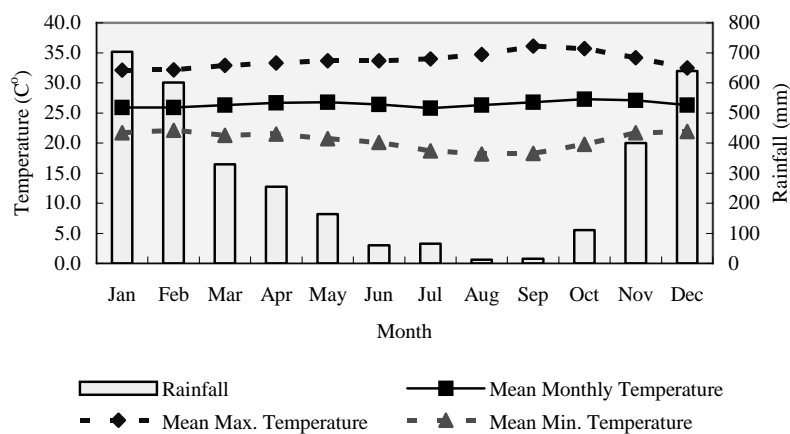
2. EXISTING CONDITION OF THE STUDY AREA

2.1 Natural Conditions

(1) Meteorology

The entire study area is under the tropical climate characterized by high air temperature with small variation throughout a year and distinct wet/dry seasons in a year. The northwest monsoon prevails from November to May, while the southwest monsoon from April to October. The northwest monsoon has high moisture, which is unloaded by the mountain ranges running from north to south. The northern part of the study area, the mountainous area in particular, receives a large volume of rainfall during the northwest monsoon period.

The monthly mean, maximum, and minimum temperature and monthly rainfall are shown in **Figure 2.1** at the Study area. The mean annual rainfall is 3,357 mm and the mean temperature is 26.5°C.



Source: Comprehensive Water Management Plan Study for Maros-Jeneberang River Basin, Nov. 2001 prepared by P.U.

Figure 2.1 Monthly Mean Temperature and Rainfall

(2) Topography and Hydrology

The study area mainly consists of two (2) topographical types; the eastern mountainous region and the western flat land. The study area is composed of the catchment areas of five major rivers (Maros, Tallo, Jeneberang, Gamanti, and Pappa). These rivers run from east to west and finally flow into the Makassar Strait.

(3) Soil and Geology

The study area is in a flat land near the sea. The flat land has gentle undulation ranging from 5 to 40 m in elevation. A marine terrace, which is generally a component of a coastal plain, is not distributed. Laterites soils cover the basement rocks in thin layers, and outcrops of basement rocks can be observed everywhere.

The flat land between Makassar and Takalar is an old floodplain of the Jeneberang River formed in the Late Quaternary age. In the vicinity of the river mouths and along the seacoast, little scale sandbars and swamps are distributed. In the shallow sea to the northwest side of Makassar, many coral reefs have grown on submerged hills. The basement rocks in the study area are composed of Tonasa Formation, Camba Formation and Quaternary Sediment. Sediment rock of Camba formation sits on old rock of Tenasa formation. Alluvial deposits exist along the coast lines and flood plains of Jeneberang River, Tallo River, Maros River, Gamanti River and Papa River.

2.2 Socio-Economic Condition

(1) Demography

The Mamminasata Metropolitan Area has a total population of 2.06 million (2003) and a land area of 246,230 ha covering Makassar city, 12 sub-districts of Maros regency, 10 sub-districts of Gowa regency, and Takalar regency. More than half of its population resides in Makassar, 19.4% in Gowa, 12.7% in Maros, and 11.6% in Takalar (see **Table 2.1**).

Table 2.1 Size and Population of Mamminasata Metropolitan Area (2003)

District	Size (ha)*	(%)	Population**	(%)
Makassar (All 14 Sub-district)	18,057	7.3	1,160,011	56.3
Maros (12 of 14 Sub-districts)	103,902	42.2	261,732	12.7
Gowa (10 of 16 Sub-districts)	72,325	29.4	399,698	19.4
Takalar (All 7 Sub-districts)	51,947	21.1	239,425	11.6
Total	246,230	100.0	2,060,866	100.0

Source: JICA Study Team*; BPS**

The population in Mamminasata has been growing steadily with an average annual growth rate of 1.9% between 2000 and 2003. Gowa has the highest growth rate of 2.5% among the four districts. Many populous inner sub-districts of Makassar experience population decline while a few others record only minor escalation. In contrast, the sub-urban districts, including Biringkanaya, Manggala, Mandai, Moncongloe, and Tamalanrea, have a growth rate of more than 3 %.

(2) Economic Performance of Mamminasata Metropolitan Area

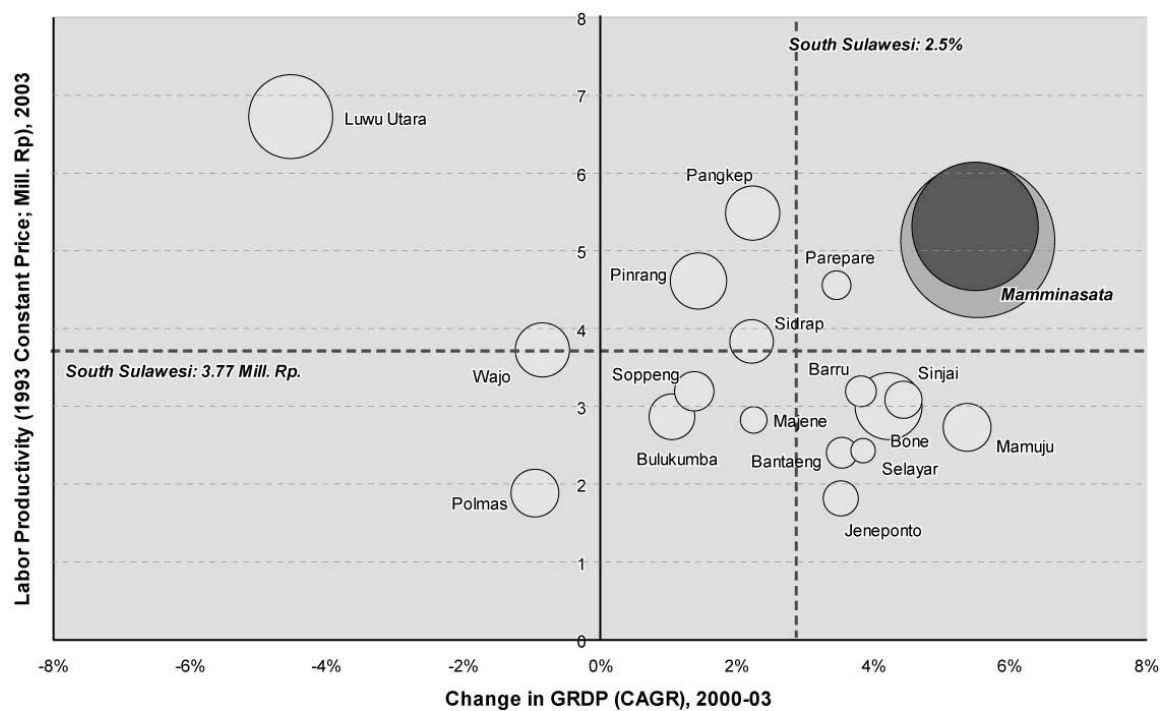
The GRDP of South Sulawesi province was Rp. 48,509,525 million in 2004, accounting for 2.6% of the national GDP. Of the whole Sulawesi region, South Sulawesi shares more than a half of its GRDP. The GRDP per capita of South Sulawesi remains at a low level at around 67% of the national average (see **Table 2.2**).

Table 2.2 Economic Comparison (2004 Current Price)

	South Sulawesi	Sulawesi Island	Indonesia
GRDP (2002) (Rp. Million)	48,509,525	92,010,735	1,863,274,686
GRDP Share (of Sulawesi)	52.7%	-	-
GRDP Share (of Indonesia)	2.6%	4.9%	-
GRDP per Capita	5,711,236	5,751,498	8,500,158

Source: BPS Statistics 2006

Figure 2.2 shows the economic performance of the South Sulawesi province from 1999 to 2003. Mamminasata shows an obviously different pattern from that of other regencies in South Sulawesi in terms of change of GRDP and labor productivity. The economic performance of Mamminasata is superior to that of South Sulawesi both in change of GRDP and in labor productivity. This indicates that, with the large size of the Mamminasata economy, the economic development of Mamminasata can greatly enhance that of the Sulawesi Island as a whole.



Source: JICA Study Team

Figure 2.2 Economic Performance of Mamminasata (2000-2003)

(3) Poverty Rate and other Socio-economic Indicators

According to the National Socio- economic Survey (BPS), the poverty ratio of the Sulawesi Island was 18.9% in 2002, which was almost same as the national average of 18.2% in the same year. The poverty ratio in Makassar (5.6%) was well lower than the national average, and that of Takalar (15.8%) was also below the national average. However, the poverty ratio in Maros (23.7%) and Gowa (19.6%) is higher.

Other socio-economic indicators included in the Millennium Development Goals (MGDs) are shown below. While school participation rate is lower than the national average, infant mortality rate and accessibility to water show better performance than the national average.

Table 2.3 Poverty and Other Socio-economic Indicators for Mamminasata

	Indonesia	South Sulawesi	Districts in Mamminasata			
			Makassar	Maros	Gowa	Takalar
Poverty rate: %	18.2	18.9	5.6	23.7	19.6	15.8
School participation rate for age group 7-12 (%)	96.1	92.5	95.6	92.8	92.5	90.0
Female mean years of schooling	6.5	6.4	9.8	5.4	5.9	5.4
Male mean years of schooling	7.6	7.3	10.8	6.2	6.7	6.0
Infant mortality rate: per 1,000	43.5	33.0	22.3	30.7	27.0	40.5
Population without access to safe water: (%)	55.2	58.7	8.0	48.0	41.8	54.0

Source: Indonesia Human Development Report, BPS/ BAPPENAS

2.3 Industrial Sector of Mamminasata Metropolitan Area

(1) Overview of Industrial Sector Performance

Mamminasata's economy highly depended on *the manufacturing industry and trade, restaurant & hotel sectors* as of 2005 and these would still remain the mainstays in GRDP share even towards 2020.

Table 2.4 GRDP Projection: Moderate Scenario

(1993 constant price, million Rp.)

Industry	2005		2010		2020		CAGR (%)
	GRDP	(%)	GRDP	(%)	GRDP	(%)	
Agriculture	665,608	13.3	760,568	10.1	1,043,014	7.5	3.0%
Mining & Quarrying	43,315	0.9	60,255	0.8	106,426	0.8	6.2%
Manufacturing Industry	1,046,325	20.9	1,420,147	18.8	2,616,181	18.8	6.3%
Electricity, Gas & Water Supply	139,965	2.8	214,245	2.8	436,259	3.1	7.9%
Construction	331,526	6.6	748,859	9.9	931,910	6.7	7.1%
Trade, Restaurants & Hotel	1,188,170	23.8	1,862,851	24.7	3,664,500	26.4	7.8%
Transportation & Communication	572,739	11.5	876,742	11.6	1,724,664	12.4	7.6%
Finance, Leasing & Business Services	366,918	7.3	622,097	8.2	1,472,730	10.6	9.7%
Services	643,829	12.9	979,567	13.0	1,910,794	13.7	7.5%
Total	4,998,395	100.0	7,545,331	100.0	13,906,478	100.0	7.1%

Source: Integrated Spatial Plan for Mamminasata Metropolitan Area (Main Report)

Considering the labor productivity and GRDP scale of each sector, the *finance, leasing & business services sector* is expected to be a new prospective sector in the future economy of Mamminasata in addition to the two mainstays (*manufacturing industry and trade, restaurant & hotel*). Other sectors would not be so significant in contribution to the economic growth because of their relatively low productivity and growth rate. To attain the target economic growth in Mamminasata, it is expected that the priority sectors (*manufacturing, trade, restaurant and hotel, and finance, leasing & business services*) will stably grow and establish their positions in the economic activities.

In the manufacturing sector of Mamminasata, only 12% of GRDP is from small-scaled enterprises, while 88% depends on medium- and large-scaled enterprises¹. There are about 180 medium and large enterprises in Mamminasata, many of which are located in the existing KIMA (*Kawasan Industri Makassar*) industrial estate.

KIMA was opened in late 1988 at a distance of 15 km from downtown Makassar, 20 minutes by car from Hasanuddin International Airport or 20 minutes from Soekarno Hatta Seaport. Its total area is 703 ha, of which 192 ha have been so far in use accommodating 189 factories² (as of December 2006), which consist mainly of food and beverage industry, marine product processing and light industry. Supporting infrastructures/facilities such as clean water reservoir, waste water treatment plant, electricity supply, telecommunication network, road network, etc. are well equipped.

(2) Future Development Plan for Mamminasata Metropolitan Area

The Mamminasata Metropolitan Development Cooperation Board (MMDCB) recently has renewed a future development plan for the area, under the cooperation of JICA. The plan defines priority development/improvement areas together with necessary infrastructures.

There are five industrial areas and two new urbanization areas envisaged in the plan as strategic development areas as outlined in the following table. Each industrial area is planned on a large scale of hundreds hectares to accommodate various types of industries in consideration of original resources of each regency, while further feasibility studies are needed for implementation.

Table 2.5 Outline of Future Industrial Areas and Urbanization Areas

Area Type	Name of Area	Location	Remarks
Industrial Area	① KIROS	Maros	Housing Industry, Sanitary Ware, Bricks, Furniture
	② KIMA2	Makassar, Maros	Processing of Cosmetics and Pharmaceuticals, Agro-processing, Warehouse
	③ KIMA (expansion)	Makassar	Agro-processing, Furniture, Electronics, etc.
	④ KIWA	Gowa	Recycling Industry, Packaging, Regional Final Disposal Site (TPA)
	⑤ KITA	Takalar	Processing of Fruit, Cocoa, Vanilla, Seaweed, Soybeans, Maize and Livestock
New Urbanization Area	⑥ To be named	Gowa, Maros	Residence, Business, Governmental Offices
	⑦ To be named	Takalar	Residence, Business

Source: JICA Mamminasata Study

¹ Study on Implementation of Integrated Spatial Plan for the Mamminasata Metropolitan Area

² By December 2006, KIMA has acquired 321 ha of the total planned area of 703 ha. Out of 321 ha, 192 ha have been sold 189 ha to the factories.

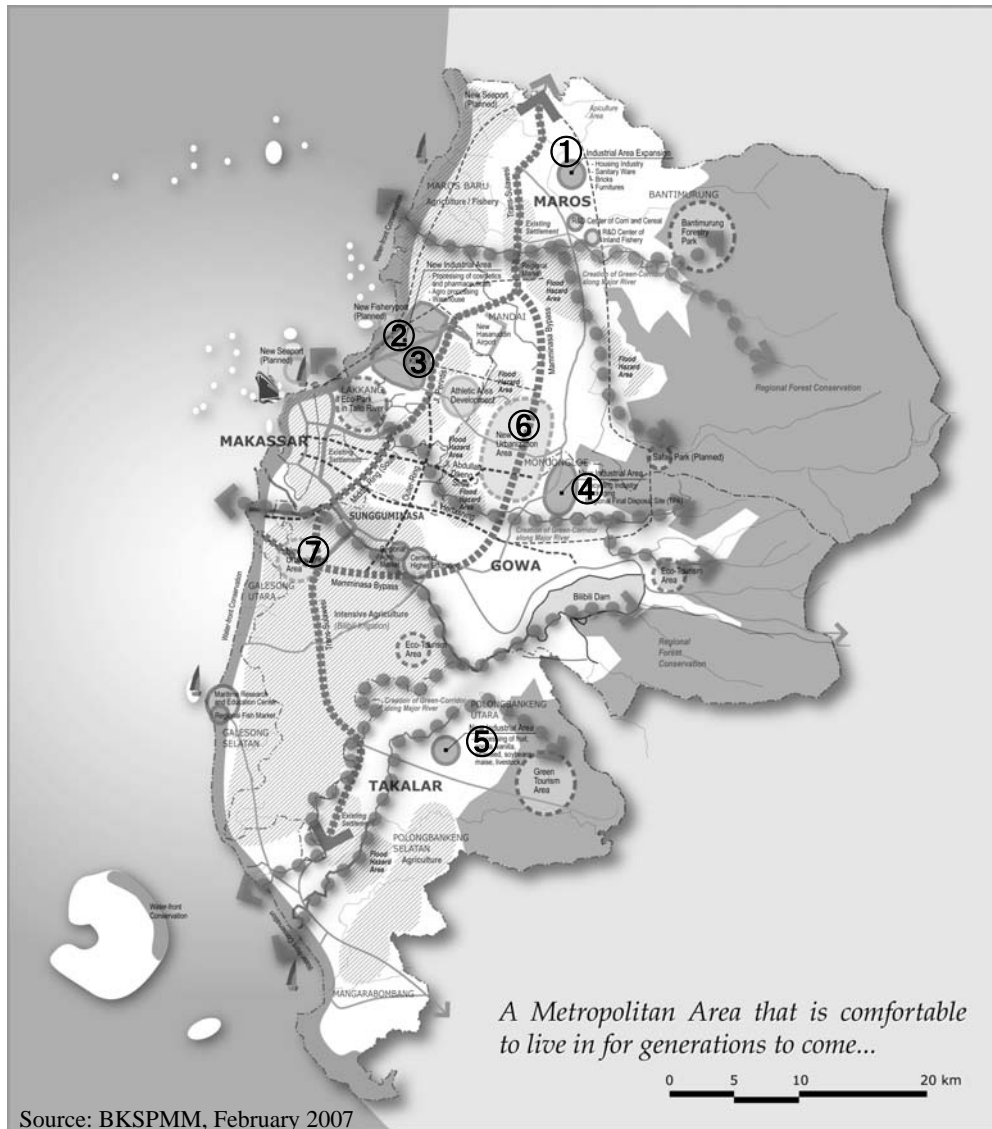


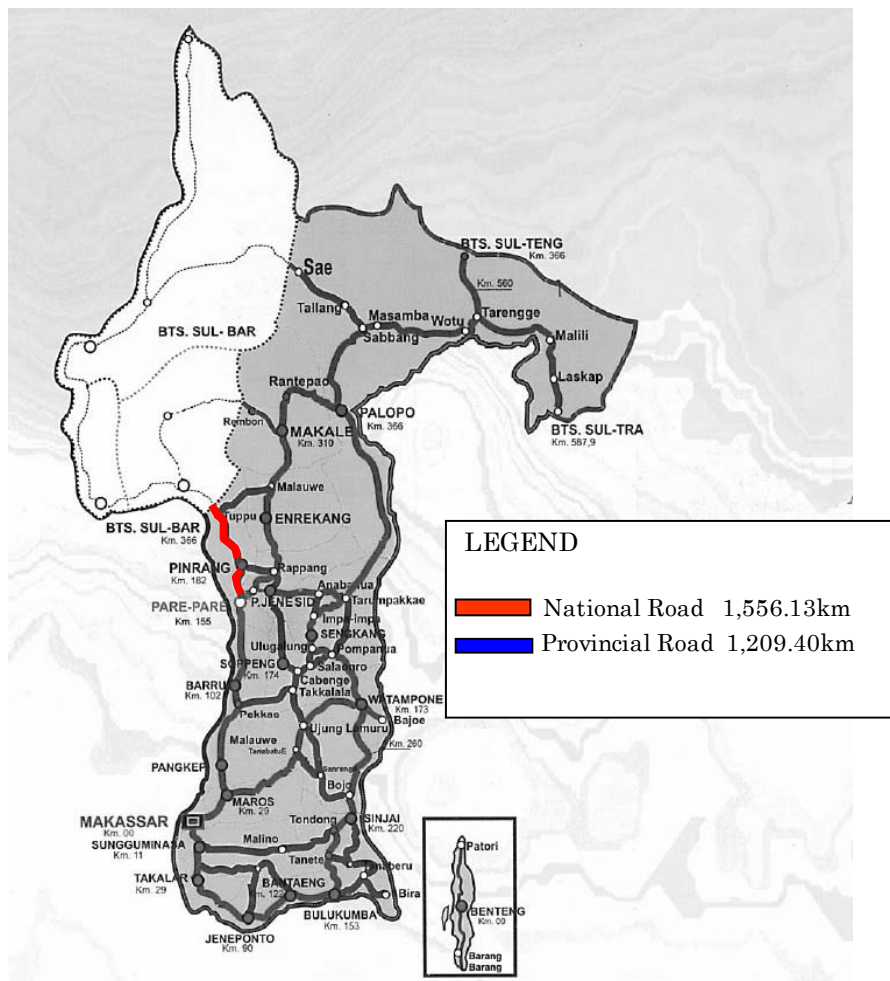
Figure 2.3 Mamminasata Metropolitan Area Development Plan

2.4 Road and Transport Situations

(1) Road Facilities and Traffic Situation

As of 2006, 1,556 km of national roads and 1,209 km of provincial roads exist in South Sulawesi Province as shown in **Figure 2.4**. National roads connect Makassar City with adjacent cities (regional activity centers) and provincial roads connect regional and local activity centers.

Road surface of national and provincial roads in South Sulawesi Province is 50% in good, 37% in fair, 5% in poor and 8% in bad condition.



Source: Praswil, South Sulawesi Province (2006)

Figure 2.4 Road Network in South Sulawesi

(2) Road Facilities of Mamminasata Metropolitan Area

The present road network in the Mamminasata Metropolitan Area consists of national roads, provincial road and local roads. The total length of national and provincial is 382 km and that of the local road is approximately 4,000 km. Three regency capitals of Maros, Gowa and Takalar are connected with Makassar City by national roads.

The road condition in the Mamminasata Metropolitan Area is summarized in **Table 2.6**.

Table 2.6 Pavement Road Condition in Mamminasata Metropolitan Area

	Good	Fair	Slightly Damaged	Seriously Damaged
National Roads	31.4%	68.2%	0.6%	-
Provincial Roads	39.9%	33.6%	8.7%	17.8%

Source: Data Informasi 2006, Praswil, South Sulawesi Province

(3) Public Transport System and Facilities

1) Bus Services

The current public transport services in the Mamminasata Metropolitan Area are provided by road-based transport modes (buses, mini bus, taxi, becak, etc.). Mini bus is the main public transport mode in the Mamminasata Metropolitan Area.

Bus service for inter-city is provided for between the Mamminasata Metropolitan Area and other major cities in the entire Sulawesi Island. The Mallengkeri and Daya bus terminals are operated as inter-city bus stations in the Mamminasata Metropolitan Area and provide transferring facilities from inter-city buses to other public transport services.

Mini bus service is provided on most of the arterial and collector roads in the Mamminasata Metropolitan Area as a major intra-city transport mode.

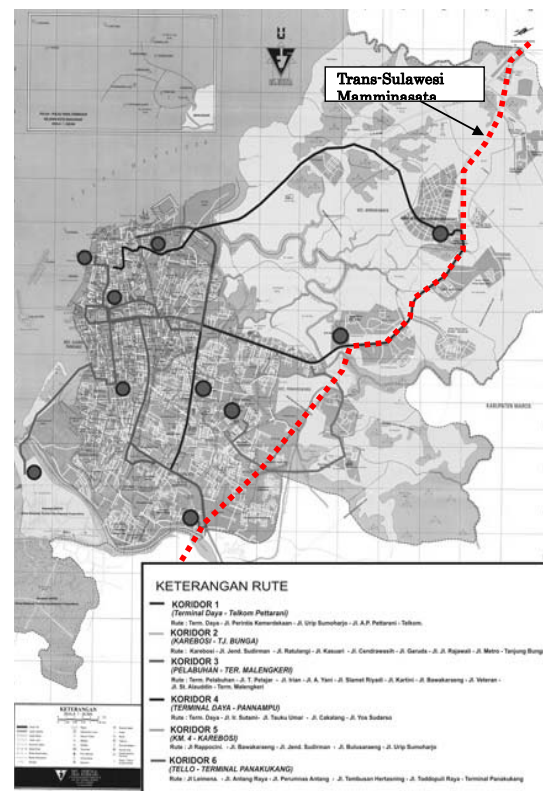
2) New Busway System

Dinas Perhubungan (Transport Agency) of Makassar City has worked out a new busway system plan. The busway system intends to replace the present mini bus and private passenger cars with large buses on the urban trunk roads. Some of the proposed operation routes, shown in **Figure 2.5**, in the plan are duplicated with the present mini bus operation routes.

The busway routes are planned to set on existing roads as an exclusive lane. The local governments are required to bear the road widening and land acquisition costs under budget shortage. The exclusive busways on the 2-lane road are physically not applicable. Installation on 4-lane roads would be also not easy. As the exclusive lane without providing additional lanes by road widening reduces traffic capacity, the traffic congestion problems would not be solved.

3) Inland Water Transport

The Makassar City has developed a master plan for inland water transport network. The Tallo River will be a part of the network and the clearance of roads crossing it shall be considered for navigational operation.

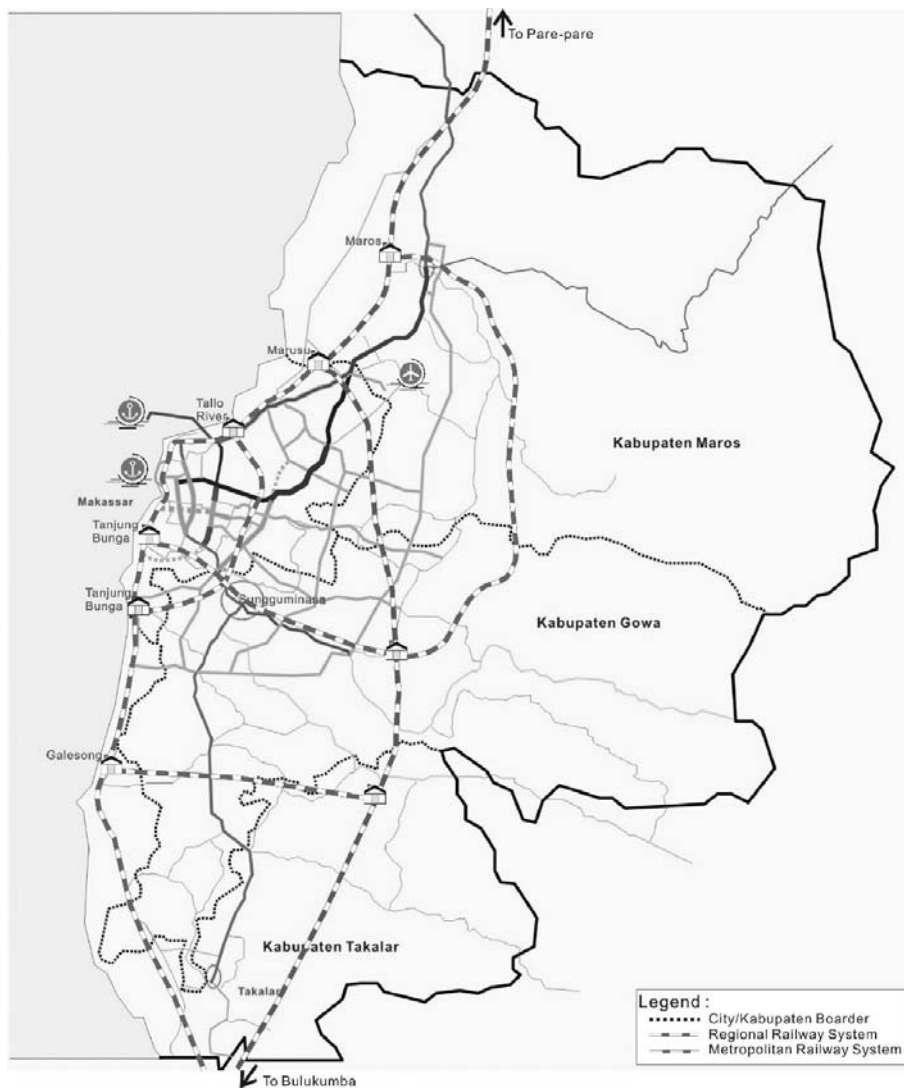


Source: Dinas Perhubungan, Makassar City

Figure 2.5 New Busways Plan of Makassar City

4) Railway System

Dinas Tata Ruang (Spatial Planning Agency) has prepared a railway development master plan for the Mamminasata Metropolitan Area shown in **Figure 2.6**. The planned rail network covers the entire Mamminasata Metropolitan Area using the ring and radial network as an urban railway system. However, as the investment cost is very large, introduction of the railway system was not recommended in the Mamminasata Spatial Plan Study of JICA. The railways, MRT (Mass Rapid Transit) or LRT (Light Rail Transit) would be a future challenge and a separate study should be made in the future.



Source: Praswil South Sulawesi Province

Figure 2.6 Railway Network Plan by South Sulawesi Province

(4) Other Transport Facilities

1) Hasanuddin Airport

The Hasanuddin Airport acts as a transit point of air passengers for other destinations in Sulawesi Island and a gateway to eastern Indonesia. This is a hub port not only the Sulawesi Island but also eastern Indonesia (Maluku, Papua and Irianjaya). The airport handled a total of approximately 3.9 million air passengers in 2006. The airport is managed by PT. Angkasa Pura I. The airport has a 2,500 m long runway which is capable of accommodating B737 aircraft.

Since the capacity of the existing taxiway and apron of Hasanuddin Airport has been saturated due to rapid increment of air traffic, new terminal building (51,000 m²), taxiway (1,917 m) and apron (62,800 m²) has been constructed by the budget of the central government. The construction will be completed in 2008. Bidding for the new runway with a length of 1,300 m is in progress and its construction would be started within 2007. In the long term, the government will extend it up to 3,100 m.

The Hasanuddin International Airport is located at the northeast of the city center of the Mamminasata Metropolitan Area, in Kabupaten Maros. The main access routes from the city center to the airport are the Perintis Kemerdekaan and Ir Sutami Toll roads. A new Airport Terminal Access Road was completed in 20006 (right photograph).

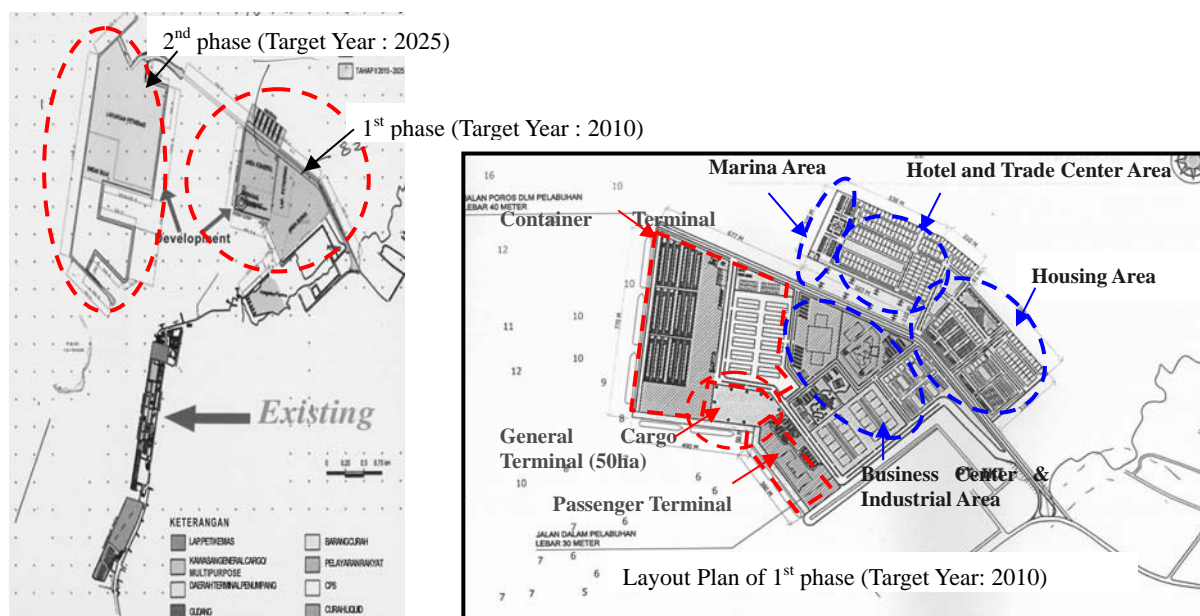


2) Makassar Port

Makassar City is the main outlet/inlet of cargo movement in Sulawesi. The Makassar port is located at the center of the Mamminasata Metropolitan Area and it has a logistical role as the sole container port of the South Sulawesi province.

The port has 3 container berths with a maximum depth of 12 m and 4 units of gantry crane. A container yard with an area of 114,416 m² is provided in the port area and an inland container depot has been constructed along the port access road of Jl Tol Ir Sutami.

Since the container traffic at the new container terminal will reach 500,000 TEU/year in the near future, MOT has an expansion plan of the port. The master plan of the port is shown in **Figure 2.7**.



Source: Ministry of Transport

Figure 2.7 Expansion Plan for the Makassar Port

(5) Road Safety and Over Loading Control

1) Road Safety

The registered vehicle numbers in Indonesia have increased by 24.8% on the average between 2002 and 2005. Traffic accidents have increased by 19.3% per year in line with the motorization as indicated in **Table 2.7**. Approximately 11,600 persons died and 22,200 persons were injured in 2005.

Table 2.7 Traffic Accident in Indonesia

Year	2002	2003	2004	2005	Average Annual Increase
Fatal	8,762	9,856	11,204	11,610	9.9%
Injury	14,941	14,836	21,067	22,217	15.6%
Number of Accidents	12,267	13,399	17,732	20,623	19.3%

Source: MOT, December 2006

The traffic accidents in the Mamminasata Metropolitan Area have also increased in parallel with the rapid motorization. The average increase rate of traffic and fatal accidents in the last 4 years are 37% and 16% respectively. **Table 2.8** is a comparison of accident rates in the Mamminasata Metropolitan Area with all Indonesia. The fatal accident ratio of the population in the Makassar Metropolitan Area is very high compared with that in all Indonesia.

Table 2.8 Fatal Accident Ratio Comparison

	Population (2005)	Number of Fatal Accidents (2006)	Fatal Accident Ratio (per 100,000 people)
Makassar	1,193,451	111*	9.3
Maros	296,336	58*	19.6
Gowa	575,295	76*	13.2
Indonesia (all)	222,055,000	12,117**	5.5

Source: * Traffic Accident Statement, National Police Agency

** MOT, December 2006

Motorcycle is the largest mode of vehicles involved in traffic accidents and its share is 62 % of the total number of accident. The major reasons are its large share in the total traffic volume, insufficient traffic safety awareness, misbehavior of drivers, insufficient traffic regulation enforcement, and under-standard traffic management and facilities. Countermeasures for improving the above issues would be not only physical facility improvement but also regulation enforcement, and education.

2) Overloading

The degree of the Minister of MOC No.KM13 Year 2001 designated the road classification in Sulawesi. Under the degree, roads are classified into Class I, II, IIIA, IIIB and IIIC.

Table 2.9 Axle Load Control by Road Criteria

Class	Maximum Size of Vehicles	Maximum Axle Load (ton)
I	W= 2.5m, L=18m	>10
II	W=2.5m, L=18m	10
IIIA	W=2.5m, L=18m	8
IIIB	W=2.5m, L=12m	
IIIC	W=2.1m, L=9 m	

All national roads in Sulawesi were classified into either IIIA or IIIB. The maximum axle loads allowed on the public roads is 8 tons.

According to the axle load survey in April 2007 as a part of traffic survey, approximately 64% of surveyed vehicles are overloaded at Maccopa Weigh Station in Maros and approximately 47% of surveyed vehicles are overloaded at Somba Opu Weigh Station in Gowa.

3. TRANSPORT PLANS

3.1 Transport Plans

(1) National Transport Development Plan and Strategies

The national policy and strategy of the transport sector is to support the vision, mission and development objectives stipulated in the national RPJP (National Long-term Development Plan) 2005-2025 and spatial plans for national (NTRWN) and Sulawesi Island (NTRW Pulau Sulawesi). The vision and mission of RPJP are to attain independent, advanced, equal and prosperous nation. The period of RPJP is for 20 years and it is divided into 5-years national middle term development plans (RPJM), namely RPJM-I of 2005-2009, RPJM-II of 2010-2014, RPJM-III of 2015-2019 and RPJM-IV of 2020-2024.

The visions of RPJM-I are:

- To establish the society, people and nation of safe, united, harmonized and peace.
- To establish the society, people and nation secured with highly protected, equality, basic human rights.
- To establish prosperous economy of providing sufficient job opportunity, good life for sustainable development

The mission of RPJM-I is establishment of safe/peace, equal/democratic and prosperous nation. The infrastructure development is an integral part of RPJM-I. The efficient and effective transport infrastructure will support the economic growth, regional development and unification of nation.

(2) Five Year Plan (Renstra 2005-2009) of the Ministry of Public Works

The Ministry of Public Works (MPW) established the five-year plan including vision, mission, overall goals and sector goals under RPJM-I. The function and duty of public road development policy, strategy and targets for 2005 to 2009 are stipulated in the plan.

The following issues are key issues to achieve the planned target:

- Lack of capacity and fund for road maintenance.
- Regional disparity and poor access from production centers to market areas, including many isolated areas.
- Many road infrastructures were damaged by natural disaster leading to diversion of budget allocation from road maintenance to disaster and road damage treatment.
- Realizing balanced and integrated development areas (including isolated areas, boundary areas, small islands) to strength unity of regions in Indonesia.

- Limited government financial capacity on road infrastructure development compared with demand for road development. Therefore, it is necessary to enhance budget allocation effectiveness and efficiency, and to find innovative financial resources from community and/or private sector.
- Difficulty in investment promotion aspects due to delay of toll road development.
- Necessity to support national and international transport development schemes (ASEAN/Asian Highways).
- Based on community demand, it is necessary to make effort to ensure fast reformation process, transparency and accountability development, community and business world with better role.

The vision of MPW in the five year plan is to provide the infrastructure, which is reliable, beneficial, for realization of safe, peace, equal, democratic and more prosperous nation.

The mission of MPW is:

- To fulfill the regional public works infrastructure to protect the centers of production and settlement from flood damages.
- To fulfill the necessity of regional public works infrastructure in road sector, in order to support the regional development and the flow of goods and services.
- To develop public works infrastructure in settlement to realize the housing and settlement qualified and productive.
- To conduct the development of building that is safe and secure.
- To increase the regional government and society capacity in public works infrastructure development.
- To develop the applied and competitive public works technology and to increase the quality of public works infrastructure.
- To implement the efficient organization, work mechanism, and integration through good governance principle and to develop professional human resource.

(3) Sulawesi Island Transport Development Plans

There are several existing studies regarding the transport system of Sulawesi. The following studies have been reviewed:

- 1) Sulawesi Island Integrated Transportation Development Study (Studi Pengembangan Keterpaduan Transportasi di Pulau Sulawesi)

This is a recently completed multi-mode study commissioned by the Research and Development Agency of the Ministry of Communications. The final report was submitted in November 2006. Its target year is 2022. This study emphasized the role of ferry and air transportation. Several new ferry/shipping routes (Bitung-Mindanao, Kendari-Ambon, etc.) and new airports (Mamasa, Palopo,

Pasangkay, etc.) were proposed, although road planning focused on improvement and strengthening of existing roads.

2) Mamminasata Spatial Plan 2003-2012

The Mamminasata Spatial Plan (2002) was established in reference to the road network plan proposed in the Ujung Pandang Highway Development Study, JICA, 1989 and the planned road network covered in and around the Mamminasata Metropolitan Area to strengthen regional linkage for ensuring economic development (**Figure 3.1.1**).

The planned network is similar to that of the JICA Study in 1989. However, the alignment of the “Outer Ring Road” as well as the location of the junction with Jl. Perintis Kemerdekaan was modified and the junction was shifted to the northern side of the Hasanuddin airport.

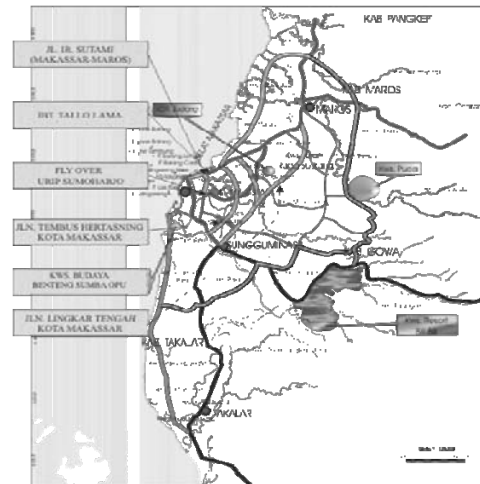


Figure 3.1 Road Development Plan of Mamminasata Spatial Plan 2003-2012

3) Ujung Pandang Highway Development Study, JICA (1989)

“Studi Pengembangan Jalan Raya Ujung Pandang”, JICA, 1989 proposed the trunk road network in Makassar City up to 2009. It also identified major traffic corridors connecting Makassar and Maros, Gowa, and Takalar as shown in **Figure 3.2**. The trunk network plan is composed of (i) five arterial radial roads and (ii) three ring roads for Makassar City and its surrounding regencies. The framework itself had been well coordinated with city planning, geographic condition and urbanization trends and Makassar city has developed its trunk road system in accordance with the JICA Study recommendations.

4) Makassar City Development Plan 2005-2025

This is the on-going master plan of Makassar City. The alignments of the Middle Ring Road and Outer Ring Road as proposed in the JICA Study 1989 are retained. Almost all road networks are the same as those envisaged in the Mamminasata Spatial Plan 2003-2012, except the Losari Beach road which would

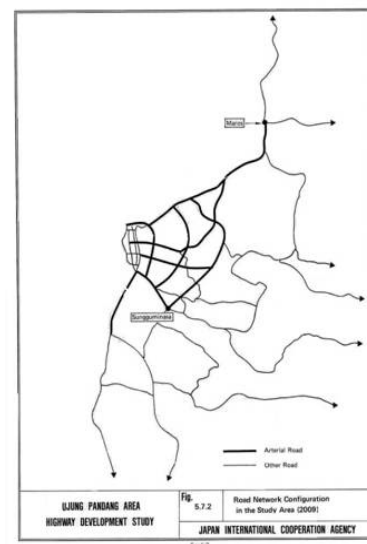


Figure 3.2 Road Development Plan by JICA

be widened to 20-40m as part of the West Ring Road (**Figure 3.3**).

Remarkable features of the plan are land use plan for the coastal area and the Tallo River estuary, where a large area of land is planned for reclamation as a new residential, commercial and industrial area by 2025. Extension of the “Inner Ring Road (JI.AP Pettarani)” to the southern part of the Jeneberang River remains unchanged despite of difficulties in land acquisition.

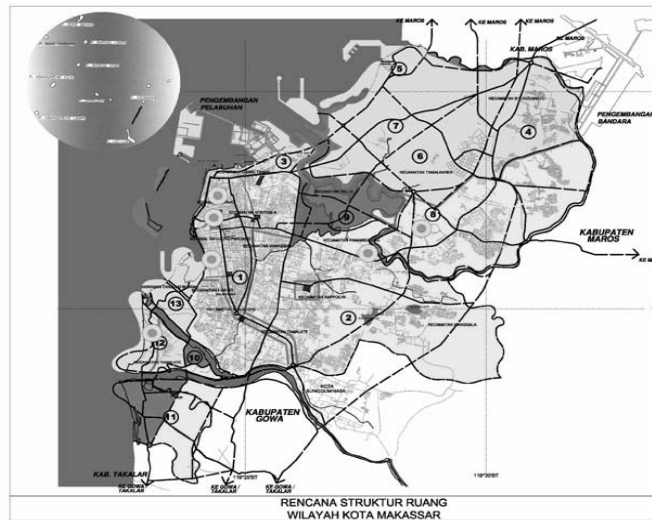


Figure 3.3 Road Development Concept of Makassar City Development Plan 2005-2025

- 5) Integrated Spatial Plan for Mamminasata Metropolitan Area, JICA, 2006

The “Integrated Spatial Plan for Mamminasata Metropolitan Area”, JICA, 2006 proposed the trunk road network in the Mamminasata Metropolitan Area including Makassar City, Maros, Gowa and Takalar up to 2020. The Mamminasata Study recommended 16 road links to be developed or improved. The F/S roads were proposed as priority roads among these road links.

- 6) Trans-Sulawesi Corridor Improvement Programs

The original Trans-Sulawesi road was from Makassar to Manado and it was opened in early 1990s. The current concept of Trans-Sulawesi road consists of three corridors (west, central and east corridors) in Sulawesi Island Spatial Plan (RTR Sulawesi Island) established by BKPRS (Sulawesi Regional Development Cooperation Board) and MPW. The Trans-Sulawesi Road Mamminasata Section is part of the west corridor.

3.2 Administrative Framework

(1) Central Government

1) The Directorate General of Highway (DGH), Ministry of Public Works

The Directorate General of Highways (DGH), Ministry of Public Works is the responsible organization for national roads in entire Indonesia. The Directorate General of Highways consists of Directorate of Programming, Directorate of Technical Guidance, Directorate of Freeways & Urban Roads, Directorate of Roads and Bridges for West Region, and Directorate of Roads and Bridges for East Region. The organization chart of DGH is shown in **Figure 3.4**.

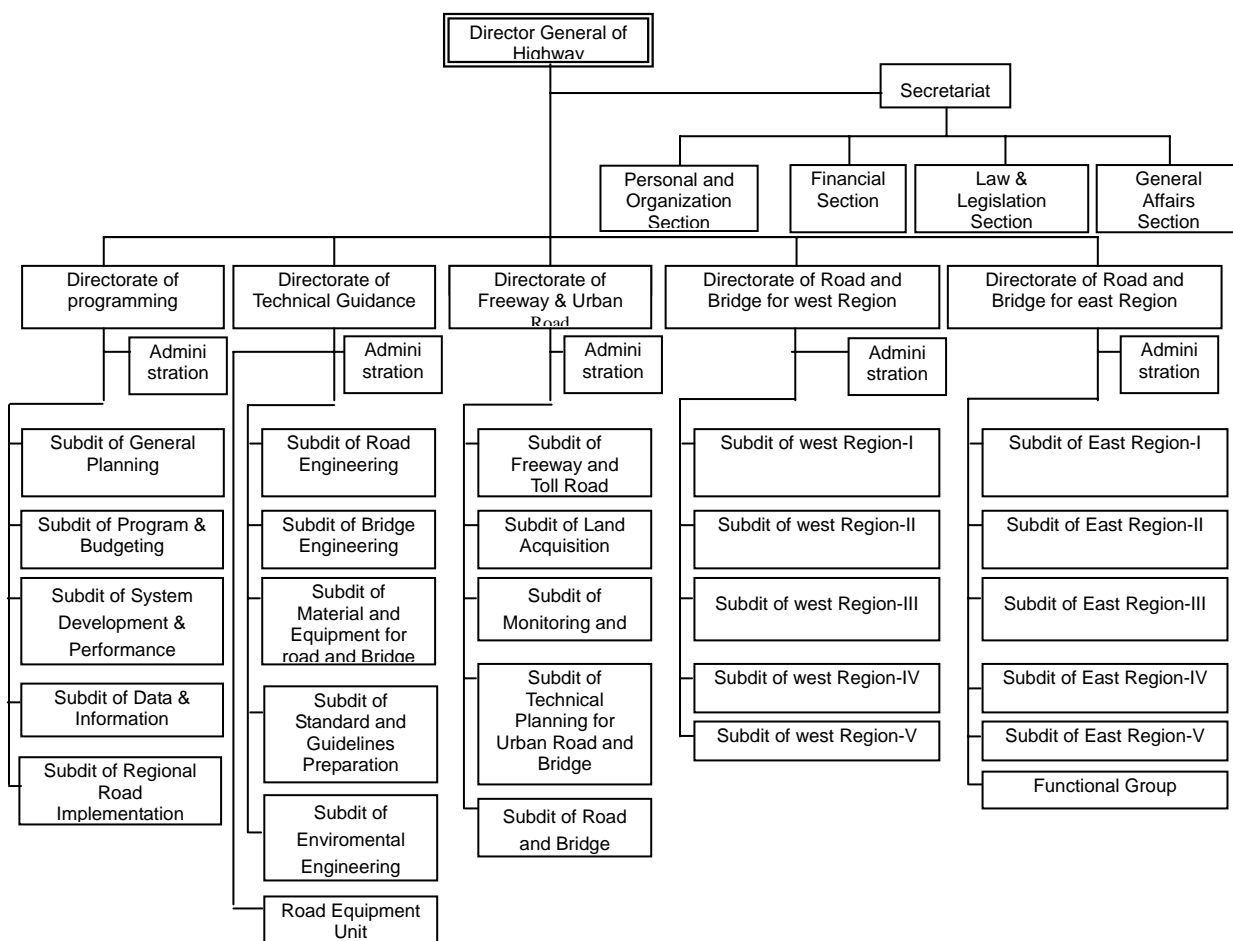


Figure 3.4 Organization Chart of Directorate General of Highways

2) Organization of Balai Besar, the Regional Representative of DGH

As a regional representative of DGH for implementation of National Highway development in the technical matters, 7 Balai Besar and 3 Balai (covering Bali, Maluku, Papua and other areas) have been established throughout the country on the basis of the Decree of Ministry of Public Works No.14/PRT/M 2006 and No.15/PRT/M/2006, and started functioning from January 2007.

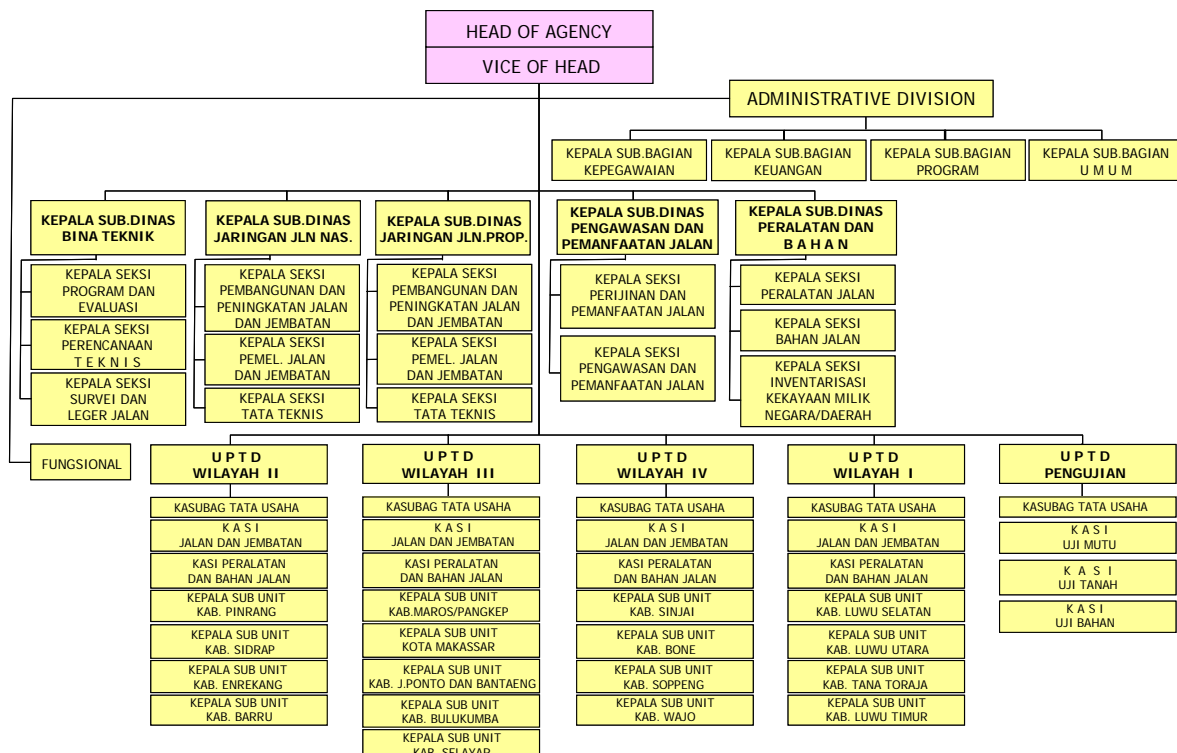
The main duty and the function of Balai Besar are 1) conduct planning and technical guidance; 2)

construction, operational and maintenance monitoring, quality assurance, procurement of equipment and material, as well as organizational management. Under the chief of Balai Besar, there are task forces (Batuan Kerja) for design and supervision (P2JJ), road betterment and maintenance.

(2) Provincial Government

Dinas Praswil (Dinas Prasarana Wilayah of South Sulawesi Provincial Government) is responsible for provincial roads in the South Sulawesi Province. Responsibilities of Dinas Praswil for the road sector include planning, design, construction and maintenance of provincial roads as well as maintenance of part of national roads. The organization chart of Dinas Praswil (Dinas Prasarana Wilayah) is shown in **Figure 3.5**.

There are corresponding maintenance divisions (Kepala Seksi Pemeliharaan) in the Dinas Praswil for national road and provincial road. There are three to four officers in each division for the administrative works for the maintenance. Actual implementation of the maintenance work is conducted at each UPTD (Unit Pelaksana Teknis Dinas: Unit for Technical Implementation of Agency) established at Kabupaten/Kota level. The UPTDs conduct the routine maintenance by procuring freelance labors and the periodic maintenance by outsourcing sub-contractors.



Source: Dinas Praswil of South Sulawesi Province

Figure 3.5 Organization Chart of Dinas Prasarana Wilayah South Sulawesi Province

(3) City and Regency Governments

Dinas PU of each City/Regency Government is responsible for planning, design, construction and maintenance of Kabupaten/Kota roads. Road maintenance for city and regencies is conducted by force account of these local governments.

(4) System of Highway Administration

With regard to the highway administration, the once abolished Department of Highway (PU) has been restored from the Department of Settlement and Regional Infrastructure in 2004 and the regional offices of PU (Balai Besar) have been re-established¹ in January 2007 to coordinate the activities of PU at the regional level and conduct the procurement and implementation of the development of the national road network. **Table 3.1** illustrates the responsibilities for activities in the highway administration at different government levels.

Table 3.1 Responsibilities of Highway Administrations in South Sulawesi

Road Classification/Task	Responsibility	Funding	Implementation
I. National Road			
1. Planning	Bina Marga	APBN	Bina Marga
2. Construction/ Betterment	Bina Marga	APBN	Bina Marga Balai Besar
3. Land Acquisition/ Resettlement	Bina Marga Local Governments	APBN/(and APBDI/APBDII)	Bina Marga Local Governments
4. Periodic Maintenance	Bina Marga	APBN	Balai Besar
5. Routine Maintenance	Bina Marga	APBN	PRASWIL/Balai Besar
II. Provincial Road			
1. Planning	PRASWIL	APBD1	PRASWIL
2. Construction/ Betterment	PRASWIL	APBD1(PAD/DAU/DAK/ External Grant/Loan)	PRASWIL
3. Land Acquisition/ Resettlement	PRASWIL	APBDI, APBDII	PRASWIL. Local Governments
4. Periodic Maintenance	PRASWIL	APBD1(PAD/DAU/DAK/ External Grant/Loan)	PRASWIL
5. Routine Maintenance	PRASWIL	APDB1	PRASWIL
III. Kabupaten/Kota Road			
1. Planning	Dinas PU	APBDII	Dinas PU
2. Construction/ Betterment	Dinas PU	APBDII , APBN (PAD/DAU/DAK/External Grant/Loan)	Dinas PU
3. Land Acquisition/ Resettlement	Dinas PU	APBDII	SKPD (Dinas PU)
4. Periodic Maintenance	Dinas PU	APBDII (PAD/DAU/DAK/External Grant/Loan)	Dinas PU
5. Routine Maintenance	Dinas PU	APBDII	Dinas PU

Source: JICA Study Team

Planning for national roads is conducted by the Directorate of Planning of Bina Marga. The Directorate of Planning is responsible for pre-FS, FS and Implementation Program of specific

¹ Based on the Decree of Ministry of Public Works No.14/PRT/M 2006 and No.15/PRT/M/2006

projects. The budget of Bina Marga for each year is prepared and requested in accordance with the IIRMS and specific project planning. Once the budget for a specific road development project is allocated, detailed design and tender document preparation are done by the Directorate of Engineering. Procurement and implementation of the project is carried out by the Directorate of Eastern Region (in case of South Sulawesi) through the regional Balai Besar with the Project Management Unit (PMU) and Project Implementation Unit (PIU) established for the project. Construction and maintenance of national roads are conducted by Balai Besar as a regional representative of DGH.

Land acquisition/resettlement for the national road development is conducted in the institutional set-up where an ad hoc committee for land acquisition consisting of eleven agencies concerned is established for specific road projects. No specific responsibility is stipulated in the new Road Law as to who should conduct land acquisition for a particular road category. As such, a recent land acquisition case for a flyover project on a national road in Makassar City the land acquisition costs were shared among the Makassar City, South Sulawesi Province and the Central Government.

3.3 Financial Situation of Road Sector

(1) Mechanism of Revenue and Budget Allocation in Indonesia

The laws of regional autonomy established in 1999 (Law No. 22 concerning the Regional Administration and Law No. 25 concerning Financial Equilibrium of Central and Regional Governments) have changed the mechanism of revenue and budget allocation in Indonesia in terms of balance between the local and central governments.

The following illustrates the basic policy of the laws. Based on this policy, decentralization of both authority and funding from the central government towards Provincial, Kabupaten and Kota governments² has taken place.

- i) Reduction of Central Government Functions and Delegation of its authorities to Kabupaten and Kota Governments
- ii) Equalization of Province, Kabupaten and Kota
- iii) Effective Monitoring Function by Strengthening Authority of Local Councils

There are two major revenue sources for a local government, namely its own revenue from local tax and levies and the revenue allocation from the central government. The majority of tax revenues from automobiles and gasoline are collected at the provincial level and allocated to Kabupaten/Kota within the province concerned.

(2) Financial Situation of Central Government

² The offices of the Central Government such as foreign relations, defense, national security, judicial courts, monetary and fiscal matter, and religion were maintained at local government level.

After the enforcement of the Local Autonomy Policy, the ratio of capital expenditure of the Central Government against GDP has been decreasing due to the fiscal reform program of IMF and the decentralization of fiscal resources towards local governments. Before that the ratio remained at the level of about 6% to 9%, but it immediately went down to 3% after the Policy has been enforced for the years 2002, 2003 and 2004, then lowered further recently to 1.9% for the years 2005 and 2006.

The revenue of the Central Government has been constantly increasing for the last five years and about 34% to 35% of the revenue has been transferred to the local governments as transfer fund.

The budget allocated to the road sector accounted for 1.2% to 1.3% of the Government Expenditure recently and its tendency has been fairly stable. About 4.0 to 7.0 trillion Rupiahs have been allocated to the road sector for the last five years.

Table 3.2 illustrates the breakdown of the road budget of the Central Government for the last five years. The maintenance budget has been from Rp 0.9 trillion to Rp 1.5 trillion and has not been increasing. The budget for betterment and new construction has been fluctuating from Rp 2.2 trillion to Rp 5.9 trillion depending on the years. The budget for the year 2007 was set as Rp 9.8 trillion with its maintenance budget increasing about 30% from the year 2006. However, as the funding size required to raise 90% of the national roads above the “poor” status has been estimated to be Rp 15 to 20 trillion every year, the total budget allocated for the year 2007 is still far below the requirement.

Table 3.2 Road Sector Budget of Central Government

(Rp trillion)

Road Sector Budget of Central Government	2002		2003		2004		2005		2006		2007	
1.Maintenance	1.3	33%	0.9	12%	1.0	22%	1.1	22%	1.5	21%	2.6	27%
2.Betterment and New Construction	2.3	58%	5.9	76%	2.2	49%	3.4	69%	5.0	68%	7.0	71%
3.Design and Monitoring	0.2	5%	0.1	1%	0.2	4%	0.2	4%	0.3	4%	0.0	0%
4.PUSAT (Central DGH: Software)	0.2	5%	1.0	13%	1.1	24%	0.3	6%	0.5	7%	0.0	0%
5.Others		0%		0%		0%	0.04	1%	0.02	0%	0.24	2%
Total	4.0	100%	7.8	100%	4.5	100%	4.9	100%	7.3	100%	9.8	100%

Source: Bina Marga

(3) Financial Situation of Regional Governments

The following common tendency has been observed in the financial situation of the regional governments in the Mamminasata Metropolitan Area for the last five years:

- i) Revenues and expenditures have been growing at an annual average growth rate of 17% to 20% reflecting the growth of the regional economy and growing contribution of the transfer fund from the Central Government.
- ii) Funding has been allocated more for recurrent expenditure than for development expenditure.
- iii) The road sector budget has been suppressed for the years 2002, 2003 and 2004, then started increasing for the years 2005 and 2006.

- iv) The road sector budget is about 4% to 6% of the total expenditure.
- v) The majority of the road budget is allocated towards road improvement and rehabilitation which are given urgent priority and scarce funding is available for road maintenance.
- vi) The road sector budget allocated for the last five years has been far below the requirement of the regional governments.

The total revenue of the South Sulawesi Provincial Government is composed of its own local revenue and the transfer fund from the Central Government, at a ratio of about 50%. The revenue itself has been increasing steadily at an annual average rate of 17% for the last five years. The expenditure of the government has also been increasing at a similar rate. However the share of the development expenditure has been slightly decreasing while the recurrent expenditure has been growing at a rate of 20% par annum.

The road sector budget of the Province has been about 4% to 6% of the total expenditure (8% to 17% of the development expenditure) and has stagnated for the years 2002, 2003 and 2004 with the budget being Rp 30 to 40 billion, and then has started increasing for the years 2005, 2006 and 2007 with about Rp 74 billion, Rp 75 billion and Rp 98 billion respectively. The majority of the budget has been allocated towards the construction and rehabilitation of roads and bridges since priority is given to the improvement of the existing 1,200 km of provincial roads in the South Sulawesi Province.

The share of South Sulawesi Province in the total budget that Bina Marga has allocated for all the Provinces have been 2 % to 4 % for the period of 2001 to 2007 with the share in the 2007 budget being 3.8%.

Table 3.3 Composition of Road Sector Budget of South Sulawesi Province

Budget Item	2002		2003		2004		2005		2006		2007	
	Rp. Billion	Ratio	Rp. Billion	Ratio	Rp. Billion	Ratio	Rp. Billion	Ratio	Rp. Billion	Ratio	Rp. Billion	Ratio
Road Sector Budget	42.6	100.0%	37.8	100.0%	33.9	100.0%	73.7	100.0%	75.2	100.0%	98.4	100.0%
(Construction)	42.6	100.0%	20.0	53.1%	14.4	42.4%	53.8	73.0%	54.4	72.2%	71.2	72.3%
(Rehabilitation)		0.0%		0.0%	0.4	1.1%	0.8	1.1%	5.7	7.6%	13.5	13.7%
(Routine Maintenance)	NA		17.7	46.9%	19.1	56.5%	19.1	25.9%	15.2	20.1%	13.7	14.0%

Source: South Sulawesi Province

The Makassar City has been maintaining its revenue size of about 60% of that of the South Sulawesi Province. The revenue of the City for the year 2006 was Rp 821.9 billion. About 13% to 18 % of the City's revenue is financed by its own revenue sources and the rest is being financed by the transfer fund from the Central Government. While the revenue was increasing, the road budget of the City has been kept at Rp 20 to 30 billion level for the last five years. It has been estimated that about Rp 100 to 130 billion is required for every year to rehabilitate and maintain the City's 1,500 km long road network.

Kabupaten Gowa, Maros and Takalar depend on the transfer fund from the Central Government, especially the General Allocation Fund (DAU), for more than 90% of their revenue. At present they are unable to finance their road sector by their own revenue and are totally dependent on the funding from the Central Government. While Kabupaten Gowa has to maintain its 2,104 km Kabupaten road network, the allocation of its maintenance budget has been from Rp 1 to Rp 2 billion for the last five years.

The level of budget allocation for the road sector for the City of Makassar, Kabupaten Gowa, Maros and Takalar for the last five years has been very similar with Rp 20 billion to Rp 40 billion of capital expenditure mostly allocated for the road improvement and with Rp 1 billion to Rp 4 billion for the road maintenance.

Table 3.4 Revenue, Development Expenditure and Road Sector Budget for South Sulawesi, Makassar, Gowa, Maros and Takalar

Budget Item	2002		2003		2004		2005		2006	
	Rp. Billion	Ratio	Rp. Billion	Ratio	Rp. Billion	Ratio	Rp. Billion	Ratio	Rp. Billion	Ratio
1. South Sulawesi Province										
1) Total Revenue	734.5	100.0%	787.1	100.0%	885.2	100.0%	1,095.7	100.0%	1,372.3	100.0%
2) Total Development Expenditure	358.7	48.8%	493.3	62.7%	293.1	33.1%	429.5	39.2%	493.5	36.0%
3) Road Sector Budget	60.2	8.2%	37.8	4.8%	33.9	3.8%	73.7	6.7%	75.2	5.5%
(Road Construction)	42.6	5.8%	20.0	2.5%	14.4	1.6%	53.8	4.9%	54.4	4.0%
(Road Improvement)		0.0%		0.0%	0.4	0.0%	0.8	0.1%	5.7	0.4%
(Road Routine Maintenance)	17.7	2.4%	17.7	2.3%	19.1	2.2%	19.1	1.7%	15.2	1.1%
2. Makassar City										
1) Total Revenue	426.4	100.0%	520.5	100.0%	543.9	100.0%	595.7	100.0%	821.9	100.0%
2) Total Development Expenditure	356.3	83.6%	437.2	84.0%	447.4	82.3%	458.6	77.0%	582.2	70.8%
3) Road Sector Budget	16.7	3.9%	30.1	5.8%	16.7	3.1%	18.8	3.2%	35.7	4.3%
(Road Construction)		0.0%	1.3	0.3%		0.0%		0.0%	2.0	0.2%
(Road Improvement)	10.4	2.4%	18.8	3.6%	12.2	2.2%	15.3	2.6%	26.9	3.3%
(Bridge Construction)	4.1	1.0%	6.4	1.2%	1.1	0.2%		0.0%		0.0%
(Road Routine Maintenance)	2.3	0.5%	3.5	0.7%	3.5	0.6%	3.5	0.6%	4.5	0.5%
(Sidewalk Construction)		0.0%		0.0%		0.0%		0.0%	2.3	0.3%
4) Land Acquisition/Compensation	2.9	0.7%	3.9	0.7%	3.3	0.6%	0.0	0.0%	3.5	0.4%
3. Gowa										
1) Total Revenue	203.5	100.0%	262.2	100.0%	276.2	100.0%	306.2	100.0%	450.0	100%
2) Total Development Expenditure	65.0	31.9%	221.8	84.6%	252.6	91.4%	248.8	81.2%	202.1	45%
3) Road Sector Budget	9.2	4.5%	16.7	6.4%	19.5	7.1%	17.4	5.7%	47.1	10%
(Constructor/Improvement)	7.9	3.9%	15.0	5.7%	18.6	6.7%	15.7	5.1%	46.1	10%
(Routine Maintenance)	1.4	0.7%	1.7	0.7%	0.9	0.3%	1.7	0.6%	1.0	0%
4. Maros										
1) Total Revenue	156.0	100.0%	220.2	100.0%	215.9	100.0%	232.6	100.0%	372.5	100.0%
2) Total Development Expenditure	31.7	20.3%	63.3	28.8%	55.7	25.8%	65.4	28.1%	136.7	36.7%
3) Road Sector Budget	11.2	7.2%	14.5	6.6%	13.4	6.2%	18.4	7.9%	43.1	11.6%
(Constructor/Improvement)	10.0	6.4%	14.4	6.5%	10.7	5.0%	16.9	7.3%	42.9	11.5%
(Routine Maintenance)	1.2	0.8%	0.1	0.0%	0.7	0.3%	0.8	0.3%	0.1	0.0%
5. Takalar										
1) Total Revenue	148.7	100.0%	177.0	100.0%	182.2	100.0%	193.5	100.0%	303.1	100.0%
2) Total Development Expenditure	30.5	20.5%	118.2	66.8%	112.6	61.8%	125.6	64.9%	203.5	67.1%
3) Road Sector Budget	11.4	7.6%	10.3	5.8%	7.2	4.0%	7.5	3.9%	26.9	8.9%
(Constructor/Improvement)	11.3	7.6%	7.4	4.2%	1.7	1.0%	6.7	3.5%	25.9	8.6%
(Routine Maintenance)	0.1	0.0%	2.9	1.6%	5.5	3.0%	0.7	0.4%	1.0	0.3%
6. Mamminasata Area Total										
1) Total Revenue	1,669.0	100.0%	1,967.0	100.0%	2,103.4	100.0%	2,423.8	100.0%	3,319.8	100.0%
2) Total Development Expenditure	842.2	50.5%	1,333.9	67.8%	1,161.3	55.2%	1,327.9	54.8%	1,617.9	48.7%
3) Road Sector Budget	108.7	6.5%	109.3	5.6%	90.8	4.3%	135.8	5.6%	228.1	6.9%
(Constructor/Improvement)	86.1	5.2%	83.4	4.2%	59.0	2.8%	109.3	4.5%	179.1	5.4%
(Routine Maintenance)	22.6	1.4%	25.9	1.3%	29.7	1.4%	25.8	1.1%	49.0	1.5%

Source: JICA Study Team based on the data from the regional governments

(4) Implementation Set-up for EIRTP II – IBRD

The Second Eastern Indonesia Region Transport Project (EIRTP II) which began in 2006 and is ongoing, is composed of two complementary transport projects aimed at supporting economic

growth, and improving social welfare in 16 provinces and about 190 "kabupatens" and "kotas" (districts and municipalities) of the Eastern Indonesia Region.

The funding mechanism is illustrated in **Figure 3.6** where IBRD provides loan to the Government of Indonesia and in turn GOI, namely the Ministry of Finance, provides fund to DGH as the executing agency with the provision that DGH should share 30% of the funding by its own APBN budget, and provides funds to the provincial and Kabupaten/Kota governments in the form of grant with the provision that the regional governments should share 30%, 60%, 90% of the funding by their own APBD budget depending on the fiscal capacity of the regional government. Another provision which is claimed to become a burden on the regional governments is that the governments should prepare 100% of the fund beforehand (Pre-financing) in order to receive the grant. 90% to 30% of the fund will then be reimbursed to them when the grant is provided by the Central Government.

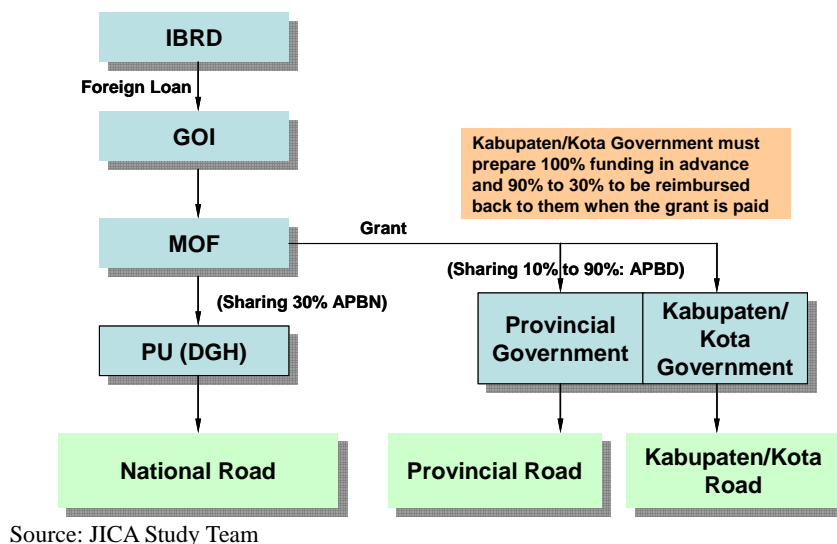


Figure 3.6 Funding Flow for EIRTP II

3.4 On-going and Planned Road Projects related to the F/S Roads

The status of the on-going and planned projects related to the F/S road development planning are as described in the following sub-sections:

(1) Jl.Tol.Ir.Sutami

Jl.Tol.Ir.Sutami is currently under construction by private sector (a BOT scheme). The development concept is to construct an express toll road (2 ways x 2 lanes) with 2-lane frontier roads on both sides. A new Tallo River bridge (2-lane bridge) is scheduled to be constructed in the 1st stage. The ROW of around 70 m has been already secured through the proposed alignment by the Government and currently earthworks, drainage works and PCC pavement construction are executed. The bridge construction was commenced in 2007.

(2) Middle Ring Road

Implementation of the project was planned under a “Build-Operation-Transfer (BOT)” scheme. A new company was established by a consortium named “Regional Company of Bangun Sarana Makassar” formed by the Makassar Government and PT. Karsa Buana Santika (JKT) in January 2005. However, the BOT scheme did not work and it was suspended.

(3) Jl.Perintis Kemerdekaan and Jl.Ulip Sumohadjo Flyover

The Jl.Ulip Sumohadjo Flyover project was commenced in February 2007 by APBN (GOI’s own finance). The project will be completed in 2008. Budget was also allocated for the design of the Jl.Ulip Sumohardjo Flyover IC ramps and widening of the Jl. Perintis Kemerdekaan. Widening construction of Jl.Perintis Kemerdekaan from the 4-lane road to 6-lane road was also commenced in 2007 as APBN for 1.2 km road construction was allocated (refer to Figure 3.4.1). DGH will complete the road widening up to Jl.Tol.Ir.Sutami IC by 2010.

(4) Maros - Pangkep Road Widening

The Maros-Pangkep road (23 km) is part of the Trans-Sulawesi road (national road). The development concept of the project is to widen the existing 2 lane road to 4 lanes. The Trans-Sulawesi Mamminasata Road is connected to this road. One of the two accesses of the Mamminasa Bypass will be connected to this road at approximately 1.5 km north of the Maros Town. The road widening works were commenced in January 2007 by APBN (GOI’s own finance) as shown in the following photographs.

(5) Jl.Hertasning

The construction of Jl. Hertasning will be continued under Dinas Prasarana Wilayah (South Sulawesi Provincial Government). The scheduled construction length for 2007 is 2.60 km. The development concept is to widen the existing road from 2 lanes to 4 lanes with a median.

(6) Jl.Abdullah Daeng Sirua

Detailed design for 2.5 km of Jl.Abdullah Daeng Sirua was completed and Makassar City has completed construction of about 800 m. The development concept is to construct a 2-lane new road opposite the PDAM (water supply canal) on PDAM ROW.