



JAPAN INTERNATIONAL COOPERATION AGENCY



DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS - ARMM
REPUBLIC OF THE PHILIPPINES

**THE STUDY
ON
INFRASTRUCTURE (ROAD NETWORK)
DEVELOPMENT PLAN
FOR
THE AUTONOMOUS REGION IN MUSLIM MINDANAO
(ARMM)
IN
THE REPUBLIC OF THE PHILIPPINES**

FINAL REPORT

VOLUME-I : EXECUTIVE SUMMARY

MARCH 2010

**CTI ENGINEERING INTERNATIONAL CO., LTD.
YACHIYO ENGINEERING CO., LTD.**

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EXCHANGE RATE

December 2009

1 PhP = 1.97 Japan Yen

1 US\$ = 46.35 Philippine Peso

1 US\$ = 91.65 Japan Yen

Central Bank of the Philippines

PREFACE

In response to the request of the Government of the Republic of the Philippines, the Government of Japan decided to conduct the “Study on Infrastructure (Road Network) Development Plan for the Autonomous Region in Muslim Mindanao in the Republic of the Philippines” and entrusted the Study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a Study Team headed by Mr. Mitsuo Kiuchi of CTI Engineering International Co., Ltd. in association with Yachiyo Engineering Co., Ltd. from September 4, 2008 to February 10, 2010.

The Study Team held discussions with the engineers of the Department of Public Works – ARMM, the Department of Public Works and Highway – National and other officials of the ARMM Government as well as concerned agencies of the National Government and conducted field surveys, data gathering and analysis, formulation of Road Network Development Master Plan, Institutional Development Plan and Road Maintenance Improvement Plan, feasibility studies of priority projects and workshops/seminars for technology transfer. Upon returning to Japan, the Study Team prepared this final report to summarize the results of the Study

I hope that this report will contribute to the development of road network, promotion of proposed projects and to the enhancement of friendly relationship between two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of the Philippines for their close cooperation and help extended to this Study.

March 2010

Kiyohumi KONISHI
Director General
Economic Infrastructure Department
Japan International Cooperation Agency(JICA)

LETTER OF TRANSMITTAL

MR. Kiyohumi KONISHI

Director General

Economic Infrastructure Department

Japan International Cooperation Agency (JICA)

Dear Sir,

We are pleased to submit herewith the Final Report of the “Study on Infrastructure (Road Network) Development Plan for the Autonomous Region in Muslim Mindanao (ARMM) in the Republic of the Philippines”. This report summarized the results of the Study which was undertaken from September 4, 2008 to February 10, 2010.

This report analyzed the present and future road network issues as well as institutional issues and formulated the road network development master plan, institutional development plan, and road maintenance improvement plan and undertook the feasibility study of two priority road projects. Workshops and seminars were also undertaken to effectively transfer technology.

The master plan and two priority road projects for which feasibility study was undertaken were evaluated technically, economically and environmentally feasible. We sincerely hope that recommended road network development master plan, institutional development plan, road maintenance improvement plan and two FS road projects will be steadily implemented.

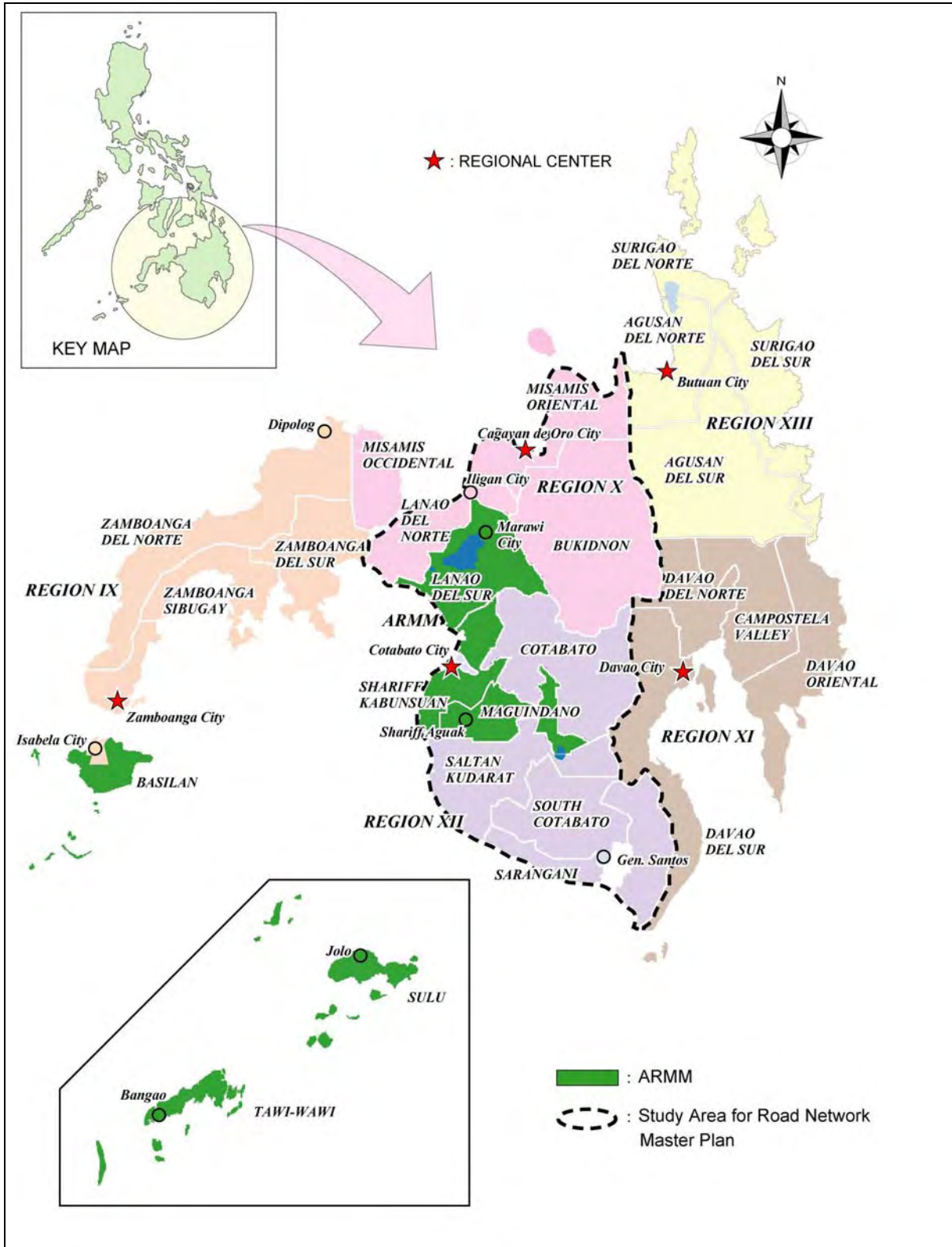
We wish to take this opportunity to express our sincere gratitude to your Agency, the Ministry of Foreign Affairs and the Ministry of Land, Infrastructure and Transport. Further, we wish to express our deep gratitude to the Department of Public Works and Highways – ARMM, the ARMM Government, the Department of Public Works and Highways – National, and other authorities concerned in the Government of the Republic of the Philippines for their close cooperation and assistance extended to us during the course of the Study.

Very truly yours,

MITSUO KIUCHI

Team Leader

The Study on Infrastructure (Road Network) for
the Autonomous Region in Muslim Mindanao



LOCATION MAP

ACTIVITY PHOTOS



1st Steering Committee Meeting



2nd Steering Committee Meeting



3rd Steering Committee Meeting



4th Steering Committee Meeting



Stakeholders' Meeting



Seminar/Workshop



Consultation Meeting with Military



Barangay Consultation Meeting

ACRONYMS AND ABBREVIATIONS

AESO	:	Area Equipment Service Office
AMWP	:	Annual Maintenance Work Program
ARMM	:	Autonomous Region in Muslim Mindanao
ASFP	:	ARMM Social Fund Project
AusAid	:	Australian Agency for International Development
BAS	:	Bureau of Agricultural Statistics
CNC	:	Certificate of Non-Coverage
DA	:	Department of Agriculture
DAR	:	Department of Agrarian Reform
DENR	:	Department of Environment and Natural Resources
DEO	:	District Engineering Office
DIP	:	District Impact Project
DO	:	Department Order
DPWH	:	Department of Public Works and Highways
ECC	:	Environmental Compliance Certificate
EIA	:	Environmental Impact Assessment
EIRR	:	Economic Internal Rate of Return
EIS	:	Environmental Impact Statement
EMB	:	Environmental Management Bureau
EOJ	:	Embassy of Japan
GAA	:	General Appropriations Act
GOJ	:	Government of Japan
GRDP	:	Gross Regional Domestic Product
GRP	:	Government of the Republic of the Philippines
ICD	:	Institutional Capacity Development
ICT	:	Information and Communication Technology
IEE	:	Initial Environmental Examination
IROW	:	Infrastructure Right-of-Way
IRR	:	Implementing Rules and Regulations
JBIC	:	Japan Bank for International Cooperation
J-BIRD	:	Japan-Bangsamoro Initiatives for Reconstruction and Development
JICA	:	Japan International Cooperation Agency
LARRIPP	:	Land Acquisition, Resettlement, Rehabilitation and Indigenous Peoples Policy
LGU	:	Local Government Unit
MBA	:	Maintenance by Administration
MBC	:	Maintenance by Contract
MEDCO	:	Mindanao Economic Development Council
MILF	:	Moro Islamic Liberation Front
MNLF	:	Moro National Liberation Front
MVUC	:	Motor Vehicle User's Charge
NEDA	:	National Economic Development Authority
NSO	:	National Statistics Office
PAP	:	Project Affected Person
PCCP	:	Portland Cement Concrete Pavement
PD	:	Presidential Decree
PIP	:	Provincial Impact Project
RA	:	Republic Act
RAP	:	Resettlement Action Plan
RIP	:	Regional Impact Project
ROW	:	Right-of-Way
RPDO	:	Regional Planning and Development Office
UN	:	United Nations
UNDP	:	United Nations Development Programme
UNESCO	:	United Nations Educational, Scientific and Cultural Organization
USAID	:	United States Agency for International Development
WB	:	World Bank

EXECUTIVE SUMMARY

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1. INTRODUCTION

1.1 Background

- The Autonomous Region in Muslim Mindanao (ARMM) was created in 1989. A plebiscite was held to determine if the residents would want to be part of the ARMM and the following year in 1991, ARMM was officially inaugurated.
- Peace agreement with the Moro National Liberation Front (MNLF) was concluded in 1996 and a plebiscite was held again in 2001 for possible expansion of the ARMM. Meanwhile, negotiation with the Moro Islamic Liberation Front (MILF) which has separated from MNLF in 1977 is still on-going.
- Although the region is rich in natural resources and has high economic development potentials, it is still one of the poorest regions in the country. Deteriorated infrastructure brought by the long-lasting conflicts posed as serious bottleneck for urgent economic recovery and sustainable development.
- Being an autonomous government, the national government has devolved maintenance of national roads and other powers and functions to ARMM. However, the regional government still needs to develop capacity for planning, programming, construction, operation and maintenance of infrastructure for better management of infrastructure.
- In view of above, the Government of the Republic of the Philippines (GOP) requested a technical cooperation from the Government of Japan (GOJ) to conduct the “The Study on Infrastructure (Road Network) Development Plan for the Autonomous Region in Muslim Mindanao “under the JICA.
- The GOJ has launched the Japan - Bangsamoro Initiatives for Reconstruction and Development (J-BIRD) in 2006 and this study was implemented under the umbrella of this initiative.

1.2 Objectives of the Study

The objectives of the Study are as follows:

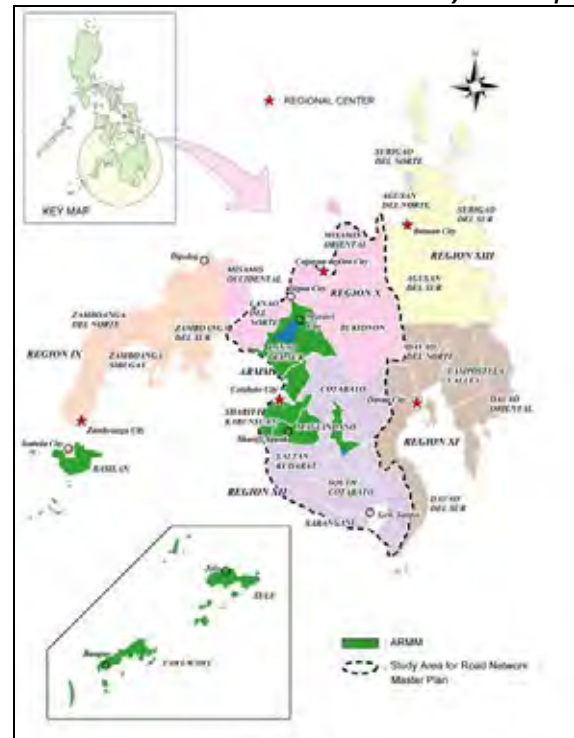
- 1) To formulate a Road Network Master Plan for ARMM and surrounding regions to the year 2025;
- 2) To conduct pre-feasibility study for priority roads and bridges identified under the Master Plan;
- 3) To develop reference materials / database that guides the road network development of the region; and

- 4) To pursue technology transfer to the counterpart personnel in the course of the Study.

1.3 Study Area

The Study covers the ARMM, Region XII and Region X (excluding Misamis Occidental). For island provinces of the ARMM such as Basilan, Sulu and Tawi-Tawi, the study focused on capacity development which includes preparation of road and bridge inventory, database and maintenance plan, but excluded from the Master Plan Study.

Study Area Map



1.4 Scope of the Study

The Study consists of the following main activities:

- Review and analysis of the present condition
- Preparation of database
- Traffic Survey, Logistics Survey and Road and Bridge Condition Survey
- Formulation of Regional Development Plan
- Formulation of Master Plan for Road Network
- Preparation of Road Maintenance Improvement Plan
- Preparation of Capacity Development Plan
- Pre-Feasibility Study on Two-Priority Roads

1.5 Final Report Organization

The final report is organized as follows:

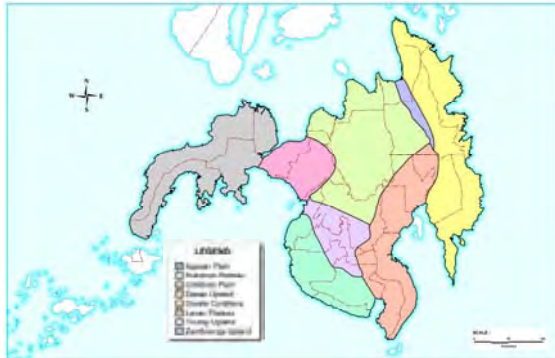
- Volume I: Executive Summary
- Volume II: Main Text
- Volume III: Annexes
- Volume IV: Drawings

2. PHYSICAL PROFILE

2.1 Topography

Mindanao Island can be divided into eight (8) topographical divisions, namely (i) Diwata Cordillera, (ii) Agusan Plain, (iii) Davao Upland, (iv) Bukidnon Plateau, (v) Cotabato Plain, (vi) Tiruray Upland, (vii) Lanao Plateau, and (viii) Zamboanga Upland.

Topographical Divisions of Mindanao Island



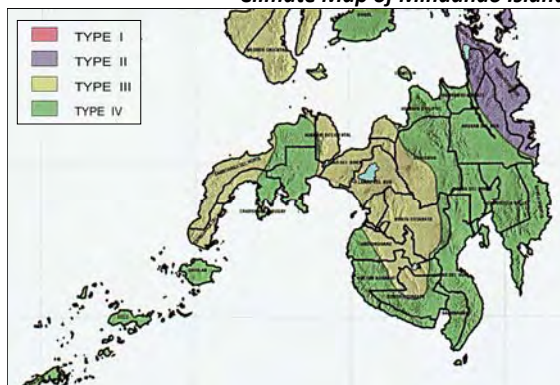
2.2 Geology

The Philippines is located in a tectonically active region and as such natural phenomena such as earthquakes and volcanic eruptions will remain in the Philippines for as long as the current geodynamics do not change. In Mindanao, the latest occurrence of a destructive earthquake was in August 17, 1976.

2.3 Meteorology

Four (4) types of rainfall distribution in the country are defined with the use of the average monthly distribution of rainfall. Areas under Type 1 are generally exposed to the southwest monsoon and get a fair share of rainfall brought about by tropical cyclones; Type 2 is exposed to the northeast monsoon being generally located along or very near the eastern coasts; Type 3 are partly shielded from the northeast monsoon but are exposed to the southwest monsoon; and Type 4 are for those areas with rainfall more or less evenly distributed throughout the year.

Climate Map of Mindanao Island



2.4 Natural Calamity

An annual average of 20 tropical cyclones enter the Philippine Area of Responsibility (PAR) however Mindanao Island excluding the northern part of Surigao Provinces are almost free of tropical cyclones. Mindanao suffers though with earthquakes, tsunamis and floods due to heavy rains.

Major Earthquake Generation of Mindanao Island



2.5 Protected Areas

In the Study Area there are three (3) main types of Protected Areas, namely (i) Natural Park, (ii) Game Refuge and Bird Sanctuary, and (iii) Watershed Forest Reserve.

Protected Areas in the ARMM, Region X and XII

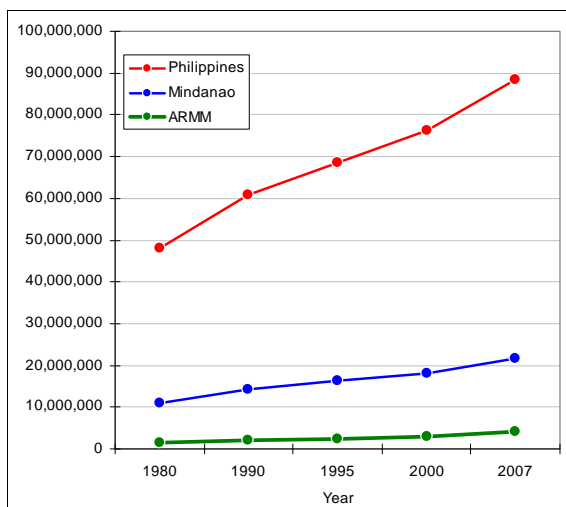


3. SOCIO-ECONOMIC PROFILE

3.1 Demographic Trend

Philippine population has been continuously increasing from 48.1million in 1980, 76.3 million in 2000 to 88.5million in 2007 with 2.15% of annual growth rate (2000-2007). Population of both Mindanao and ARMM also showed higher increases than national trend since 2000, from 18.1 in 2000 to 21.6 million in 2007 (AAGR: 2.52%), and 2.9 in 2000 to 4.1million in 2007 (AAGR: 5.27%), respectively.

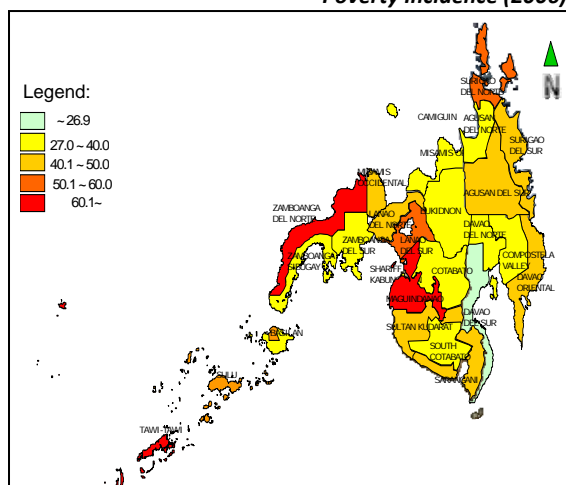
Population Trends



3.2 Poverty

Poverty incidences in 2006 indicate 55.3% in ARMM in comparison with 26.9% of National average, 39.3% in Mindanao and 41.0% in study area, and the critical phenomena is getting worse in ARMM, from 44.0% in 1997 to 51.2% in 2000 and 55.3% in 2006.

Poverty Incidence (2006)



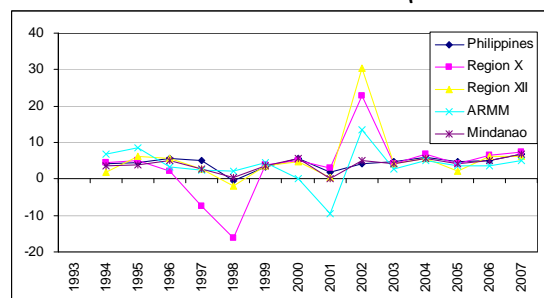
3.3 Economic Condition

a.) GRDP Growth Rate (Constant Price)

Major findings in historical trends of GRDP are summarized as follows:

- Philippine economy has been growing in terms of total GRDP (real) with growth rates of 2-6% since 1993, except for 1998 (minus growth).
- GRDP in ARMM grew continuously in 1993 to 1999 with its growth rates of 0-8%, but decreased in 2001 (-9%) and then very low growth rates up to 2006.
- Regarding its share to national, this did not change much which is around 1% from 1993 to 2007 while its share to Mindanao is around 5% to 6% from 1993 to 2007.

GRDP Trends (Constant Price)

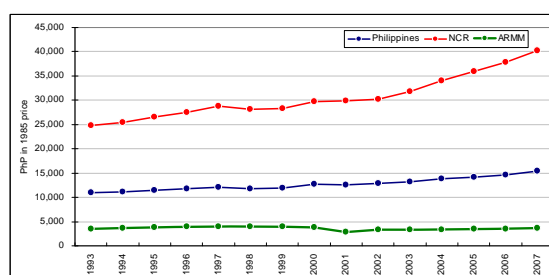


b.) Per Capita GRDP (Real Price)

In 2006, per capita GRDP in ARMM recorded PhP 16,346 (equivalent to PhP 3,486 in 1985 price), which is only 24% of National average or 34% of Mindanao and Study area, and only 9% of NCR.

Historical trend indicates very small shares of ARMM, with sharp drop in 1999 and continuously decreases until 2007.

Per Capita GRDP Trend (Real Price)



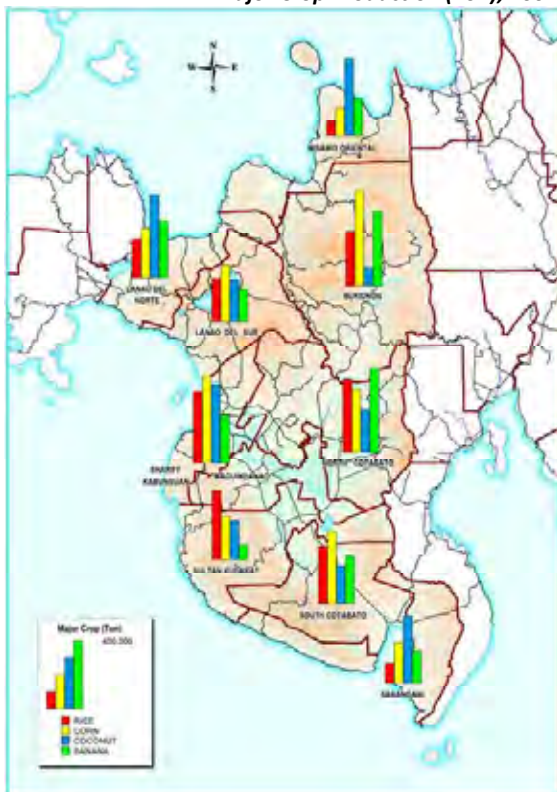
3.4 Agri-Fishery Sector Performance

a.) Major Crops Production and Yield

Productivity of major crops in the Study Area was compared with the national average and the following were noted:

- Yield of irrigated palay is higher by about 1.5 to 1.8 times than rainfed palay. To increase production, development of potential irrigable area is one of the key solutions.
- Yield of yellow corn is higher by about 1.2 to 2 times than white corn. Shifting from white corn to yellow corn should be accelerated.
- ARMM's average yield of palay is only 80% of the national average, which means there is still possibility to increase productivity.

Major Crop Production (Ton), 2007



b.) Agricultural Land Use and Irrigable Area

The Study Area has wide rice/corn field, coconut area, and industrial crops. Data of the National Irrigation Administration (NIA) shows that Maguindanao has a potential irrigable area of 146,365 hectare but only 14% have irrigation system in service. Lanao del Sur has a potential irrigable area of 40,186 hectares but only 12% is served by irrigation.

c.) Marketing/Major Flow of Agricultural Commodities

Farmers are often forced to sell the newly threshed paddy rice at low prices even if it is still wet because of the absence or lack of drying facilities. The trader then takes care of the drying

using a mechanical drier as well as milling and sacking. The milled rice are transported to Cotabato City, Cagayan de Oro City, Davao City, and General Santos City to the different retailers and consumers. Corn on the other hand is sold as dried grains to traders who transport the grains to feed milling centers either in Cotabato City, Davao City or and General Santos City. Most of the grains are then shipped to Cebu or Manila for processing as food or feeds.

Agricultural Land Use



3.5 Regional Issues

The following are the identified regional issues and problems besetting agricultural development:

- High cost of farm inputs; high cost of production is further exacerbated by the lack of production capital.
- Poor farm management practices resulting in low productivity and poor quality produce.
- Inadequate farm equipment/machinery, post harvest and related infrastructure support such as food terminals or trading posts.
- Lack of farm-to-market roads; inadequate irrigation facilities; limited access to market.
- Frequent flooding that causes damages to crops and livestock; declining fish catch.
- Weak or absence of farmers' organizations and cooperatives.