Republic of the Philippines
Department of Public Works and Highways (DPWH)

PROJECT FOR MASTERPLAN ON HIGH STANDARD HIGHWAY NETWORK DEVELOPMENT (PHASE 2)

FINAL REPORT

MAIN TEXT

<VOLUME-1>

JULY 2021

Japan International Cooperation Agency (JICA)

CTI Engineering International Co., Ltd.
Nippon Koei Co., Ltd.
Oriental Consultants Global Co., Ltd.
Nippon Engineering Consultants Co., Ltd.
Metropolitan Expressway Company Limited

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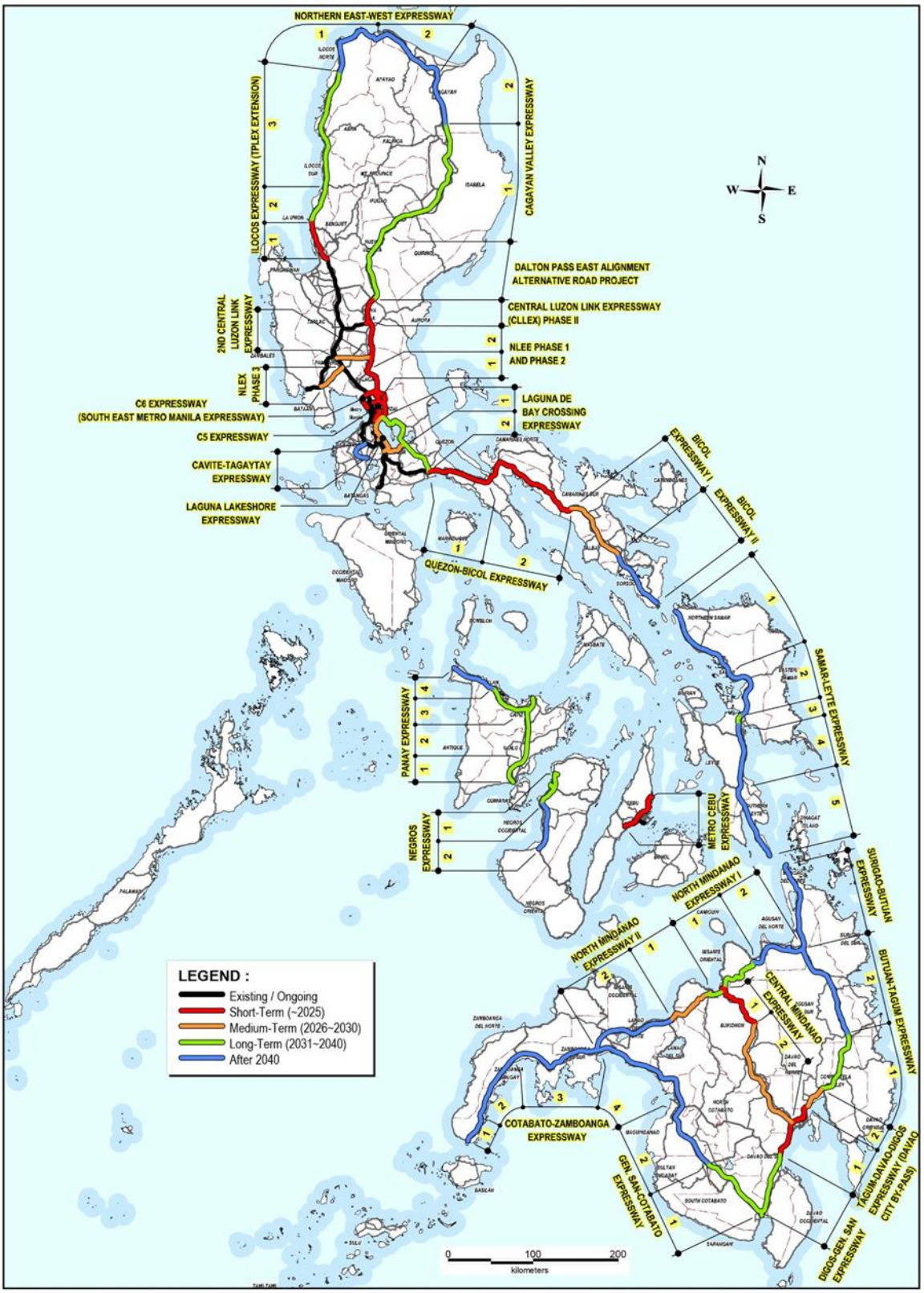
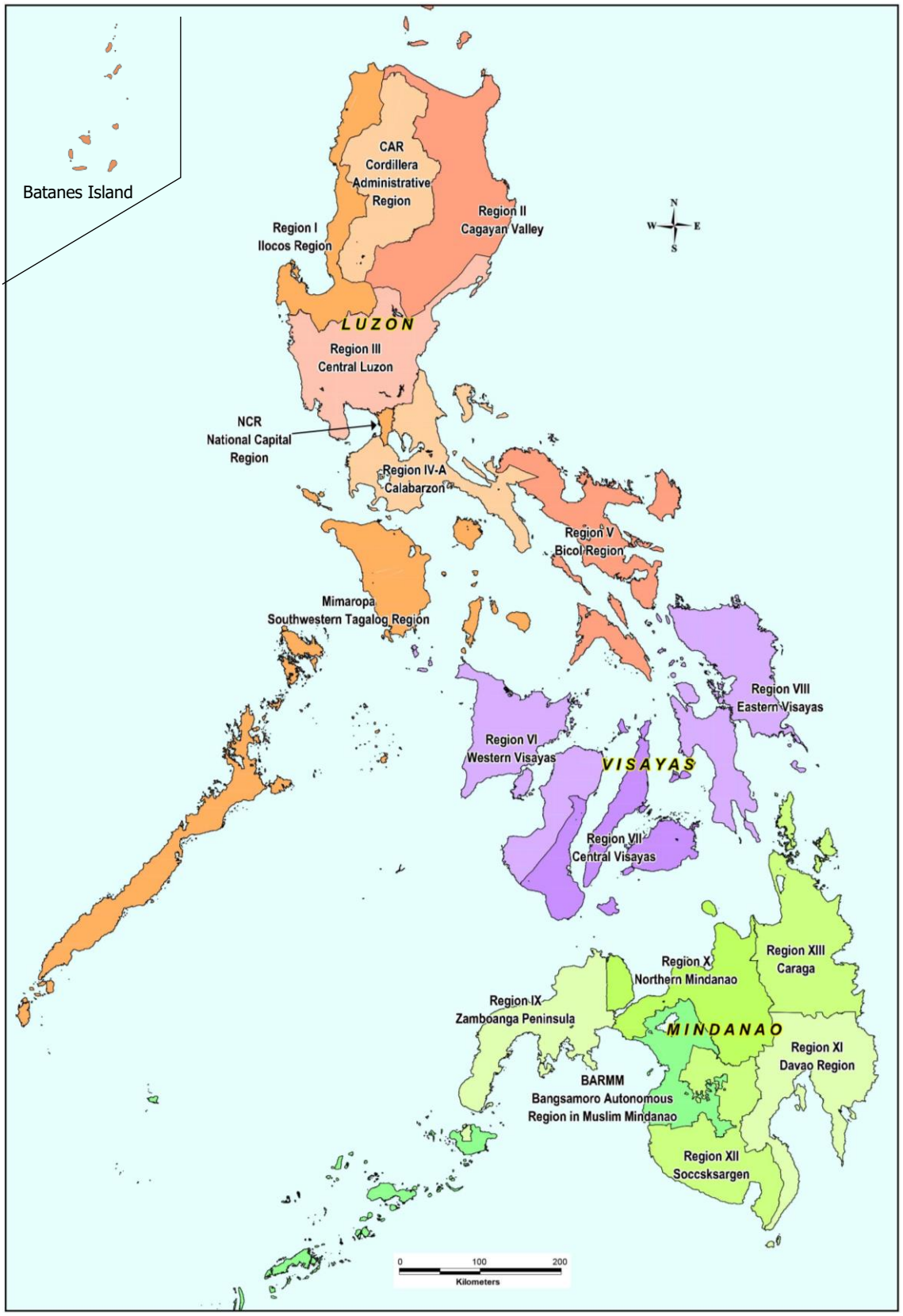
EXCHANGE RATE

March 2020
1Php = 2.1138 Japan Yen
1US$ = 51.0440 Philippine Peso
1US$ = 107.8283 Japan Yen

Central Bank of the Philippine



HSH Network and Implementation Schedule



Region Border

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APPENDIX

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

AADT	:	Annual Average Daily Traffic
AASHTO	:	American Association of State Highway and Transportation Officials
ADB	:	Asian Development Bank
ADT	:	Average Daily Traffic
AFF	:	Agriculture, Forestry. and Fisheries
AGF	:	Artificial Ground Freezing
AGR	:	Average Growth Rate
AH 26	:	Asian Highway 26
AHFF	:	Agriculture, Hunting, Forestry and Fishing
ARMM	:	Autonomous Region in Muslim Mindanao
ASEAN	:	Association of Southeast Asian Nations
BARMM	:	Bangsamoro Autonomous Region in Muslim Mindanao
BBEX	:	Bataan-Bulacan Airport Expressway
B/C	:	Benefit/Cost
BCDA	:	Bases Conversion and Development Authority
BCEZ	:	Baguio City Economic Zone
BGTOM	:	Build-Gradual-Transfer-Operate and Maintain
BIMP-EAGA	:	Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area
BLISTT	:	Baguio City-La Trinidad-Itogon-Sablan-Tuba-Tublay
BOT	:	Build-Operate-and-Transfer
BP	:	Base Port
BPO/KPO	:	Business/Knowledge Processing Outsourcing
BPR	:	Bureau of Public Roads (USA)
BQS	:	Bureau of Quality and Safety
BRT	:	Bus Rapid Transit
BSDS	:	Bridge Seismic Design Specifications
BTEX	:	Bulacan-Tarlac Airport Expressway
BTO	:	Build-Transfer-and-Operate
C3EX	:	C-3 Elevated Expressway
CAAP	:	Civil Aviation Authority of the Philippines
CADC	:	Certificate of Ancestral Domain Claim
CADT	:	Certificate of Ancestral Domain Title
CALABARZON	:	Cavite-Laguna-Batangas-Rizal-Quezon (Region IV-A)
CALAX	:	Cavite-Laguna Expressway
CAO	:	Contract-Add-and-Operate
CAPEX	:	Capital Expenditures
CAR	:	Cordillera Administrative Region
CAVITEX	:	Manila-Cavite Expressway
CBD	:	Central Business District
CBR	:	Cost-Benefit Ratio
CCLEX	:	Cebu-Cordova Link Expressway
CCPL	:	Central Cebu Protected Landscape
CCR	:	Cebu Circumferential Road
CCW	:	Centers, Corridors, and Wedges
CDO	:	Cagayan de Oro
CIAC	:	Clark International Airport Corporation
CK	:	Cotabato City-Kidapawan City
CLLEX	:	Central Luzon Link Expressway

CMH	:	Central Mindanao Highway
CLUP	:	Comprehensive Land Use Plan
CNC	:	Certificate of Non-Coverage
CO2	:	Carbon Dioxide
CP	:	Certificate of Precondition
CPA	:	Cebu Port Authority
CPI	:	Consumer Price Index
CRSDF	:	CARAGA Regional Spatial Development Framework
CS	:	Construction Stage
CTBEX	:	Cavite-Tagaytay-Batangas Expressway
CWG	:	Counterpart Working Group
DA	:	Department of Agriculture
DAO	:	DENR Administrative Order
DBM	:	Department of Budget and Management
DBTO	:	Design-Build-Transfer-Operate
DENR	:	Department of Environment and Natural Resources
DEO	:	District Engineering Office
DepEd	:	Department of Education
DF/R	:	Draft Final Report
DGCS	:	Design Guidelines, Criteria, and Standards
DIAA	:	Davao International Airport Authority
DIDP	:	Davao Integrated Development Program
DILG	:	Department of Interior and Local Government
DMM	:	Deep Mixing Method
DO	:	Department Order
DOF	:	Department of Finance
DOST	:	Department of Science and Technology
DOT	:	Develop-Operate-and-Transfer
DOTr	:	Department of Transportation
DPD	:	Development Planning Division
DPMEX	:	Del Pan-Pasig-Marikina Expressway
DPWH	:	Department of Public Works and Highways
DPWH-RBIA	:	Department of Public Works and Highways – Road and Bridge Information Application
DREAM	:	Disaster Risk and Exposure Assessment for Mitigation
DRR-CAA	:	Disaster Risk Reduction-Climate Change Adaptation
DRRM	:	Disaster Risk Reduction and Management
DRSDF	:	Davao Region Spatial Development Framework
DTI	:	Department of Trade and Industry
EAGA	:	East Asian Growth Area
ECA	:	Environmentally Critical Areas
ECC	:	Environmental Compliance Certificate
ECP	:	Environmentally Critical Project
EGWS	:	Electricity, Gas, and Water Supply
EIA	:	Environmental Impact Assessment
EIRR	:	Economic Internal Rate of Return
EIS	:	Environmental Impact Statement
EMB	:	Environmental Management Bureau
EMoP	:	Environmental Monitoring Plan
EMP	:	Environmental Management Plan
ENPV	:	Economic Net Present Value

EO	:	Executive Order
EPZ	:	Export Processing Zone
ESCAP	:	Economic and Social Commission for Asia and the Pacific
ESSD	:	Environmental and Social Safeguards Division
FAME	:	Fishery, Agro-Forestry, Mineral and Ecotourism
FDI	:	Foreign Direct Investments
FI	:	Financial Intermediation
FIRR	:	Financial Internal Rate of Return
FGD	:	Focus Group Discussion
FPIC	:	Free Prior, and Informed Consent
FRIMP	:	Flood Risk Improvement and Management Plan
F/R	:	Final Report
F/S	:	Feasibility Study
Fs	:	Factor of Safety
G2G	:	Government-to-Government
G/A	:	Generation-Attraction
GAA	:	General Appropriations Act
GCR	:	Greater Capital Region
GDP	:	Gross Domestic Product
GFS	:	Government Financing Statistics
GIDA	:	Geographically Isolated and Disadvantaged Areas
GIS	:	Geographic Information System
GNI	:	Gross National Income
GOCC	:	Government-Owned and Controlled Corporation
GOJ	:	Government of Japan
GOP	:	Government of the Philippines
GPS	:	Global Positioning System
GRDP	:	Gross Regional Domestic Product
GRP	:	Government of the Republic of the Philippines
GRPI	:	Groundwater Resource Potential Index
GVA	:	Gross Value Added
GVW	:	Gross Vehicle Weight
HAM	:	Hybrid Annuity Model
HCM	:	Highway Capacity Manual
HSH	:	High Standard Highway
HSH Class-1(IU)	:	Inter-Urban Expressway
HSH Class -1(U)	:	Urban Expressway
HSH Class -2	:	Regional High Standard Highway
HSH Phase 1	:	Study of Master Plan on HSH Network Development Phase 1
HSH Phase 2	:	Study of Master Plan on HSH Network Development Phase 2
HUC	:	Highly Urbanized City
HVDC	:	High Voltage, Direct Current
IBA	:	Important Bird Area
IC	:	Interchange
ICC	:	Investment Coordination Committee
IC/R	:	Inception Report
ICT	:	Information and Communications Technology
IE	:	Industrial Estates
IEC	:	Information, Education, and Communication
IEE	:	Initial Environmental Examination
IEM	:	Integrated Ecosystem Management

IGS	:	Isulan-General Santos
IM4Davao	:	Davao City Infrastructure Development Plan and Capacity Building Project
IMAG	:	Infrastructure Monitoring and Advisory Group
IMF	:	International Monetary Fund
IPA	:	Investment Promoting Agency
IPRA	:	Indigenous Peoples' Rights Act
IRR	:	Implementing Rules and Regulations
IT-BPO	:	Information Technology-Business Processing Outsourcing
IT/R	:	Interim Report
ITT	:	Intermodal Transport Terminal
JCC	:	Joint Coordination Committee
JICA	:	Japan International Cooperation Agency
JPY	:	Japan Yen
JV	:	Joint Venture
KAPP	:	Kilos Abante Programs/Projects
KII	:	Key Informant Interview
KDZ	:	Key Development Zone
LARRIPP	:	Land Acquisition, Resettlement, Rehabilitation and Indigenous Peoples' Policy
LCP	:	League of Cities of the Philippines
LFP	:	Locally Funded Project
LGU	:	Local Government Unit
LMAG	:	Lebak-Maasim-Alabel-Glan
LMP	:	League of Municipalities of the Philippines
LOS	:	Level of Service
LQ	:	Local Quotient
LRFD	:	Load and Resistance Factor Design
LRT	:	Light Rail Transit
LSDF	:	Luzon Spatial Development Framework
LTI	:	Laguna Technopark, Inc.
MBA	:	Maintenance by Administration
MBC	:	Maintenance by Contract
MBIFCCD	:	Manila Bay Integrated Flood Control Coastal Defense and Expressway Project
MC	:	Metropolitan Center
MCA	:	Multi-Criteria Analysis
MCDA	:	Metro Cebu Development Authority
MCDCB	:	Metro Cebu Development and Coordination Board
MCIAA	:	Mactan-Cebu International Airport Authority
MCT	:	Mindanao Container Terminal
MCTEX	:	Manila-Cavite Toll Expressway
MCWD	:	Metropolitan Cebu Water District
MCX	:	Muntinlupa-Cavite Expressway
MEPZ II	:	Mactan Export Processing Zone II
MGB	:	Mines and Geosciences Bureau
MICP	:	Manila International Container Port
MICT	:	Manila International Container Terminal
MIMAROPA	:	Mindoro-Marinduque-Romblon-Palawan (Region IV-B)
MinDA	:	Mindanao Development Authority
MHHW	:	Mean Higher High Water

MLLW	:	Mean Lower Low Water
MMDA	:	Metro Manila Development Authority
MMIS	:	Modified Mercali Intensity Scale
MMSP	:	Metro Manila Subway Project
MMUTIS	:	Metro Manila Urban Transportation Integration Study
M/P	:	Master Plan
MQX	:	Manila-Quezon Expressway
MRT	:	Metro Rail Transit
MRTS	:	Metro Rail Transit System
MSDS	:	Materials Safety Data Sheet
MSEZ	:	Manufacturing Special Economic Zones
MSME	:	Micro, Small and Medium Enterprises
MSS/DF	:	Mindanao Spatial Strategy/ Development Framework
MTEX	:	Manila-Taguig Expressway
MTL	:	Mean Tide Level
MUCEP	:	MMUTIS Update and Capacity Enhancement Project
MVUC	:	Motor Vehicle User's Charge
NAAQGV	:	National Ambient Air Quality Guideline Values
NAIA	:	Ninoy Aquino International Airport
NAIAX	:	NAIA Expressway
NaLUA	:	National Land Use Act
NAMRIA	:	National Mapping and Resource Information Authority
NATM	:	New Austrian Tunneling Method
NCIP	:	National Commission on Indigenous People
NCR	:	National Capital Region
NDRRMC	:	National Disaster Risk Reduction and Management Council, formerly National Disaster Coordinating Council (NDCC)
NEAX	:	North East Airport Expressway
NEDA	:	National Economic and Development Authority
NEXCO	:	Nippon Expressway Company
NFA	:	National Food Authority
NGO	:	Non-Governmental Organization
NHAI	:	National Highway Authority of India
NLEE	:	North Luzon Expressway East
NLEX	:	North Luzon Expressway
NOA	:	Notice of Award
NPFP	:	National Physical Framework Plan
NPR	:	National Primary Road
NPV	:	Net Present Value
NRIMP-I	:	National Roads Improvement and Management Phase I
NRW	:	Non-Revenue Water
NSCR	:	North-South Commuter Railway Project
NSR	:	National Secondary Road
NSS	:	National Spatial Strategy
NTDP	:	National Tourism Development Plan
NTR	:	National Tertiary Road
O&M	:	Operation and Maintenance
OCD-NDCC	:	Office of Civil Defense – National Disaster Coordinating Committee
OCHA	:	Office of the Coordination of Humanitarian Affairs
OD	:	Origin-Destination
ODA	:	Official Development Assistance

OECD	:	Organization for Economic Cooperation and Development
OGCC	:	Office of the Government Corporate Counsel
OGP	:	Other Government Port
OJT	:	On-the-Job Training
OS	:	Operation Stage
OSG	:	Office of the Solicitor General
OTP	:	Other Terminal Port
PA	:	Protected Area
PAD	:	Public Administration and Defense
PAGASA	:	Philippine Atmospheric, Geophysical, and Astronomical Services Administration
PALMANABA	:	Paracelis, Alfonso Lista and Mayoyao in Ifugao and Natonin and Barlig in Mountain Province
PAP	:	Programs, Activities and Projects
PAPs	:	Project Affected Persons
PBAC	:	Prequalification, Bids, and Awards Committee
PCB	:	Palawan Micro-continental Block
PCCP	:	Portland Cement Concrete Pavement
PCS	:	Pre-Construction Stage
PCU	:	Passenger Car Unit
PD	:	Presidential Decree
PD	:	Programming Division
PDD	:	Planning and Design Division
PDP	:	Philippine Development Plan
PDPFP	:	Provincial Development and Physical Framework Plan
PEA	:	Public Estates Authority, now Philippine Reclamation Authority (PRA)
PEGR	:	Philippines-Australia Partnership for Economic Governance Reform
PEIS	:	PHIVOLCS Earthquake Intensity Scale
PEISS	:	Philippine Environmental Impact Statement System
PEZA	:	Philippine Economic Zone Authority
PHP	:	Philippine Peso
PFA	:	Priority Focus Areas
PFD	:	Policy Formulation Division
PFZ	:	Philippine Fault Zone
PG/R	:	Progress Report
PHIVOLCS	:	Philippine Institute of Volcanology and Seismology
PHP	:	Philippine Peso
PIP	:	Public Investment Plan
PIRR	:	Project Internal Rate of Return
PMB	:	Philippine Mobile Belt
PMC	:	Palawan-Mindoro Microcontinent
PMO	:	Project Management Office
PMO-BOT	:	Project Management Office for Build-Operate-Transfer, now Public-Private Partnership Service
PND	:	Police National Database
PNR	:	Philippine National Railways
PP	:	Private Port
PPA	:	Philippine Ports Authority
PPD	:	Project Preparation Division
PPE	:	Personal Protective Equipment

PPMC	:	Poro Point Management Corporation
PPP	:	Public-Private Partnership
PPPC	:	Public-Private Partnership Center
PPPS	:	Public-Private Partnership Service
PREXC	:	Program Expenditure Classification
PS	:	Planning Service
PSA	:	Philippine Statistics Authority
PSCG	:	Pre-Stressed Concrete Girder
PVD	:	Pre-fabricated Vertical Drain
QOL	:	Quality of Life
RA	:	Republic Act
RAP	:	Resettlement Action Plan
RC	:	Regional Center
RC	:	Reinforced Concrete
RCDG	:	Reinforced Concrete Deck Girder
R&D	:	Research and Development
RDC	:	Regional Development Council
RDCOM	:	Regional Development Committee
RDP	:	Regional Development Plan
RERBA	:	Real Estate, Renting, and Business Activity
RIMSS	:	Road Information Management Support System
RO	:	Regional Office
ROLL IT	:	Roads Leveraging Linkages of Industry and Trade
RORO	:	Roll-on / Roll-off
ROW	:	Right-of-Way
ROWA	:	Right-of-Way Acquisition
RPFP	:	Regional Physical Framework Plan
RQD	:	Rock Quality Designation
RROW	:	Road Right-of-Way
RRTS	:	Roll-On-Roll-Off Terminal System
SABATABESA	:	Sabangan-Bauko-Tadian-Besao-Sagada
SAFDZ	:	Strategic Agriculture and Fisheries Development Zones
SBMA	:	Subic Bay Metropolitan Authority
SCADA	:	Supervisory Control and Data Acquisition
SCTEX	:	Subic-Clark-Tarlac Expressway
SD	:	Statistics Division
SEA	:	Strategic Environmental Assessment
SEARCA	:	Southeast Asian Regional Center for Graduate Study and Research in Agriculture
SEZ	:	Special Economic Zone
SHM	:	Stakeholder Meeting
SLEX	:	South Luzon Expressway
SMMSP	:	South Metro Manila Skyway Project
SOCCSKSARGEN	:	South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos City, or Region XII
SRC	:	Sub-Regional Center
SRNH	:	Strong Republic Nautical Highway
STAR	:	Southern Tagalog Arterial Road
STD	:	Sexually Transmitted Disease
STEP	:	Special Terms for Economic Partnership
STOA	:	Supplemental Toll Operation Agreement

STRADA	:	System for Traffic Demand Analysis
SWP	:	Site Working Procedure
TDA	:	Tourism Development Areas
TDM	:	Traffic Demand Management
TDS	:	Total Dissolved Solids
TEC	:	Traffic Engineering Center
TED	:	Traffic Engineering Division
TEU	:	Twenty-Foot Equivalent Unit
TEZ	:	Tourism Economic Zones
TOC	:	Toll Operations Certificate
TOD	:	Transit Oriented Development
TOR	:	Terms of Reference
TP	:	Terminal Port
TPLEX	:	Tarlac-Pangasinan-La Union Expressway
TR-4	:	Toll Road 4
TRAIN-2	:	Tax Reform for Acceleration and Inclusion
TRB	:	Toll Regulatory Board
TTC	:	Travel Time Cost
TSC	:	Transport, Storage, and Communication
TSP	:	Total Suspended Particles
TSS	:	Total Suspended Solids
TWG	:	Technical Working Group
UMRT	:	Urban Mass Rapid Transit
UNESCAP	:	United Nations Economic and Social Commission for Asia and the Pacific
UPMO	:	Unified Project Management Office
UPMO-RMC1	:	Unified Project Management Office – Roads Management Cluster 1
UPMO-RMC2	:	Unified Project Management Office – Roads Management Cluster 2
USAID	:	United States Agency for International Development
USD	:	United States Dollar
VAT	:	Value Added Tax
VCR	:	Volume Capacity Ratio
VGF	:	Viability Gap Funding
VOC	:	Vehicle Operating Cost
VPA	:	Volunteer Probation Assistance
VSDF	:	Visayas Spatial Development Framework
WACC	:	Weighted Average Cost of Capital
WB	:	World Bank
WTP	:	Willingness-To-Pay

PART A

GENERAL

CHAPTER 1

INTRODUCTION

CHAPTER 1
INTRODUCTION

1.1 Background of the Study

Chronic traffic congestion in large cities and urbanized areas is a great problem in road traffic in the Philippines. This problem is particularly serious in Metro Manila. The annual economic loss caused by the traffic congestion in Metro Manila is estimated at USD 2.45 billion, which is equivalent to approximately 4% of Metro Manila's economic production. The overconcentration of urban functions, insufficient public transport services, and lack of highway networks are considered causes of the severe congestion.

The poor state of the transport networks between the centers of economic activities, including Metro Manila and provincial cities, has been an obstacle to the economic development of rural areas and a cause of the increasing disparity between urban and rural areas. In order to alleviate the overconcentration in the urban areas and facilitate urban development in harmony with rural areas, a strategic improvement of roads and transport networks in the urban areas and a nationwide network of high standard highways, including expressways, should be planned and developed in the Philippines.

With this background, JICA implemented a Development Study, "The Study of Master Plan on High Standard Highway Network Development in the Republic of the Philippines (hereinafter referred to as "HSH Phase 1")," from April 2009 to May 2010.

In that Study, the JICA Team has established the functional classification and definition of high standard highways, prepared a comprehensive master plan including the order of priority of the planned projects, and recommended the improvement of the organizational structures.

The Study had three target areas: the areas within the 200-km radius from Metro Manila, Metro Cebu and Metro Davao. Among the eight priority projects in the three areas recommended by the JICA Team, the Government of the Republic of the Philippines (GRP) has implemented five projects with ODA Loans from Japan and under the Public-Private Partnership (PPP) scheme.

However, the HSH Phase 1 network development focused mainly on Metro Manila and its suburbs, and the GRP has no nationwide HSH network development plan yet.

Knowing the importance of the improvement of access to rural areas as an important issue to be addressed in the country, the GRP requested the Government of Japan (GOJ) to implement "The Study of Master Plan on High Standard Highway Network Development in the Republic of the Philippines (HSH Phase 2)," as a follow-through study of HSH Phase 1.

In response to the request, JICA decided to implement HSH Phase 2 and concluded the record of discussion on the implementation of the project with the Department of Public Works and Highways (DPWH) of the Philippines in September 2017.

1.2 Study Description

(1) Expected Goals to be attained after Implementation of the Proposed Plan

- To provide a higher quality of the HSH network for faster, safer, more comfortable, and more reliable and environment-friendly means of road transport, which supports the national goals of rapid, inclusive and sustained economic growth of the country.

(2) Outputs

- Defined and clarified overall HSH network focusing on nationwide highway network
- Formulation of the HSH Master Plan with implementation program of up to 2040
- Four (4) Pre-Feasibility Studies

1.3 Study Area

The Study Area covers the major transport corridors nationwide.

1.4 Scope of the Study

In order to achieve the above objectives, the Study covers the following:

(1) Definition of Overall HSH Network Focusing on Nationwide Highway Network

1) Presentation and Discussion of Inception Report
2) Review of the Current National Road and Highway Network and the National and Regional Development Plans
3) Assessment of Regional Connectivity from Viewpoints of Location of Urban Centers and Industry/Transportation/Tourism Hubs
4) Traffic Surveys
5) Formulation of Socio-Economic Framework
6) Traffic Demand Forecast
7) Definition of Hierarchy of HSH including National Roads and Highway
8) Definition of the Criteria for the HSH Network
9) Identification of Problems / Issues of HSH Network and Regional Connectivity
10) Identification of Environmental, Social and Cultural Critical Areas
11) Strategic Environmental Assessment
12) Formulation of HSH Network Development Strategy
13) Establishment of Overall HSH Network Plan
14) Preparation, Presentation and Discussion of Progress Report

(2) Formulation of Priority Projects and Pre-Feasibility Study

1) Identification of Criteria for Prioritization of Projects
2) Study of Project Cost, Economic and Financial Analysis, Engineering and Environmental Aspects, and Related Matters at Primary and Corridor Levels
3) Formulation of Project Implementation Program in Short, Medium, and Long Terms
4) Study on Project Implementation Schemes and Financial Analysis
5) Selection of Projects for Pre-Feasibility Study
6) Preparation, Presentation and Discussion of Interim Report
7) Pre-Feasibility Study including Preliminary Environmental and Social Impact Study
8) Public Consultation for the Projects
9) Preparation, Presentation and Discussion of Draft Final Report
10) Presentation of Final Report

1.5 Schedule of the Study

The Study commenced in February 2019 and complete by the end of August 2021 as shown in **Table 1.5-1**.

Table 1.5-1 Study Schedule and Progress of Work

	Work Item	2019											2020												2021	
		2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	**DEFINITION OF OVERALL HSH NETWORK FOCUSING ON NATIONWIDE EXPRESSWAY NETWORK**																									
1.1	Presentation and Discussion of Inception Report																									
1.2	Review of the Current National Road and Expressway Network and the National and Regional Development Plans																									
1.3	Assessment of Regional Connectivity from Viewpoints of Location of Urban Centers and Industry/Transportation/Tourism Hubs																									
1.4	Traffic Surveys																									
1.5	Formulation of Socio-economic Framework																									
1.6	Traffic Demand Forecast																									
1.7	Definition of Hierarchy of HSH including National Roads and Expressways																									
1.8	Definition of the Criteria of HSH Network																									
1.9	Identification of Problems / Issues of HSH Network and Regional Connectivity																									
1.1	Identification of Environmental, Social and Cultural Critical Areas																									
1.11	Strategic Environmental Assessment																									
1.12	Formulation of HSH Network Development Strategy																									
1.13	Establishment of Overall HSH Network Plan																									
1.14	Preparation, Presentation and Discussion of Progress Report																									
2	**FORMULATION OF PRIORITY PROJECTS AND PRE-FEASIBILITY STUDY**																									
2.1	Identification of Criteria for Prioritization of Projects																									
2.2	Study of Project Cost, Economic and Financial Analysis, Engineering and Environmental Aspects, and so on at Primary and Corridor Levels																									
2.3	Formulation of Project Implementation Program in Short, Medium, and Long Terms																									
2.4	Study on Project Implementation Schemes and Financial Analysis																									
2.5	Selection of Pre-Feasibility Study(s)																									
2.6	Preparation, Presentation and Discussion of Interim Report																									
2.7	Pre-Feasibility Study including Preliminary Environmental and Social Impact Study																									
2.8	Public Consultation for the Projects																									
2.9	Preparation, Presentation and Discussion of Draft Final Report																									
2.10	Preparation Final Report																									
	Submission of Reports	△ IC/R							△ P/R					△ IT/R									△ DF/R			△ F/R

Legend : Progress of Works as of November 2020 △ Submission of IC/R: Inception Report, P/R: Progress Report, IT/R: Interim Report, DF/R: Draft Final Report, F/R: Final Report

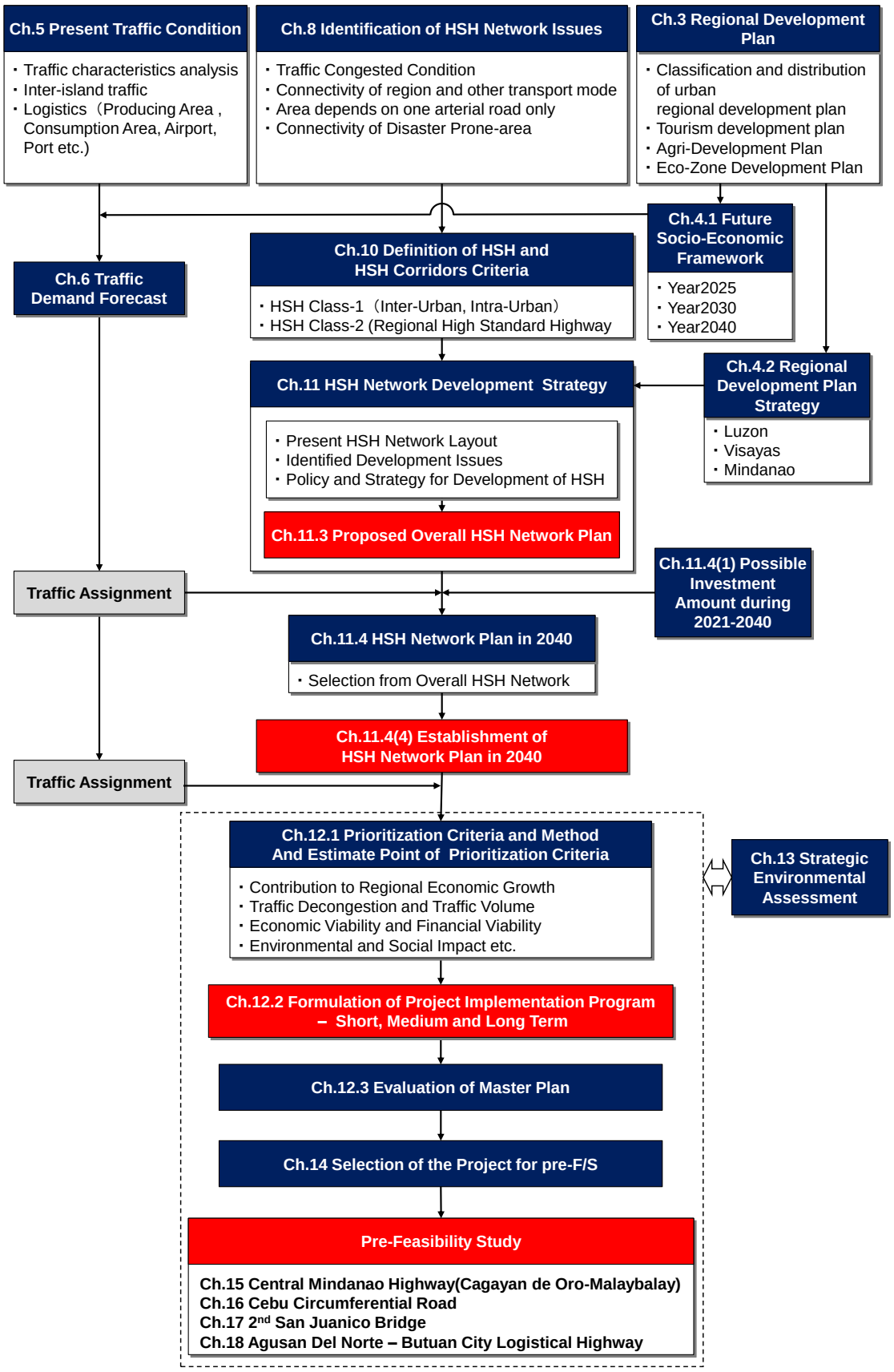


Figure 1.5-1 Project Procedure

1.6 Organization to Carry Out the Study

The Study is carried out by the Study Team organized by JICA in close collaboration with DPWH and other organizations concerned.

The Joint Coordination Committee (JCC) was organized by DPWH 1) to discuss and approve the annual work plan of the Project, 2) to evaluate the achievement of the annual work plan and overall progress of the Project, and 3) to review and exchange opinions on major issues that arise during implementation of the Project.

The JCC is composed of the following departments and officials:

Chairperson (Project Director):

1)	Mark A. VILLAR	Secretary, DPWH

Vice Chairpersons (Project Managers):

2)	Maria Catalina E. CABRAL, Ph. D., CESO I	Undersecretary for Information Management, Planning and PPP, DPWH
3)	Emil K. SADAIN, CESO I	Undersecretary for UPMO Operations and Technical Services, DPWH
4)	Rafael C. YABUT	Undersecretary for Regional Operations in Luzon except NCR and Region IV-B, DPWH
5)	Roberto R. BERNARDO	Undersecretary for Regional Operations in Visayas, NCR and Region IV-B, DPWH
6)	Dimas S. SOGUILON	Undersecretary for Regional Operations in Mindanao, DPWH

Members:

Philippine side

7)	Constante A. LLANES, JR., CESO III	Director, Planning Service, DPWH
8)	Benjamin A. BAUTISTA (OIC) (as of 26 April 2021) (vice Virgilio C. CASTILLO, retired)	Director, UPMO-RMC1, DPWH
9)	Alex G. BOTE	Director, PPPS, DPWH
10)	Aristarco M. DOROY	Director, Bureau of Construction, DPWH
11)	Samson L. HEBRA	Director, Bureau of Design, DPWH
12)	Director	NEDA
13)	Enrico C. FERRE	OIC, Planning Service, DOTr
14)	Director	DENR
15)	Jeffrey I. MANALO	Director IV, Policy Formulation, Project Evaluation and Monitoring Service (PFPEMS), PPP Center
16)	Ferdinand R. RONQUILLO	Representative, OAGMP, MMDA
17)	Director	DILG

Japan side

18)	Masahiro NAKATA	Embassy of Japan
19)	Kiyo KAWABUCHI	Senior Representative, JICA Philippines
20)	Kunihiro TAKAHASHI	Highway Expert, JICA (DPWH)
21)	Ryuichi UENO	Team Leader, JICA Study team

Provisional Members:

Regional Directors of concerned Regional Offices, DPWH

The Technical Working Group (TWG) was established to assist the JCC and is composed of the following concerned organizations and officials. The TWG is tasked to monitor and provide technical advice to the Study Team through the progress of the Study.

Head (Project Manager):

1)	Constante A. LLANES, JR., CESO III	Director, Planning Service, DPWH

Vice-Head:

2)	Alex G. BOTE	Director, PPPS, DPWH

Members:

3)	Maximo Ewald M. MONTAÑA, II	Division Chief, PPD, Planning Service, DPWH
4)	Nenita R. JIMENEZ	Division Chief, DPD, Planning Service, DPWH
5)	Rosemarie B. DEL ROSARIO	Division Chief, ESSD, Planning Service, DPWH
6)	Edwin M. FORTES	Division Chief, SD, Planning Service, DPWH
7)	Peter Paul R. CORTEZ (as of 2 February 2021) (vice Milagros C. MANAYSAY)	Division Chief, PD, Planning Service, DPWH
8)	Pelita V. GALVEZ	OIC Division Chief, PDD, PPPS, DPWH
9)	Carolyn A. LEYESA	Division Chief, TED, BQS, DPWH
10)	Antonio Erwin R. ARANAZ	Division Chief, UPMO-RMC1, DPWH
11)	Blesilda S. RAMOS	OIC Division Chief, BD, BOD, DPWH
12)	Godofredo E. CASTILLO	OIC Division Chief, PCD, BOC, DPWH
13)	Criselle S. SANTOS	Representative, NEDA
14)	Lemar L. JIMENEZ	Sr. Transport Development Officer-RTPD, DOTr
15)	Regina Paula EUGENIO (permanent) Joel POLINTAN (alternate)	SEMS, EIAMD, EMB, DENR Engineer III, EIAMD, EMB, DENR
16)	Nelson Angelo P. ROMERO	Geologist II, LGD, MGB, DENR
17)	Phebean Belle RAMOS-LACUNA	Planning Officer V, Policy Formulation Division (PFD), PPP Center
18)	Francis SALAZAR	Representative, TEC, MMDA
Provisional Members:		Chiefs of Planning and Design Division, DPWH Regional Offices concerned
19)	Nonato M. PAYLADO	Chief, PDD, DPWH VII
20)	Agnes M. BARONDA	Chief, PDD, DPWH VIII
21)	Sabiniano D. CALIAO, JR.	OIC Chief, PDD, DPWH X
22)	Vincent Roderick O ACEBES (as of 22 July 2021) (vice Ruth D. CANTIVEROS, reassigned)	OIC Chief, PDD, DPWH XIII

Note: OIC = Officer-in-Charge

The Counterpart Working Group (CWG) was organized by DPWH to collaborate with the Study Team in carrying out the Study. The members of the Counterpart Team were selected from the DPWH. DPWH submitted the list of members as follows:

1)	Maximo Ewald M. MONTAÑA, II	Division Chief, PPD, Planning Service
2)	Pelita V. GALVEZ	OIC Division Chief, PDD, PPPS, DPWH

3)	Elmo F. ATILLANO	Engineer IV, PPD-PS
4)	Guilleane J. MEDINA	Economist III, PPD-PS
5)	Jay M. ATENTO	Engineer III, DPD-PS
6)	Yvette Kirsten R. RIVERA	Economist III, PPD-PS
7)	Maria Lourdes S. BUENO	Engineer II, DPD-PS
8)	Mery Liza L. VILLAR	Engineer III, PDD-PPPS
9)	Rochelle Anne G. VALENZUELA	Engineer III, PPD-PS
10)	Philip Z. LEGAZPI	Engineer III, PPD-PS
11)	Arie L. PEÑARANDA	Engineer III, PPD-PS
12)	Recy V. NOGUERAS	Economist II, PPD-PS
13)	Anna Maria S. TABERNA	Economist III, PPD-PS
14)	Perfecto M. MARCELO III	Economist II, PPD-PS
15)	Mark Elvin L. SISON	Engineer III, PDD-PPPS
16)	Mary Jane S. CASTILLO-DIAZ	Planning Officer III, PPD-PS
17)	Maria Victoria G. LOFAMIA	Engineer III, ESSD-PS
18)	Michiko Marie B. QUIACHON	SEMS, ESSD-PS
19)	Ranz Christial P. DAPAL	Engineer II, PPD-PS
20)	Maria Jacinta K. LAGONERA	Planning Officer II, PPD-PS
21)	Charisse D. PRESTO	Cartographer V, SD-PS
22)	Rachelle Marie G. RABINO-CORPUZ	Engineer II, PPD-PS

The organization for executing the Study is shown in **Figure 1.6-1**.

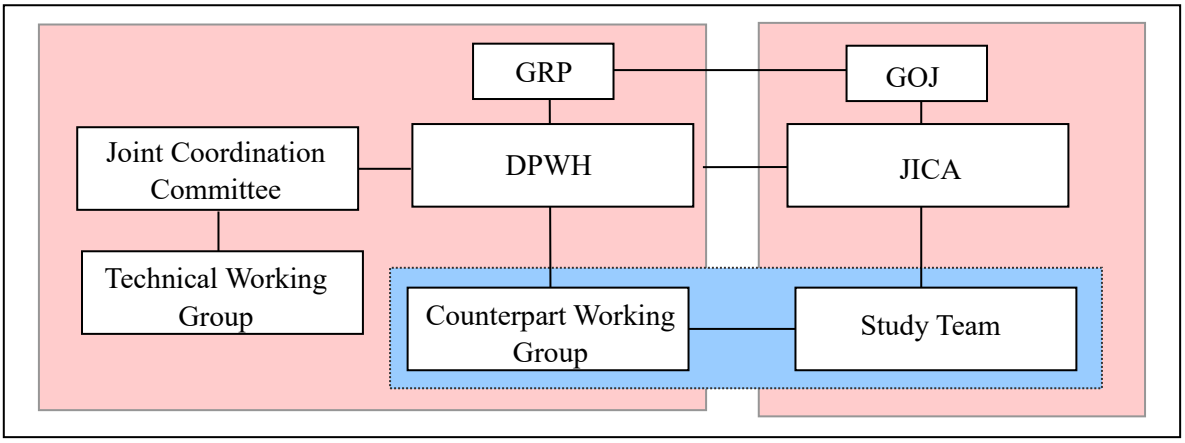


Figure 1.6-1 Organizational Chart to Carry Out the Study

The Study Team is composed of the following:

1)	Ryuichi UENO	Team Leader/ Road Policy
2)	Ryuichi OIKAWA	Deputy Team Leader/Transport Plan
3)	Mitsuo KIUCHI	Road Development Plan
4)	Hisako KOBAYASHI	Regional Plan/Urban Plan
5)	Kurato ENDO	PPP Scheme
6)	Akira MAGARIO	Highway Design (1)
7)	Alan Anthony L. ACACIO	Highway Design (2)
8)	Takeyuki TAKADA	Bridge Design (1)
9)	Norio KOYANAGI	Bridge Design (2)

10) Yui MIYAHARA	Traffic Survey and Analysis (1)
11) Suguru IWAMA	Traffic Survey and Analysis (2)
12) Risa KIKUCHI	Economic Analysis
13) Hiroshi KANEKO	Demand Forecast / Financial Analysis
14) Tomoaki TANABE	Environmental and Social Considerations
15) Atsushi HARADA	Cost Estimate
16) Nashreen G. SINARIMBO	Logistic Plan
17) Kentaro SAWADA	Tunnel Design
18) Naoya MIZUNO	Geologic Analysis for Tunnel

1.7 Final Report Organization

1.7.1 Reports Prepared

The following reports were prepared in the course of the study and submitted to DPWH.

- Inception Report (May 2019)
- Progress Report (September 2019)
- Interim Report (March 2020)
- Draft Final Report (July 2021)
- Final Report (August 2021)

1.7.2 Organization of the Final Report

The Final Report is organized as follows;

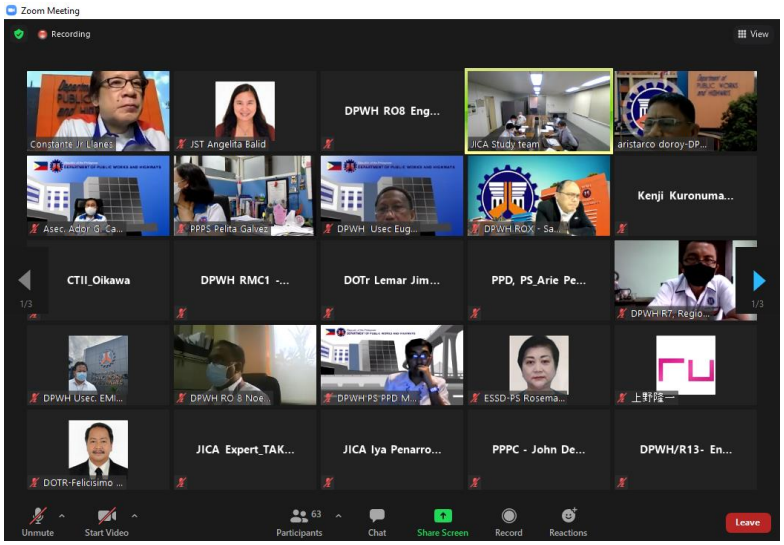
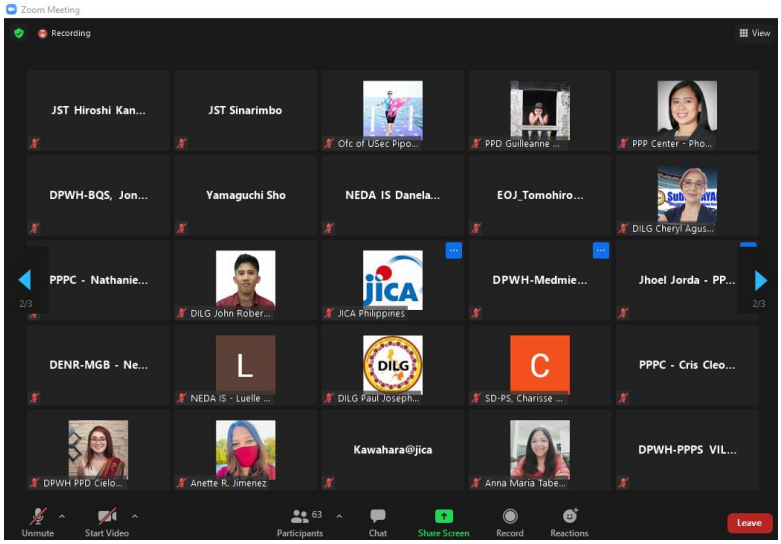
- EXECUTIVE SUMMARY
- MAIN TEXT
- APPENDIX

1.8 Meetings

(1) Joint Coordination Committee (JCC)

Four (4) JCC Meetings were conducted during the entire study, as shown:

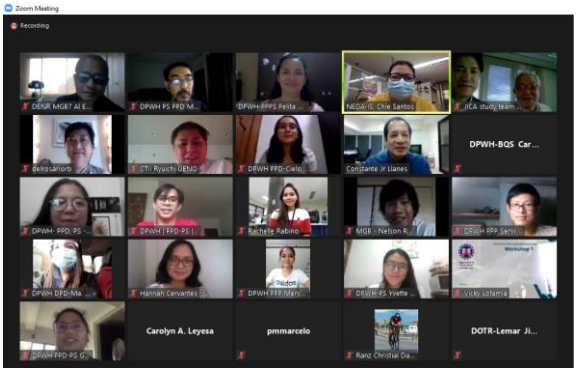
	Date/Place	Participants
1	May 21, 2019 - Office of the Secretary, 2ndFloor, DPWH Central  	65
2	September 26, 2019 - Operations Room, 2nd Floor, DPWH Central 	44

	Date/Place	Participants
3	February 24, 2020 - Operations Room, 2nd Floor, DPWH Central 	44
4	July 6, 2021, Web Meeting connecting between Philippines and Japan  	66

(2) Technical Working Group (TWG)

Technical Working Group Meeting were conducted, the first meeting was with the JCC Members being a meeting for Inception Report. Others are as shown:

	Date/Place	Participants
1	May 21, 2019 - Office of the Secretary, 2ndFloor, DPWH Central (This TWG was held in conjunction with the first JCC.)	65
2	August 9, 2019 - Conference Room, 3rd Floor, DPWH Central 	33
3	September 20, 2019 - Training Room I, 5th Floor, DPWH Central Office 	30
4	January 23, 2020 - Operations Room, 2nd Floor, DPWH Central Office 	44

	Date/Place	Participants
5	February 7, 2020 - Operations Room, 2ndFloor, DPWH Central Office 	28
6	September 16, 2020 - Zoom  	41
7	June 15, 2020 - Zoom 	47

(3) Counterpart Meeting (C/P)

Counterpart Meetings were held as a technology transfer as well as knowledge sharing:

	Topic	Date	Participants
1	Inception Report	March 22, 2019	19
2	Outline of Traffic Survey	April 1, 2019	21
3	Japan's/Philippines' Road Classification	April 11, 2019	25
4	Logistics Japan's Practices and Logistic Survey	April 25, 2019	22
5	Preliminary Traffic Survey Result	June 20, 2019	26
6	Precondition of Traffic Demand Forecast	June 20, 2019	26
7	In conjunction with the 2nd TWG meeting		
8	Traffic Demand Forecast	September 17, 2019	18
9	Logistics in the Philippines	November 15, 2019	24
10	Project Prioritization	December 11, 2019	20
11	Pre-FS Projects and JICA STRADA Training	July 20, 2020	24
12	Pre-FS Projects (Butuan and Cebu Circumferential)	July 30, 2020	26
13	Clarification on Pre-FS Projects, etc.	August 25, 2020	24

(4) Stakeholder Meeting (SHM)

Stakeholder Meetings were conducted twice for each of the following: Luzon (North and South), Visayas, and Mindanao.

	Topic	Date	Venue
1	1st Stakeholder Meeting - Visayas	July 23, 2019	Best Western Hotel, Cebu City
2	1st Stakeholder Meeting - Mindanao	July 25, 2019	Apo View Hotel, Davao City
3	1st Stakeholder Meeting – North Luzon	July 30, 2019	5th Floor, Multi-purpose Hall, DPWH Central, Manila City
4	1st Stakeholder Meeting – South Luzon	July 31, 2019	
5	2nd Stakeholder Meeting – South Luzon	February 11, 2020	Bayleaf Hotel, Intramuros, Manila City
6	2nd Stakeholder Meeting – North Luzon	February 13, 2020	Savannah Hotel, Clark City
7	2nd Stakeholder Meeting - Visayas	February 18, 2020	Best Western Hotel, Cebu City
8	2nd Stakeholder Meeting - Mindanao	February 20, 2020	Pinnacle Hotel, Davao City
9	Stakeholder Meeting	February 22, 25 and 26, 2020	Online Meeting via Zoom

(5) JICA STRADA Training

As part of the Technology Transfer of the project, and in response to the request of the DPWH counterpart members, a JICA STRADA Training was conducted on February 2021 under webinar. 31 participants from DPWH (Planning Service and PPP Service) attended webinar meeting for four (4) days.

	Topic	Date	Participants
1	Study of Traffic Assignment and Economic Analysis	February 8, 2021	31
2	Traffic Assignment Methodology	February 9, 2021	31
3	Economic Analysis Methodology	February 10, 2021	31
4	Traffic Plan of Cebu Circumferential Road	February 11, 2021	31

PART B

PRESENT AND FUTURE SOCIO-ECONOMIC CONDUCTIONS

CHAPTER 2

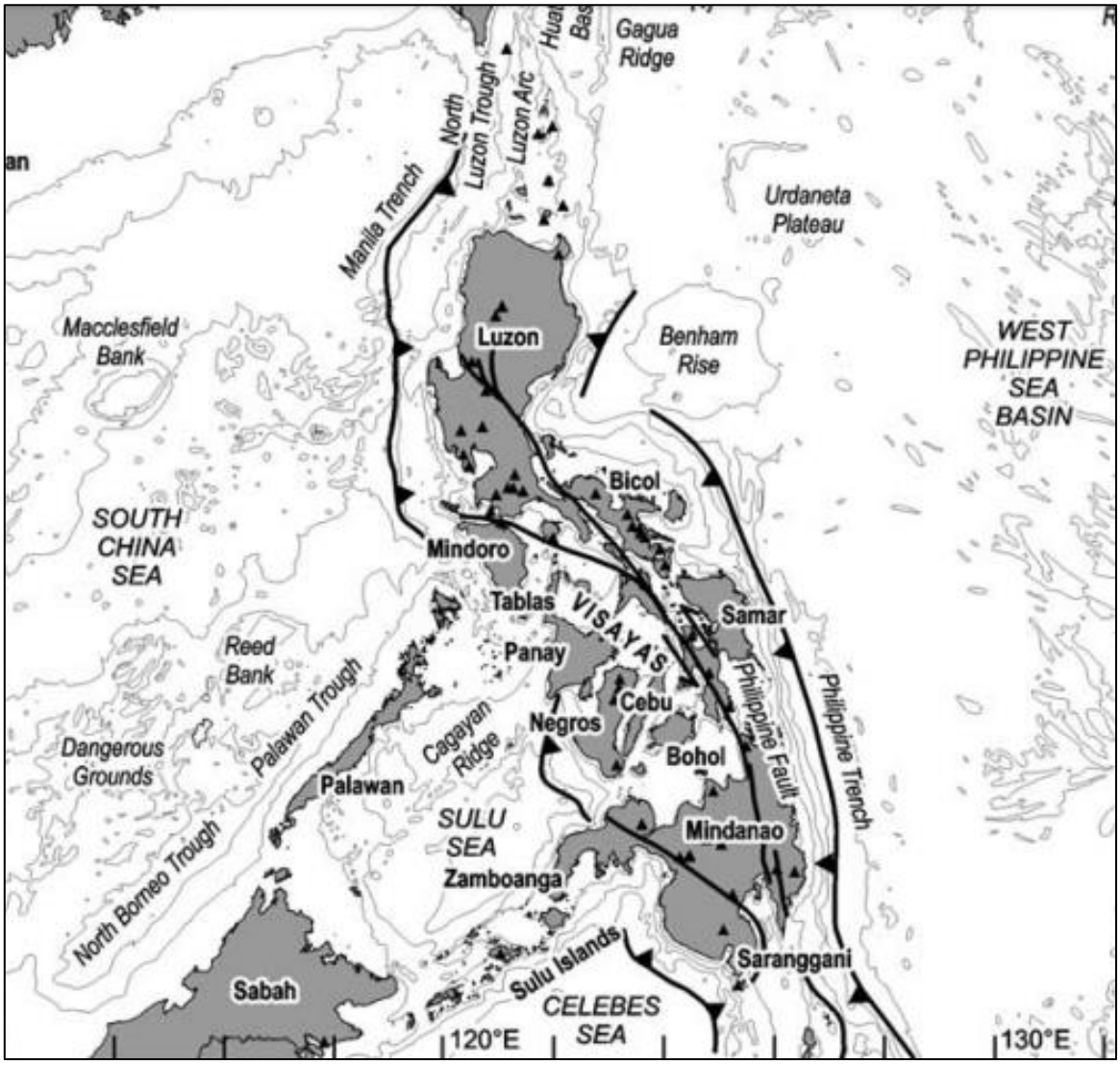
GENERAL PROFILE OF THE PHILIPPINES

CHAPTER 2
GENERAL PROFILE OF THE PHILIPPINES

2.1 Physical Profile

2.1.1 Geology

The Philippines is an evolving archipelago in the Southeast Asia comprising 7,641 islands in the total land area of 298,170 km^2 – a tectonically active region with a center subject to the large strike-slip Philippine Fault Zone (PFZ). It is divided into three island groups: Luzon, Visayas, and Mindanao. There are two tectonostratigraphic terranes: (1) the Philippine Mobile Belt (PMB) and (2) the Palawan Micro-continental Block (PCB) which is based on the seismicity and volcanism as shown in **Figure 2.1-1**.



Note-1: Subduction zones are represented by lines with the direction of movement of the subducting plates denoted by the pointed tip of the arrows. Smaller solid triangles represent volcanoes. Bathymetric contours are of 2000m interval. The entire map is bounded by 21°N (north), 7°N (south), 116°E (west), 131°E (east).

Source: Hall, 2001

Figure 2.1-1 Tectonic Map of the Philippines

(1) Philippine Mobile Belt

The Philippine archipelago is geologically part of the Philippine Mobile Belt (PMB) located between the Philippine Sea Plate, the South China Sea Basin of the Eurasian Plate, and the Sunda Plate. The Philippine Trench (Mindanao Trench) is a submarine trench 1,320 kilometers in length found directly east of the Philippine Mobile Belt at the rate of about 16 centimeters per year. Its deepest point, the Galathea Depth, has a depth of 10,540 meters. The Philippine Fault System consists of a series of seismic faults that produce several earthquakes per year, most of which are not felt.

The Philippine Mobile Belt is a complex portion of the tectonic boundary between the Eurasian Plate and the Philippine Sea Plate. It includes two subduction zones, the Manila Trench to the west and the Philippine Trench to the east, as well as the Philippine Fault System. Within the Belt, a number of crustal blocks or microplates which have been sheared off the adjoining major plates are undergoing massive deformation.

Most segments of the Philippines, including northern Luzon, are part of the Philippine Mobile Belt, which is separate from the Philippine Sea Plate to the east, the Molucca Sea Collision Zone to the south, Sunda Plate to the southwest, and the South China Sea Basin to the west and the north-west. To the north it ends in eastern Taiwan, the zone of the active collision between the North Luzon Trough portion of the Luzon Volcanic Arc and South China.

(2) Palawan – Mindoro Microcontinent

The core of the Palawan-Mindoro Microcontinent (PMC) is exposed on Palawan, while the suture zone between PMC and the PMB bisects Mindoro, Panay Island, the Zamboanga Peninsula as well as several small islands in the Central Philippines. Geologic units include uplifted Jurassic and Miocene marine sediments, Tertiary volcanics, Cretaceous gretwacke-shale with intercalated spilites, and metamorphosed basement units. Sedimentary rock in northern Palawan consists of quartz-rich sandstones, pebble mudstones and mudstones. Its metamorphic rocks consist of schists, phyllites, quartzites and slates with sedimentary protoliths. Paleontological dating of sedimentary sequences on northern Palawan suggests Late Cretaceous to Eocene age. Additionally, identification of olistostromes in far northern Palawan are interpreted as remnants of an accretionary prism. Dating of chert, clastic, and limestone sequences of these olistostromes show a Middle Jurassic to Early Cretaceous age.

Southern Palawan is comprised of the Palawan Ophiolite Complex. Volcanic rocks in the ophiolite are comprised primarily of boninites and harzburgites with overlying chert, clastics, and carbonates. Formation is dated to Late Cretaceous to Eocene based on radiolarians extracted from chert. The ophiolite is interpreted as a supra-subduction zone ophiolite that has undergone a high degree of partial melting.

Mindoro is a small northwest-southeast trending island northeast of Palawan with two geologic blocks separated by a central mountain range. The northeast block is composed of rocks derived from the Philippine archipelago and the southwest block is interpreted to be largely composed of the PMC. The juxtaposition of island-arc and continental rocks indicates that Mindoro represents a suture between the PMB and the PMC.

(3) Geological Classification

There are four main types of lithologic units, namely: (1) metamorphic rocks, (2) ophiolites and ophiolitic rocks, (3) magmatic rocks and active volcanic arcs, and (4) sedimentary basins. Classification of the entire Philippines according to geological classifications are shown in **Figure 2.1-2**.

1) Luzon

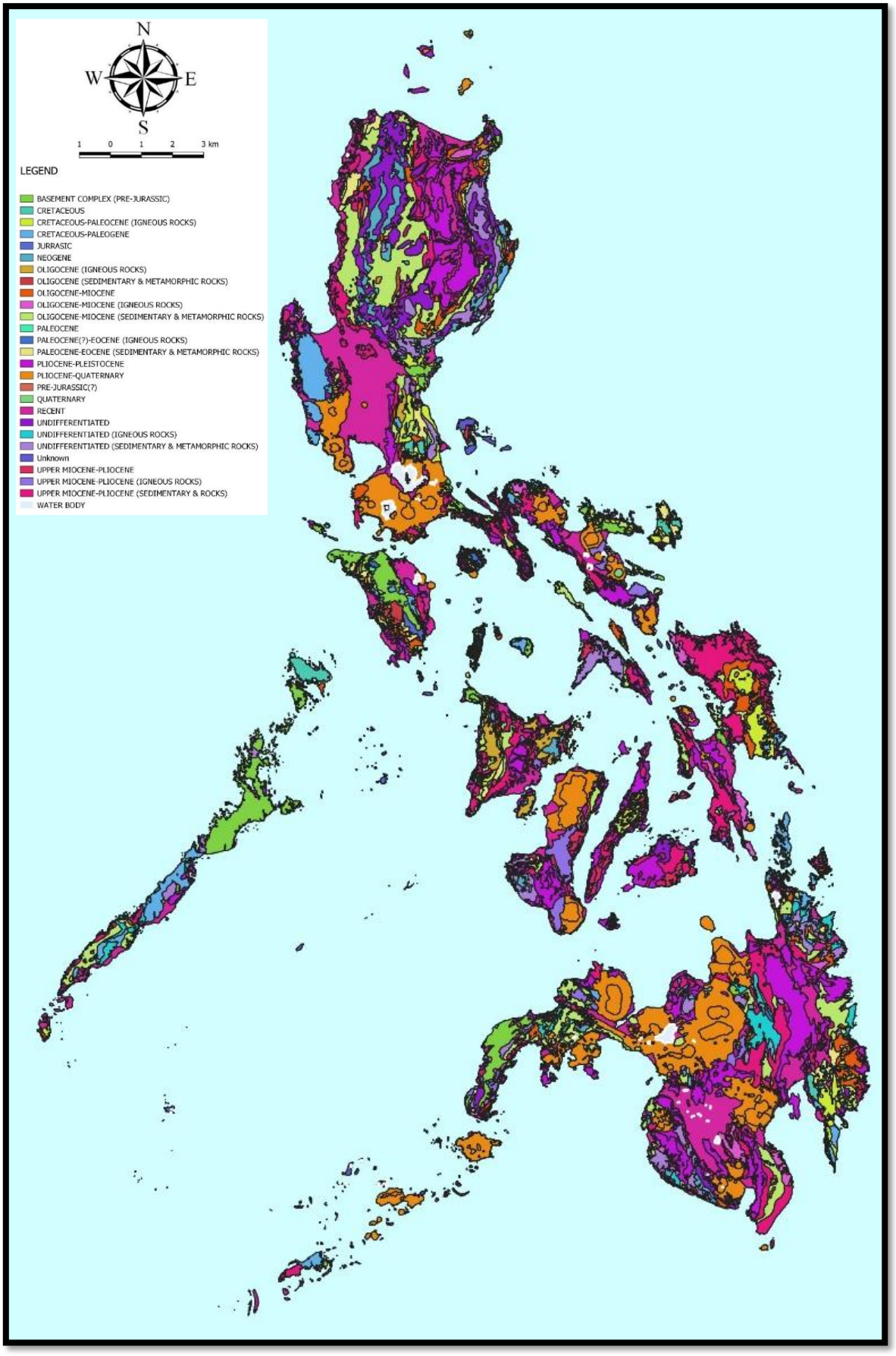
Luzon is traversed by the Central Cordillera and Northern Sierra Madre mountain ranges as shown in **Figure 2.1-2.** Mountain ranges are composed of uplifted basalts and spilites and Jurassic and Miocene marine sediments. Furthermore, Tertiary volcanics and metamorphosed basement units are also present as sedimentary basins between uplifts make up the remainder of Luzon.

2) Mindanao Island

Mindanao is the southernmost portion of the Philippines. Geologic units include uplifted Jurassic and Miocene marine sediments, Tertiary volcanics, and metamorphosed basement units and sedimentary basins between uplifts make up the remainder of Mindanao.

(4) Minerals

The Philippines is abundant in mineral sources which can be attributed to its strategic location along the "Pacific Ring of Fire." With this, the country is a substantial producer of copper, coal, gold, nickel, chromite, iron, and other industrial materials.



Source: PHILGIS

Figure 2.1-2 Geologic Map of the Philippines

2.1.2 Potential Earthquake Generators

An earthquake is a weak (scarcely perceptible) to violent (completely devastating) shaking of the ground produced by the sudden movement of rock materials below the earth's surface.

(1) Types of Earthquakes

There are two types of earthquake: the tectonic and the volcanic earthquakes. Tectonic earthquakes are produced by sudden movements along faults and plates boundaries; while volcanic earthquakes are earthquakes induced by rising lava or magma beneath active volcanoes.

The Philippines, which is located in latitude 5° to 19°45' North and longitude 116° to 128° East - being in the "Pacific Ring of Fire", has many potential earthquake generators that are distributed all over the country. Generators of tectonic and volcanic earthquakes are shown in **Figure 2.1-3** and **Figure 2.1-4**, respectively. At present, PHIVOLCS has identified twenty-four (24) active volcanoes which are potential earthquake generators.

(2) Ways to Measure the Strength of an Earthquake

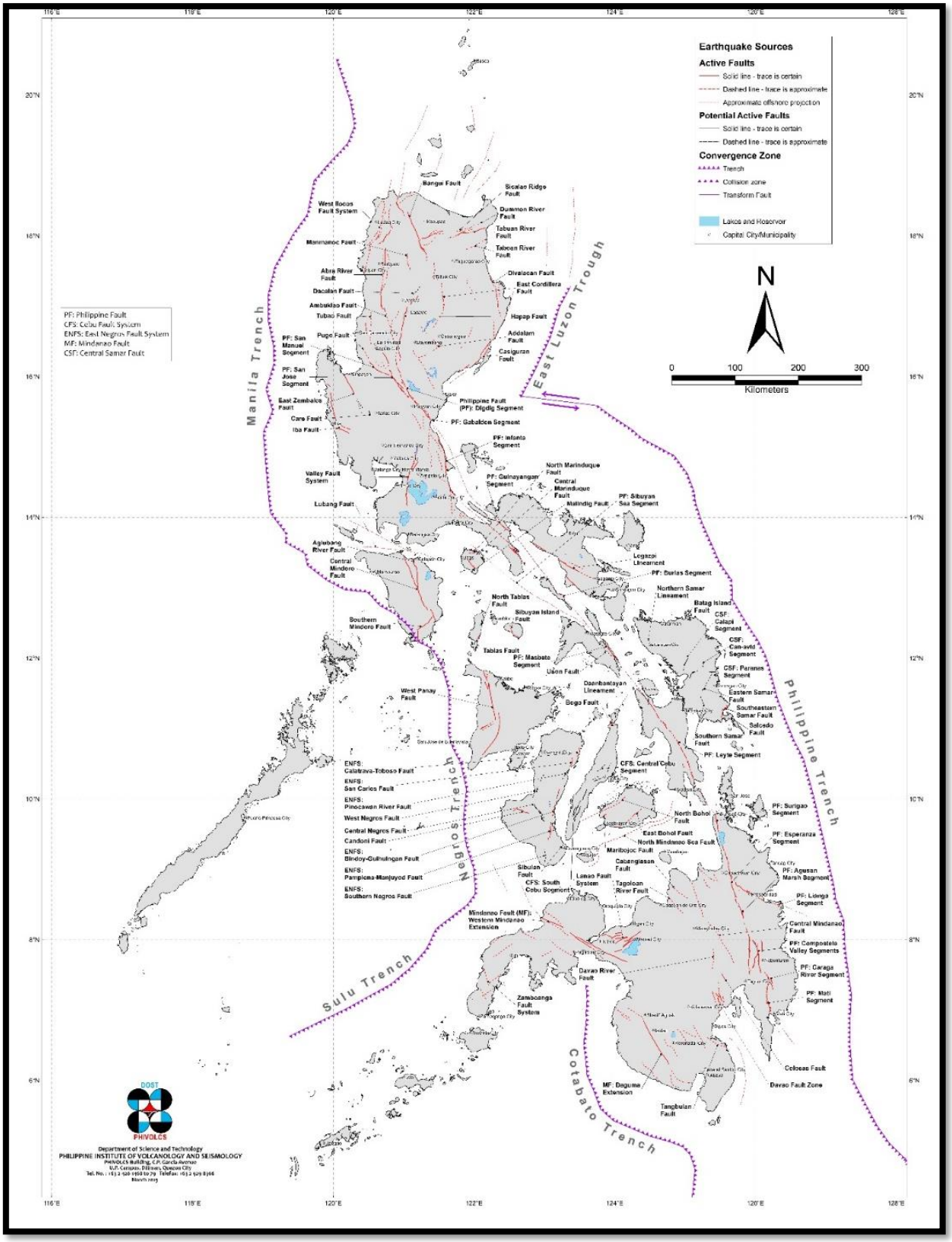
There are two ways to measure the strength of an earthquake: magnitude and intensity. Magnitude is proportional to the energy released by an earthquake at the focus. It is represented by Arabic numbers (e.g., 6.7, 8.9). On the other hand, intensity is the strength of an earthquake as perceived and felt by people in a certain locality. It is a numerical rating based on the relative effects to people, objects, environment and structures in the surroundings. In the Philippines, the intensity of an earthquake is determined by the PHIVOLCS Earthquake Intensity Scale (PEIS).

(3) Recorded Earthquake Events (1907-2018)

Data gathered in May 2019 from PHIVOLCS about earthquake events show that there were 11,906 earthquake events with intensity of 4.0 and above, sorted from PHIVOLCS earthquake catalogue, as shown in **Figure 2.1-5**.

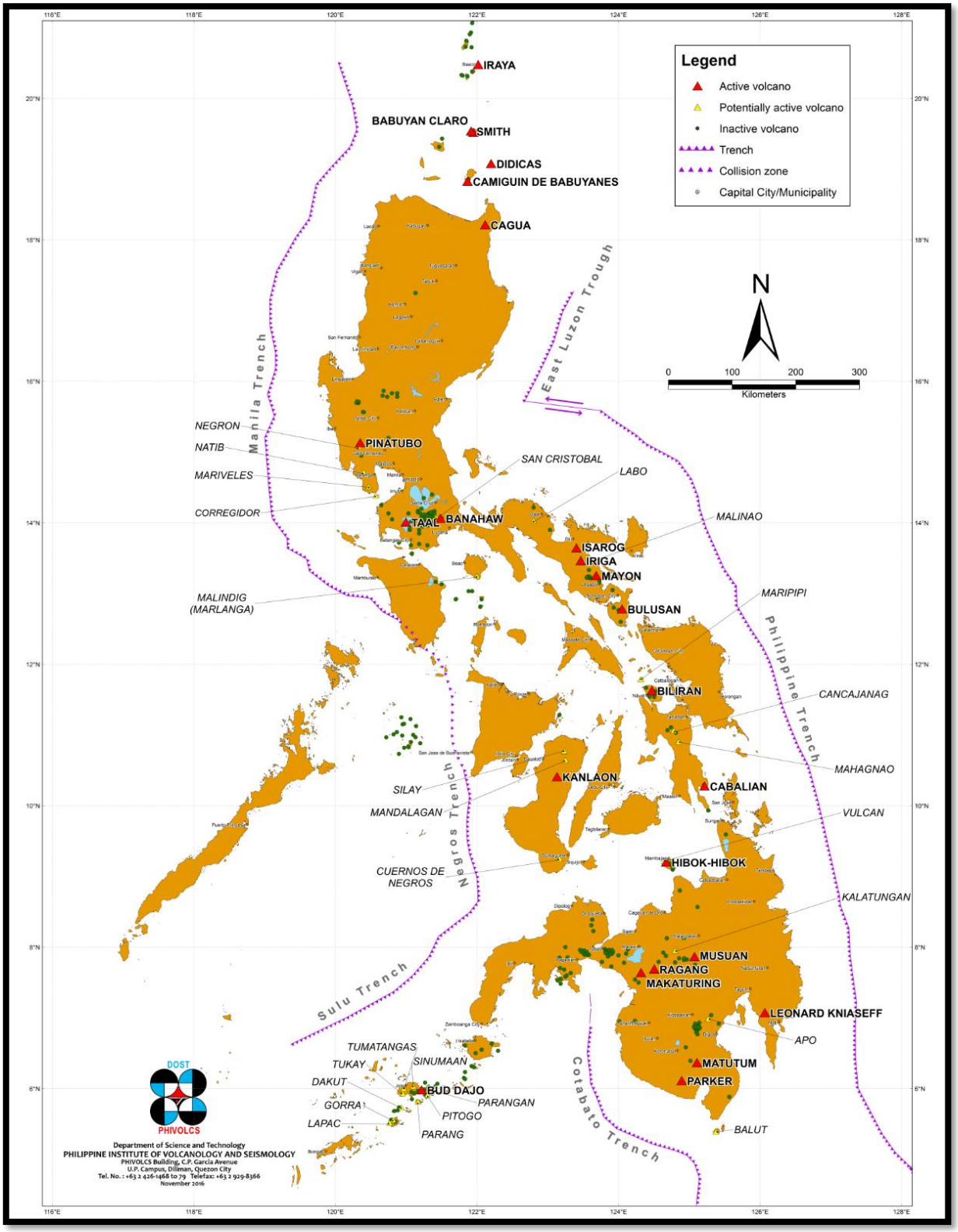
(4) Earthquake-triggered Landslide

In 2004, PHIVOLCS has generated an Earthquake-triggered Landslide Susceptibility Map based on Critical Acceleration Values and Earthquake Intensities as shown in **Figure 2.1-6**.



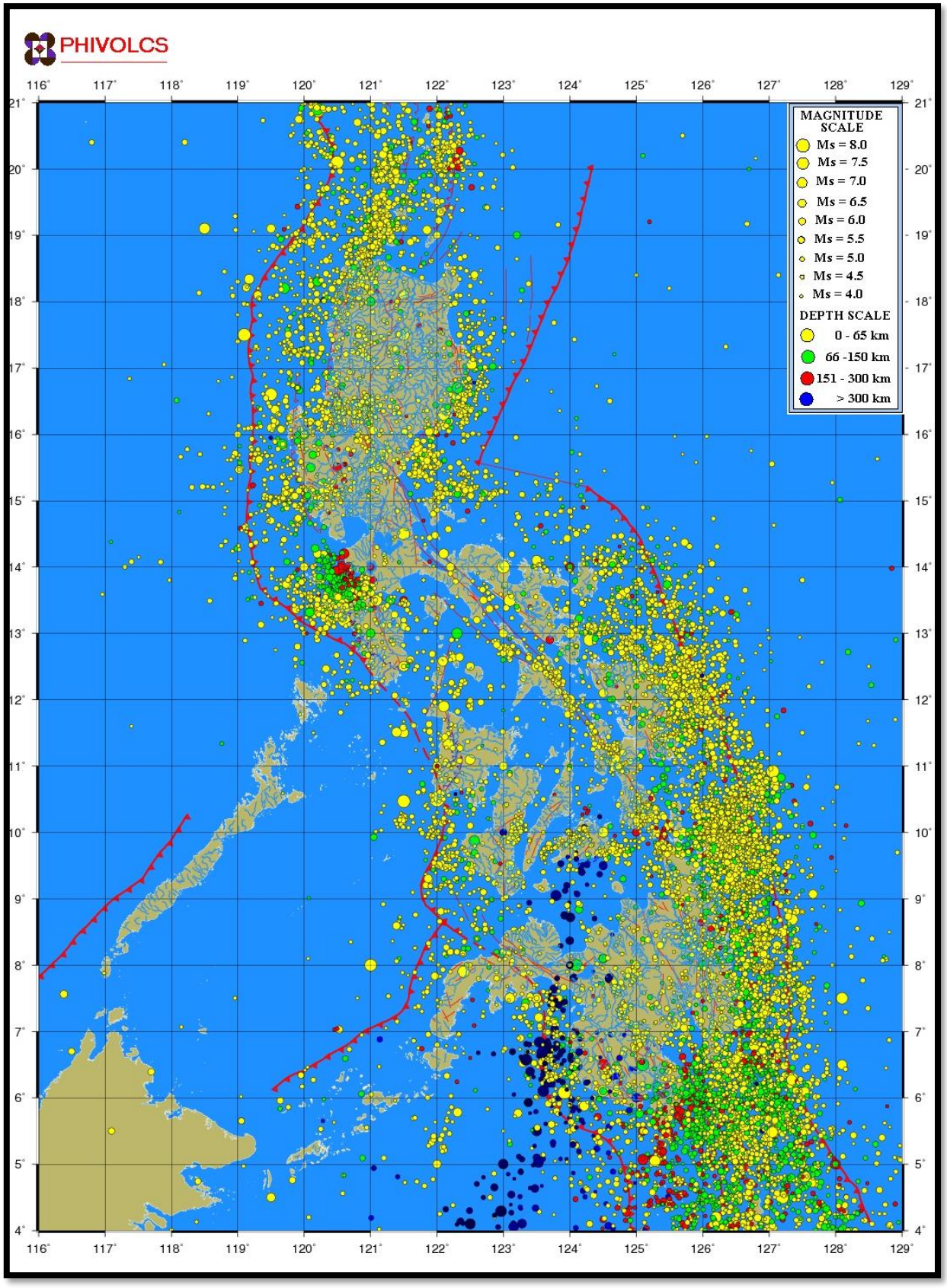
Source: Philippine Institute of Volcanology and Seismology (PHIVOLCS), March 2019

Figure 2.1-3 Distribution of Active Faults and Trenches in the Philippines



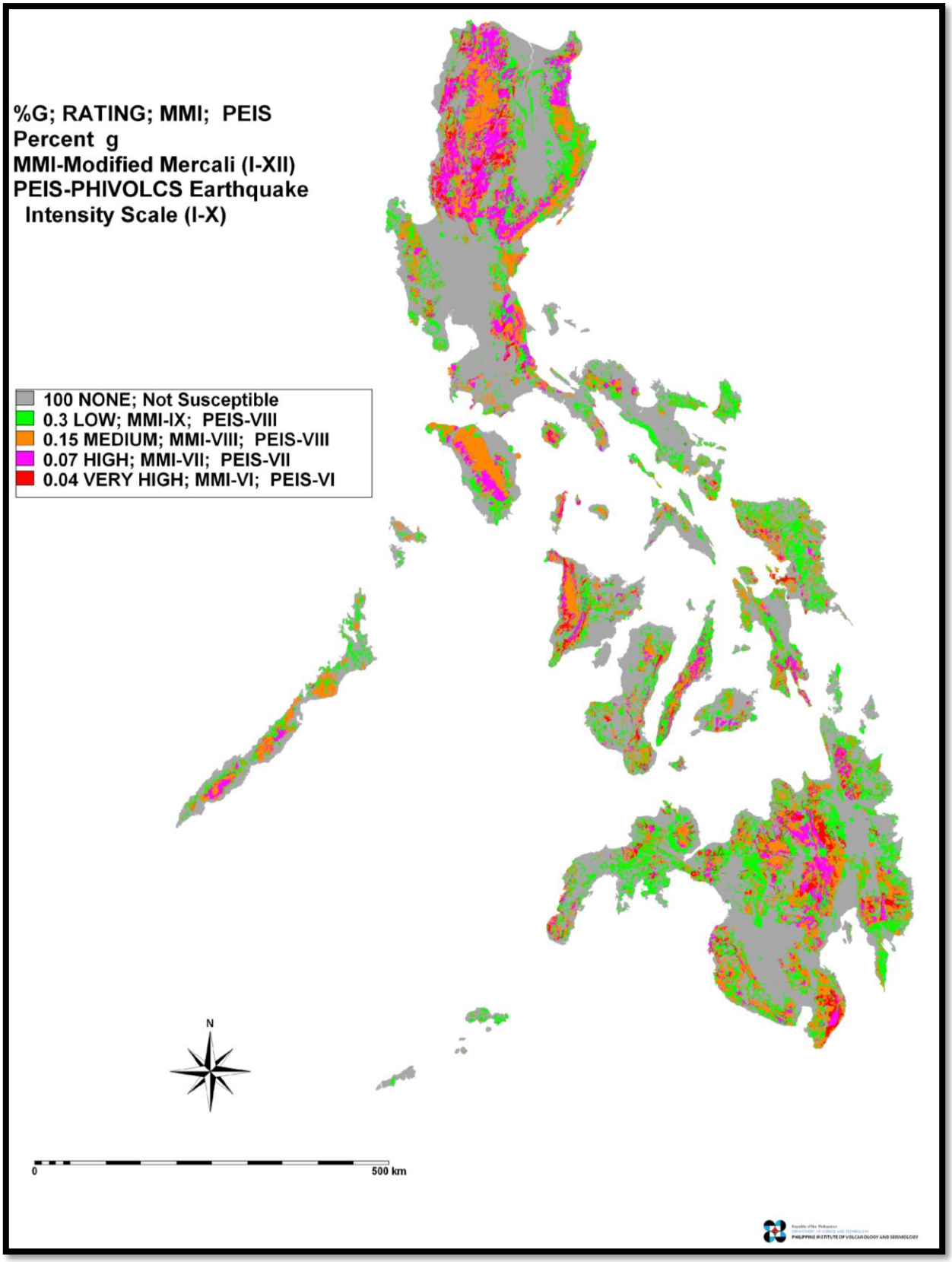
Source: Philippine Institute of Volcanology and Seismology (PHIVOLCS), November 2016

Figure 2.1-4 Distribution of Active and Potentially Active Volcanoes in the Philippines



Source: Philippine Institute of Volcanology and Seismology (PHIVOLCS), May 2019

Figure 2.1-5 Seismicity Map of the Philippines: Magnitude 4.0 and Above (1907-2018)



Source: Philippine Institute of Volcanology and Seismology (PHIVOLCS), 2004

Figure 2.1-6 Earthquake-triggered Landslide Susceptibility Map

2.1.3 Climate

The climate in the Philippines is tropical and maritime, characterized by relatively high temperature, high humidity and abundant rainfall. The most important elements are Temperature, Humidity, and Rainfall.

(1) Temperature

The mean annual temperature in the Philippines based on the average of all weather stations, excluding Baguio City, is 26.6 ℃. The coolest month is January with a mean temperature of 25.5 ℃, while the warmest month is May with a mean temperature of 28.3 ℃. Latitude is an insignificant factor in the variation of temperature while altitude shows greater contrast in temperature. That is why the mean annual temperature of Baguio City with an elevation of 1,500 meters is 18.3C – comparable with those in countries with temperate climate, making it known as the Summer Capital of the Philippines.

The difference between the mean annual temperature of the northernmost station in Laoag and that of the southernmost station in Zamboanga is insignificant. Thus, there is essentially no difference in the mean annual temperature of places in Luzon, Visayas or Mindanao measured at or near sea level.

(2) Humidity

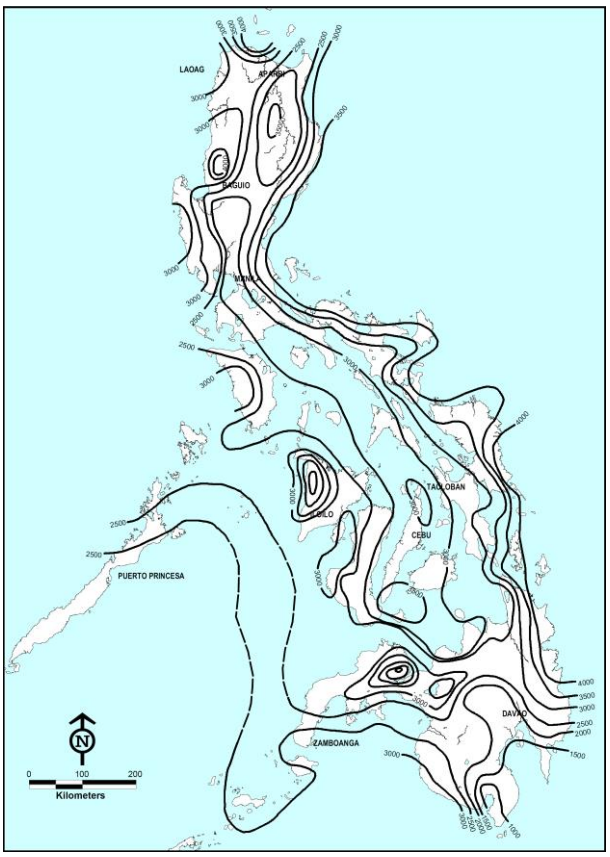
Humidity refers to the moisture content of the atmosphere. The Philippines has a high relative humidity due to high temperature and the surrounding bodies of water.

Based on the Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA), the average monthly relative humidity varies between 71% in March and 85% in September. The combination of warm temperature and high relative and absolute humidity gives rise to high sensible temperature throughout the Philippines. During March to May, the temperature and humidity in the archipelago attain their maximum levels.

(3) Rainfall

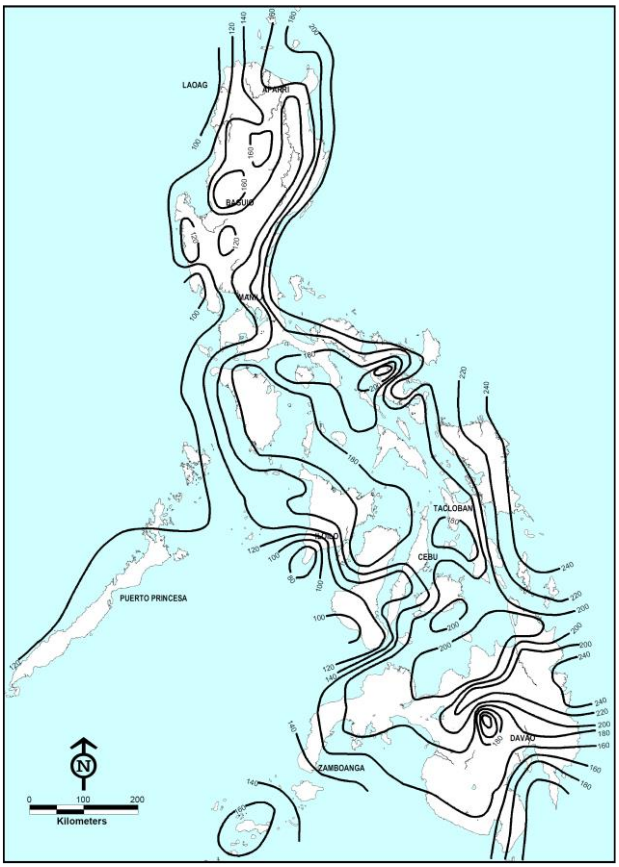
The most important climatic event in the Philippines is rainfall. Rainfall distribution in the archipelago varies from one region to another, depending upon the direction of the moisture-bearing winds and the location of the mountain systems. The mean annual rainfall varies from 0.96 to 4.06 meters annually. Baguio City (Luzon), eastern Samar (Visayas), and eastern Surigao (Mindanao) receive the greatest amount of rainfall, while the southern portion of Cotabato (Mindanao) receives the least amount of rain. At General Santos City in Cotabato, the average annual rainfall is only 0.98 meter.

Figure 2.1-7 and **Figure 2.1-8** show the distribution of mean annual rainfall in millimeters and the distribution of mean annual numbers of rainy days.



Source: PAGASA

Figure 2.1-7 Distribution of Mean Annual Rainfall (mm)



Source: PAGASA

Figure 2.1-8 Distribution of Mean Annual Number of Rainy Days

(4) Season

Based on the temperature and rainfall data, the climate in the archipelago can be divided into two (2) seasons: (1) the rainy season – from June to December, and (2) the dry season – from December to May. The dry season may be subdivided further into (a) the cool dry season – from December to February; and (b) the hot dry season – from March to May.

There are four (4) types of climate are classified based on the distribution of rainfall as shown in **Figure 2.1-9.**

Type I	Two pronounced season: Dry - November to April Wet - the rest of the year, maximum rain period is from June to September.
Type II	No dry season. There is not a single dry month. Maximum rain period - December to February Minimum monthly rainfall - March to May.
Type III	No very pronounced maximum rain period. Dry season - either during the period from December to February or from March to May, resembles Type I as it has short dry season.
Type IV	Rainfall is evenly distributed, resembles Type II.

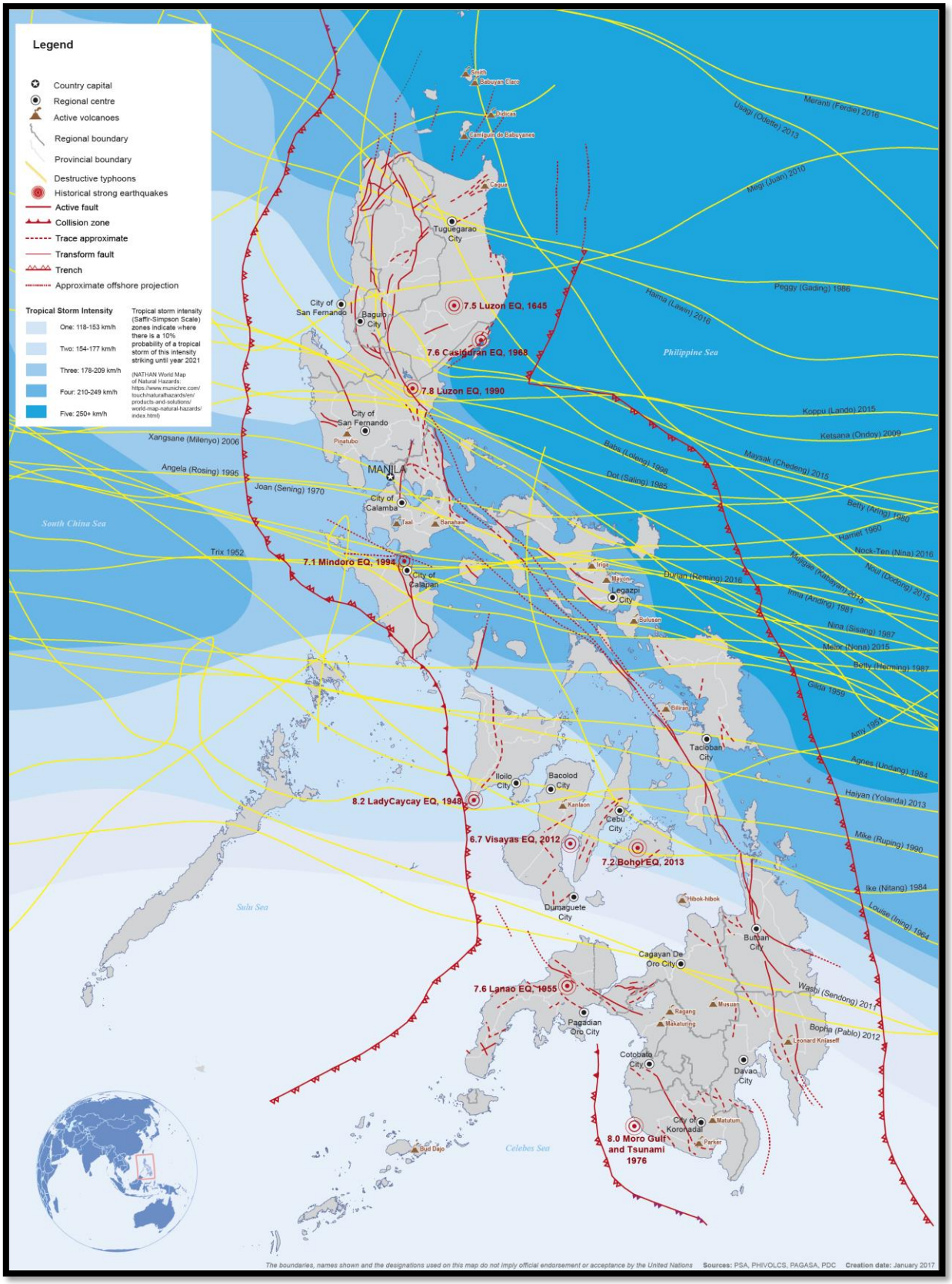
Source: PAGASA

Figure 2.1-9 Climate Map of the Philippines based on the Modified Coronas Classification

(5) Typhoon

Typhoons have a great influence on the climate and weather conditions of the Philippines. A great portion of the rainfall, humidity and cloudiness are due to the influence of typhoons. They generally originate in the region of the Marianas and Caroline Islands in the Pacific Ocean which have the same latitudinal location as Mindanao. Their movements generally follow a northwesterly direction, sparing Mindanao from being directly hit by majority of the typhoons that cross the country. This makes the southern Philippines highly desirable for agriculture and industrial development.

In 2017, the United Nations Office of the Coordination of Humanitarian Affairs (OCHA) has created a hazard map showing the historical strong earthquakes, as well as the destructive typhoons, as in **Figure 2.1-10**.

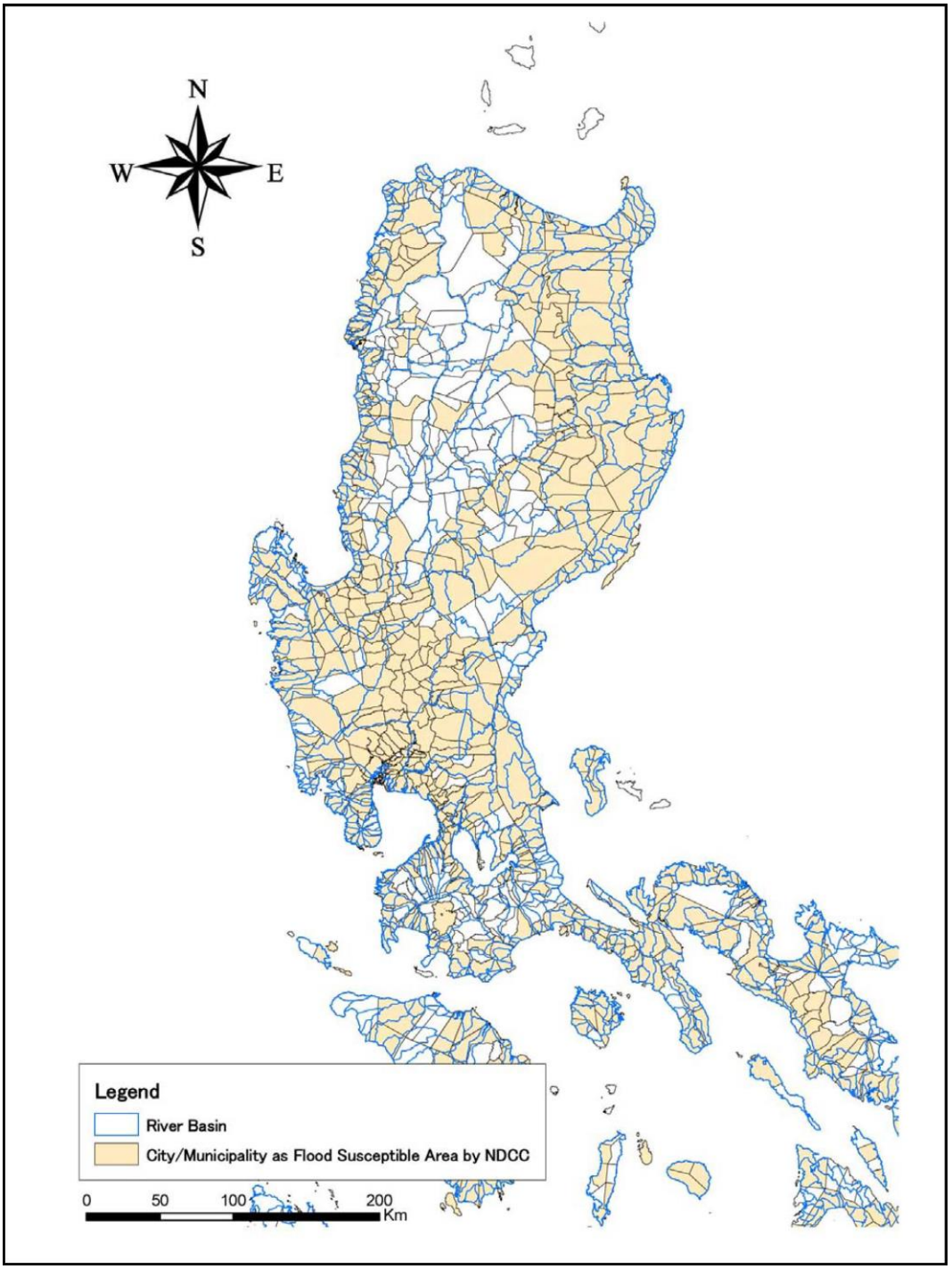


Source: OCHA, 2017

Figure 2.1-10 Philippine Hazard Map

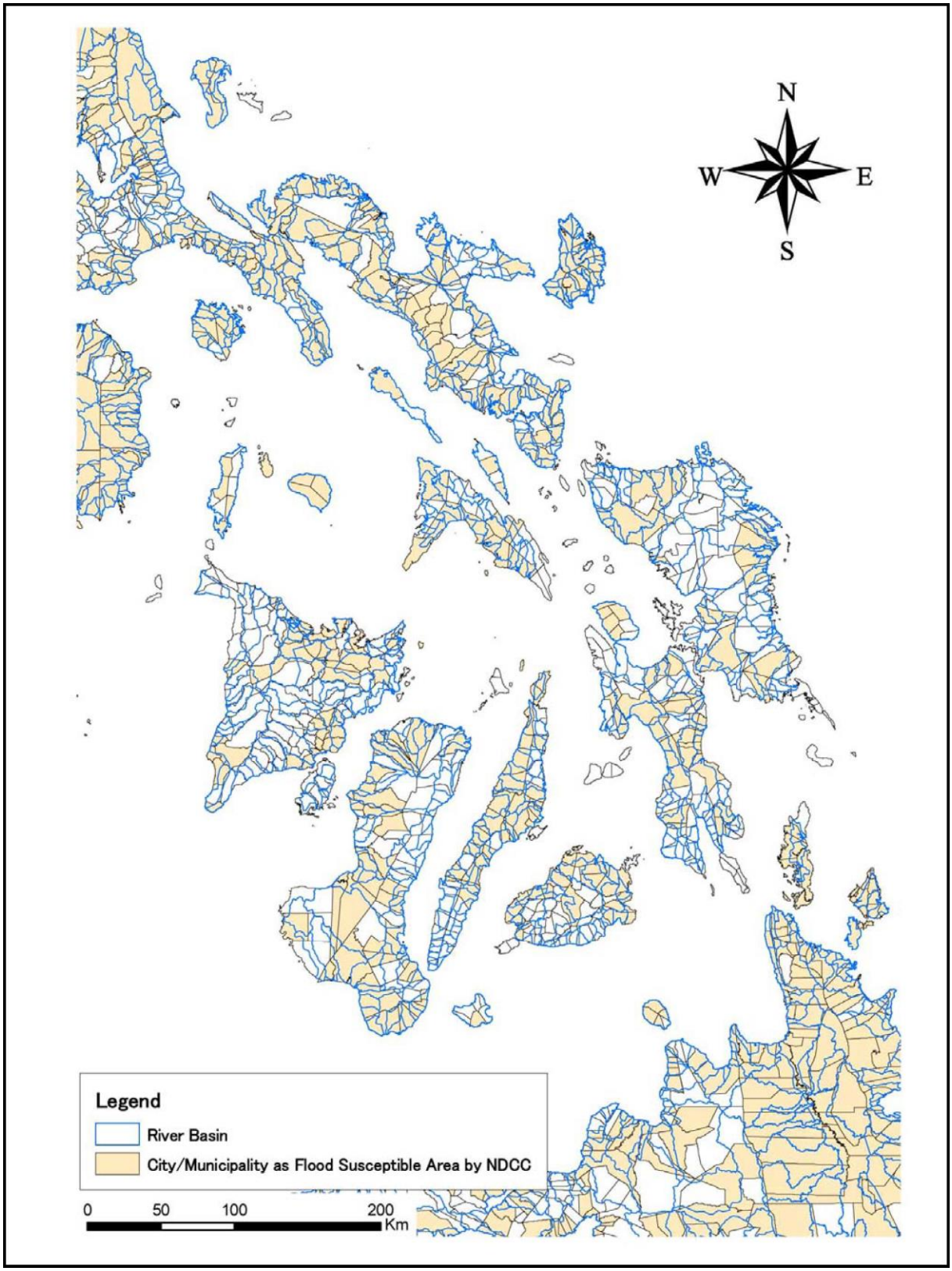
2.1.4 Flood Potential Area

In 2008, DPWH with JICA's assistance undertook the "Study on the Nationwide Flood Risk Assessment and the Flood Mitigation Plan (FRIMP). The Study has related the OCD-NDCC's (Office of the Civil Defense - National Disaster Coordinating Committee) flood susceptible cities and municipalities with the river basins as shown in **Figure 2.1-11**, **Figure 2.1-12**, and **Figure 2.1-13**, for Luzon, Visayas and Mindanao, respectively. **Figure 2.1-14** also shows the susceptible areas in Palawan.



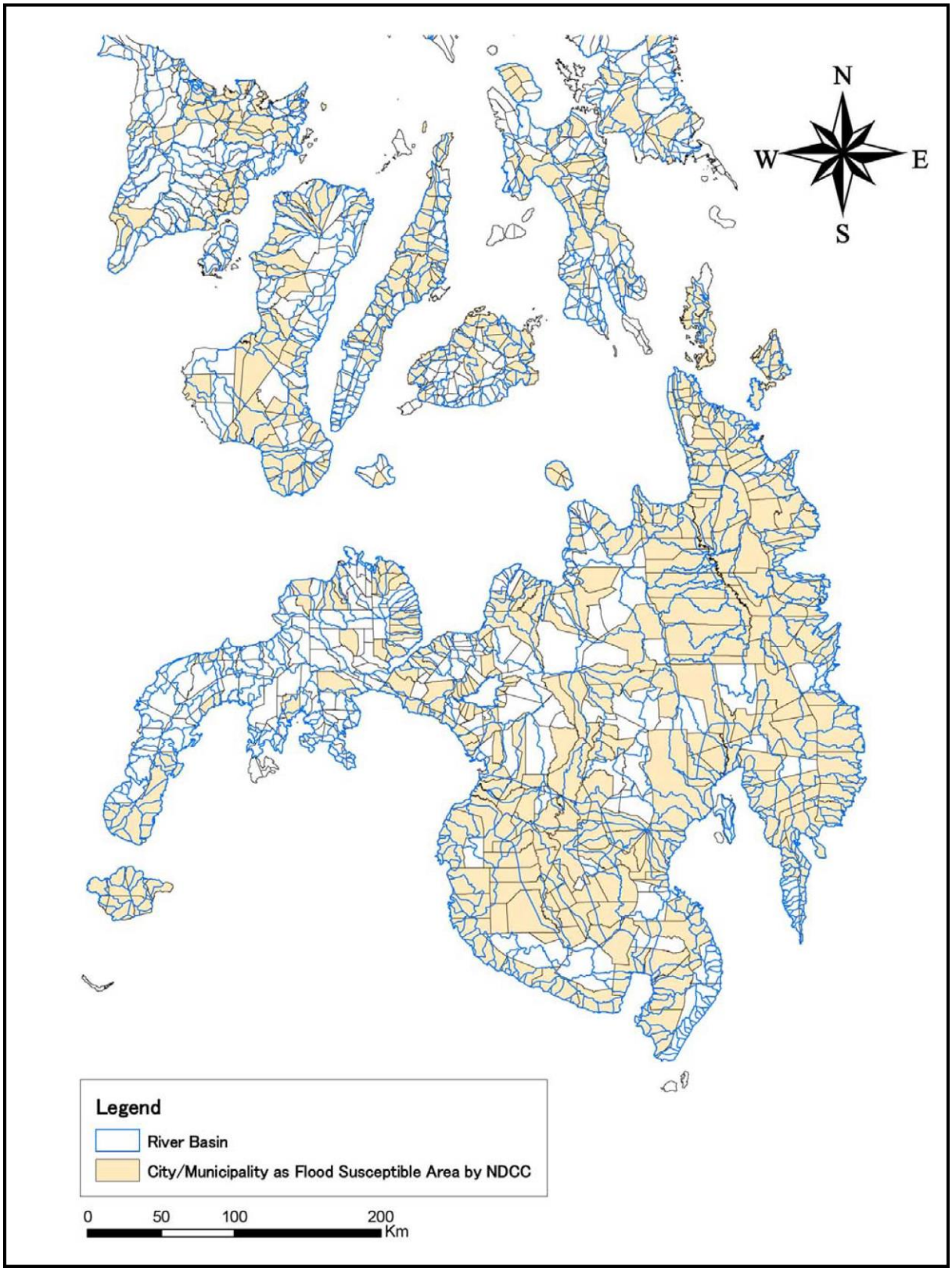
Source: Study on the Nationwide Flood Risk Assessment and the Flood Mitigation Plan (FRIMP), 2008

Figure 2.1-11 Flood Susceptible Areas in Luzon



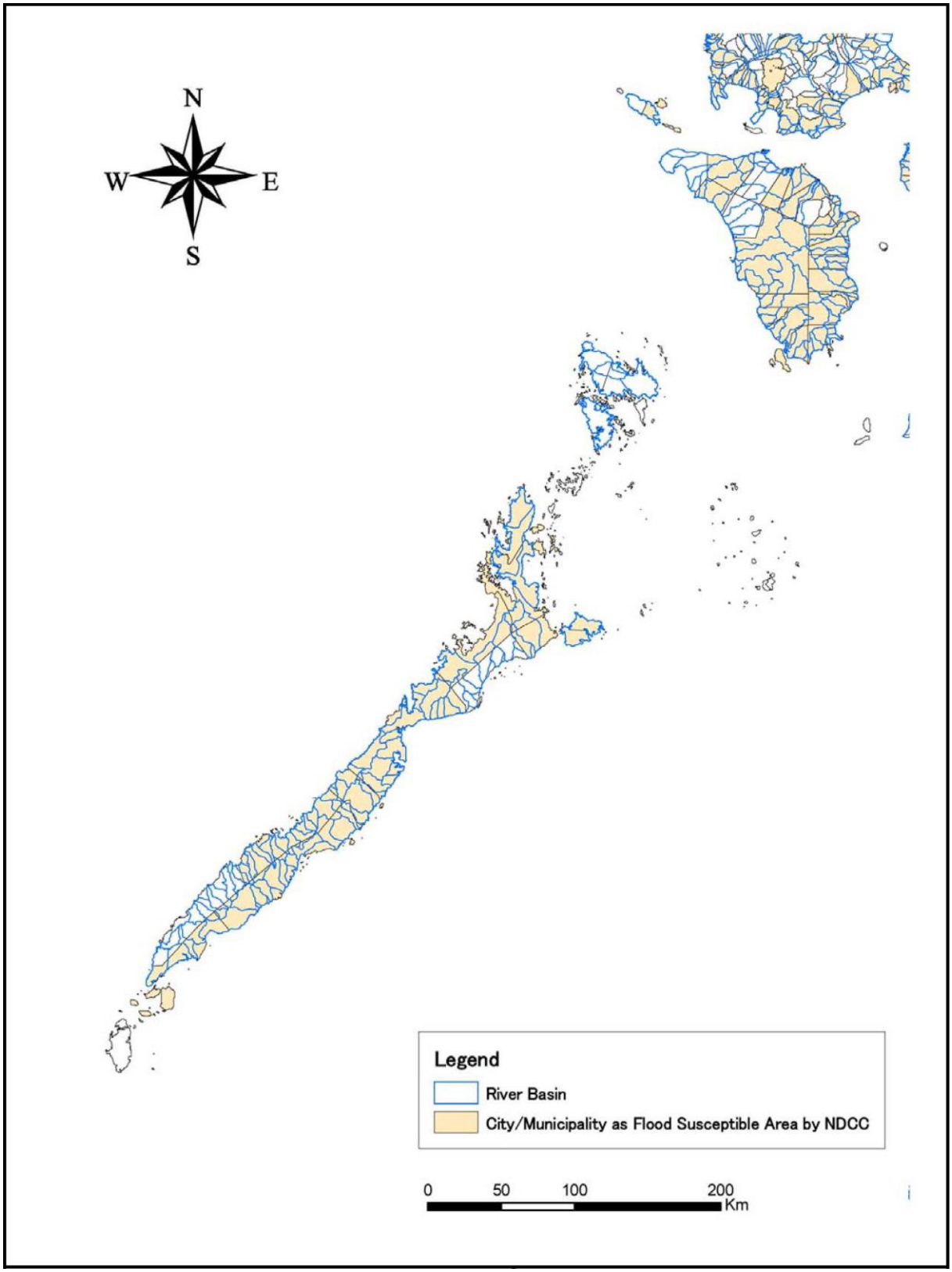
Source: Study on the Nationwide Flood Risk Assessment and the Flood Mitigation Plan (FRIMP), 2008

Figure 2.1-12 Flood Susceptible Areas in Visayas



Source: Study on the Nationwide Flood Risk Assessment and the Flood Mitigation Plan (FRIMP), 2008

Figure 2.1-13 Flood Susceptible Areas in Mindanao



Source: Study on the Nationwide Flood Risk Assessment and the Flood Mitigation Plan (FRIMP), 2008

Figure 2.1-14 Flood Susceptible Areas in Palawan

2.2 Socio-Economic Profile

2.2.1 Demographic Trend

The past demographic trend is shown in **Table 2.2-1**. The average annual population growth rates between census years are shown in **Figure 2.2-1**, **Figure 2.2-2** and **Figure 2.2-3**. The shares of population and land area of the Study Area to the Philippines and population density are graphically shown in **Figure 2.2-4**. Characteristics of the demographic trend of the Study Area are as follows:

Philippines

- Population reached 101 million in 2015, which was 8.6 million (9%) higher than the population in 2010 and 24.3 million (32%) higher than the population in 2000.
- Population density increased from 266 persons/sq. km. in 2010 to 290 persons/sq. km. in 2015.
- Population is still highly concentrated within the vicinity of Metro Manila. Region IV-A recorded the highest population out of all the 17 administrative regions in 2015, followed by the National Capital Region and Region III. The combined population of the three regions account for 38.1% of the national population in 2015.

National Capital Region (NCR)

- Population reached 12.9 million in 2015 and shared 13% of the Philippine population.
- Population density is extremely high at 20,785 persons/sq.km.
- Population growth rate slightly dropped from 1.79% per year from 2000 to 2010 to 1.59% per year from 2010 to 2015. The trend is expected to continue according to PSA projection until the growth rate becomes 0% in 2040 to 2045. This suggests that the NCR may have already reached its saturation point (as characterized by its very high population density) and a part of the population tends to move to adjacent regions, such as Region III and Region IV-A.

Luzon

- Population (including NCR) reached 57.5 million in 2015, which comprises 57% of the Philippine population.
- Population density is 388 persons/sq.km, which is 34% higher than the national average.
- Population growth rate has slightly declined, from an annual rate of 2.03% from 2000 to 2010 to 1.79% from 2010 to 2015.
- Region IV-A (CALABARZON) and Region III (Central Luzon) recorded the highest annual growth rates in the island group from 2010 to 2015 at 2.58% and 1.95%, respectively. This may be due to the spill-over population moving from NCR.

Visayas

- Population in 2015 is 19.4 million and shared 19% of the Philippine population.
- Population density is 324 persons/sq.km., which is 12% higher than the national average, but 16% lower than that of Luzon.
- The island group recorded a steady population growth rate, ranging from 1.41% to 1.49% per year from 2000 to 2015. This value is expected to decline continuously starting from 2020, according to PSA projection.
- Region VII (Central Visayas) consistently recorded the highest annual growth rate in the island group from 2000 to 2015. This is mainly due to the rapid growth in the highly urbanized cities (HUCs) of Metro Cebu – Cebu City, Lapu-lapu City and Mandaue City.

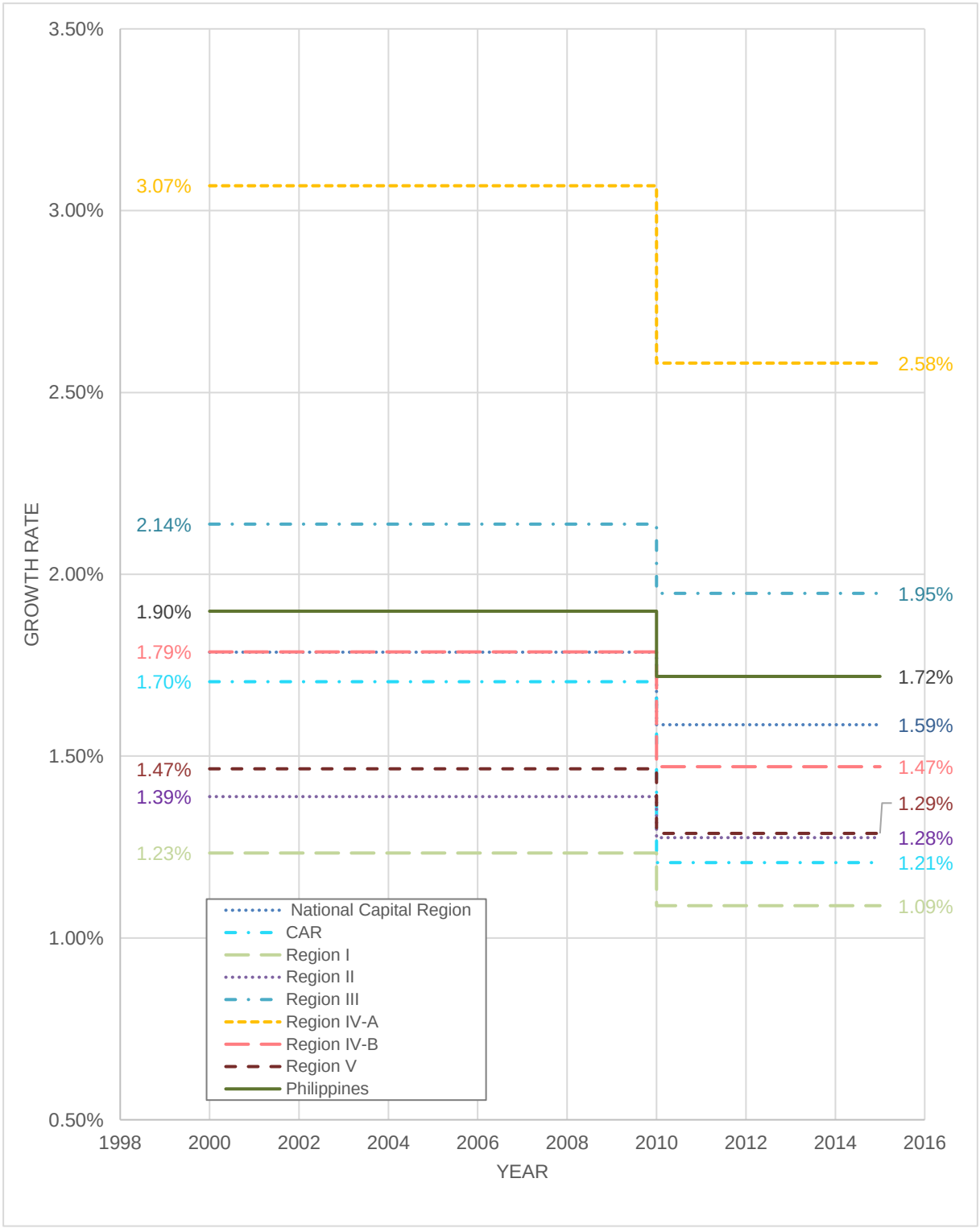
Cebu had the highest growth rate among all provinces in the entire island group from 2000 to 2015.

Mindanao

- Population in 2015 reached 24.1 million and shared 24% of the Philippine population.
- Population density is 174 persons/sq.km., which is 40% lower than the national average.
- The Autonomous Region in Muslim Mindanao (ARMM) recorded the highest population growth rate among all regions in the Philippines at 2.89% per year from 2010 to 2015.

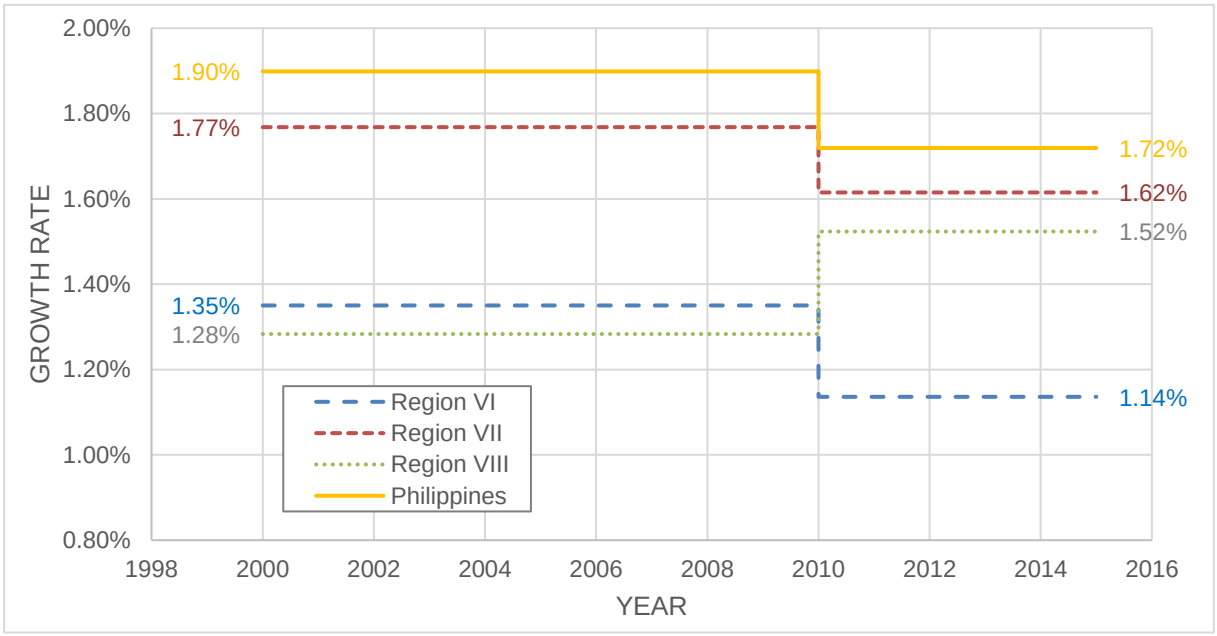
Table 2.2-1 Past Demographic Trend of the Philippines

Region		Actual Population			Land Area	Density (persons/sq km)			Past annual PGR	
		2000	2010	2015	(sq. km)	2000	2010	2015	2000-2010	2010-2015
PHILIPPINES		**76,485,088**	**92,335,113**	**100,979,303**	**347,682**	**220**	**266**	**290**	**1.90%**	**1.72%**
LUZON		**42,822,878**	**52,362,999**	**57,470,097**	**149,442**	**287**	**350**	**385**	**2.03%**	**1.79%**
NCR	**National Capital Region**	9,932,560	11,855,975	12,877,253	620	16,032	19,137	20,785	1.79%	1.59%
CAR	**Cordillera Administrative Region**	1,365,412	1,616,867	1,722,006	19,818	69	82	87	1.70%	1.21%
Region I	**Ilocos Region**	4,200,478	4,748,372	5,026,128	12,965	324	366	388	1.23%	1.09%
Region II	**Cagayan Valley**	2,813,159	3,229,163	3,451,410	29,837	94	108	116	1.39%	1.28%
Region III	**Central Luzon**	8,204,742	10,137,737	11,218,177	21,906	375	463	512	2.14%	1.95%
Region IV-A	**CALABARZON**	9,320,629	12,609,803	14,414,774	16,576	562	761	870	3.07%	2.58%
Region IV-B	**MIMAROPA**	2,299,229	2,744,671	2,963,360	29,606	78	93	100	1.79%	1.47%
Region V	**Bicol Region**	4,686,669	5,420,411	5,796,989	18,114	259	299	320	1.47%	1.29%
VISAYAS		**15,528,346**	**18,003,940**	**19,373,431**	**59,886**	**259**	**301**	**324**	**1.49%**	**1.41%**
Region VI	**Western Visayas**	6,211,038	7,102,438	7,536,383	20,778	299	342	363	1.35%	1.14%
Region VII	**Central Visayas**	5,706,953	6,800,180	7,396,898	15,873	360	428	466	1.77%	1.62%
Region VIII	**Eastern Visayas**	3,610,355	4,101,322	4,440,150	23,235	155	177	191	1.28%	1.52%
MINDANAO		**18,133,864**	**21,968,174**	**24,135,775**	**138,354**	**131**	**159**	**174**	**1.94%**	**1.81%**
Region IV	**Zamboanga Peninsula**	2,831,412	3,407,353	3,629,783	16,680	165	198	211	1.87%	1.21%
Region X	**Northern Mindanao**	3,505,708	4,297,323	4,689,302	20,459	171	210	229	2.06%	1.68%
Region XI	**Davao Region**	3,676,163	4,468,563	4,893,318	20,433	180	219	239	1.97%	1.74%
Region XII	**SOCCSKSARGEN**	3,222,169	4,109,571	4,545,276	22,610	135	170	188	2.46%	1.94%
Region XIII	**Caraga**	2,095,367	2,429,224	2,596,709	36,651	57	66	71	1.49%	1.28%
ARMM	**Autonomous Region of Muslim Mindanao**	2,803,045	3,256,140	3,781,387	21,520	141	168	195	1.51%	2.89%



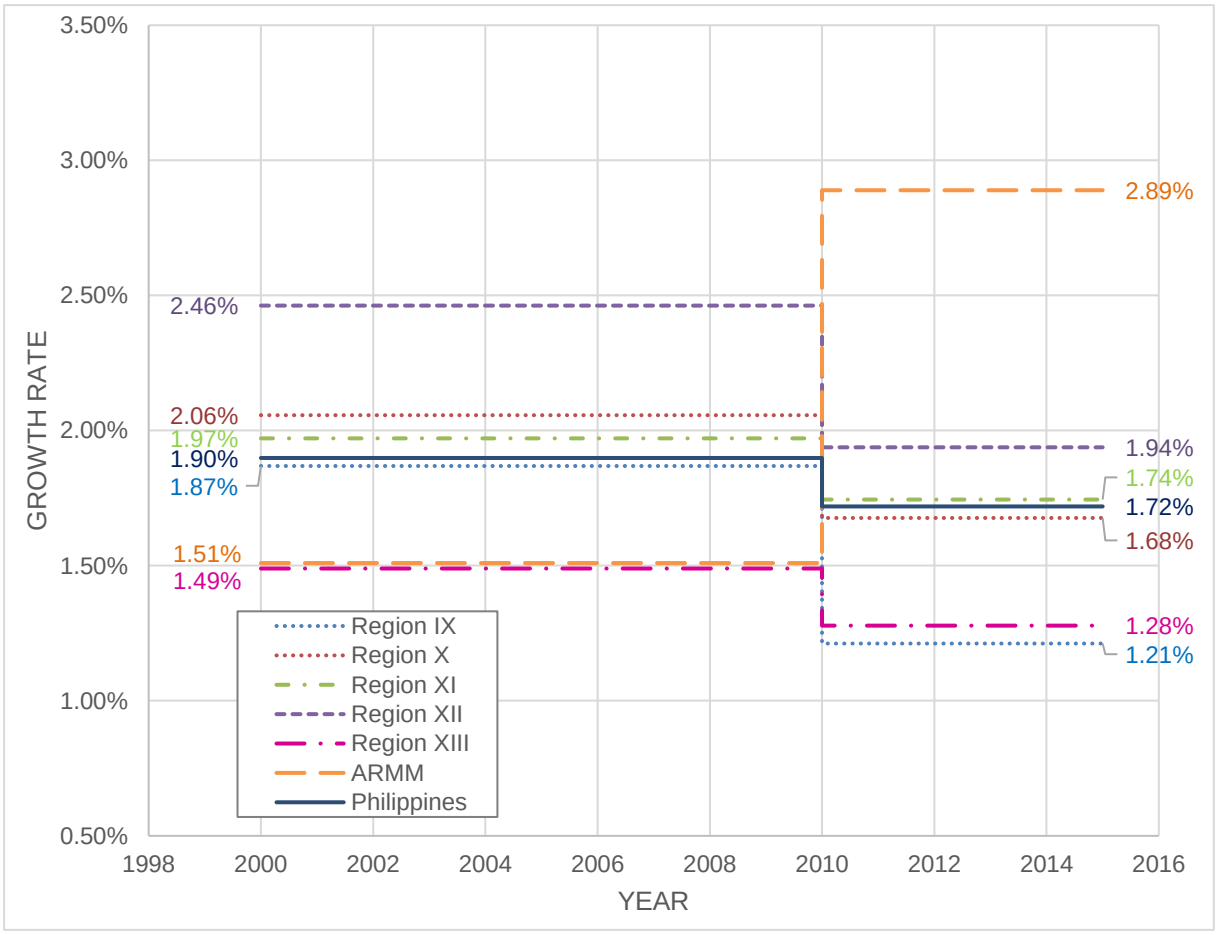
Source: Philippine Statistics Authority, 2018

Figure 2.2-1 Past Population Growth Rate: Luzon



Source: Philippine Statistics Authority, 2018

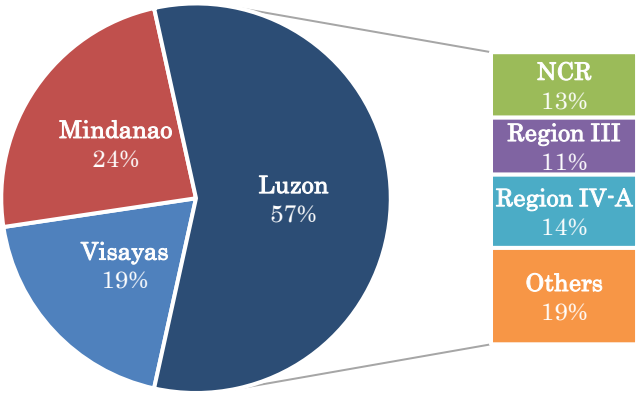
Figure 2.2-2 Past Population Growth Rate: Visayas



Source: Philippine Statistics Authority, 2018

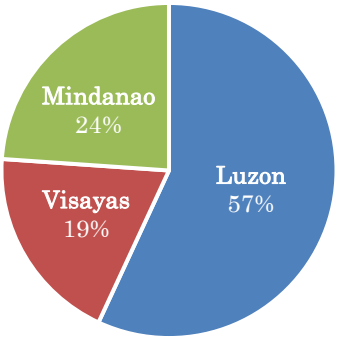
Figure 2.2-3 Past Population Growth Rate: Mindanao

Philippines: 100,979,303

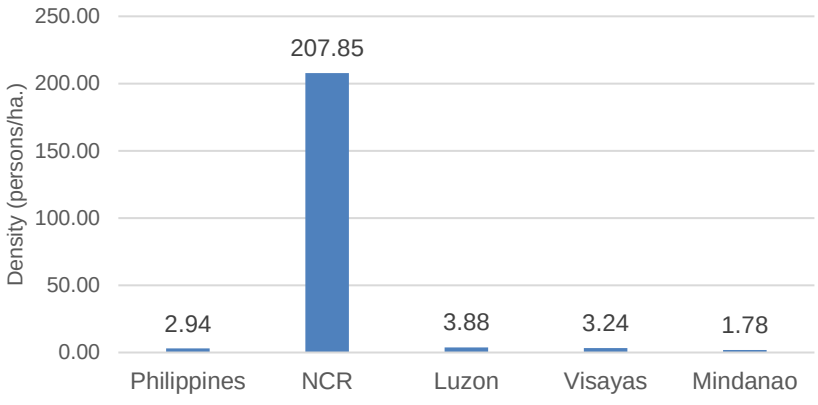


Population Share, 2015

Philippines: 347,682 sq. km.



Land Area Share, 2015



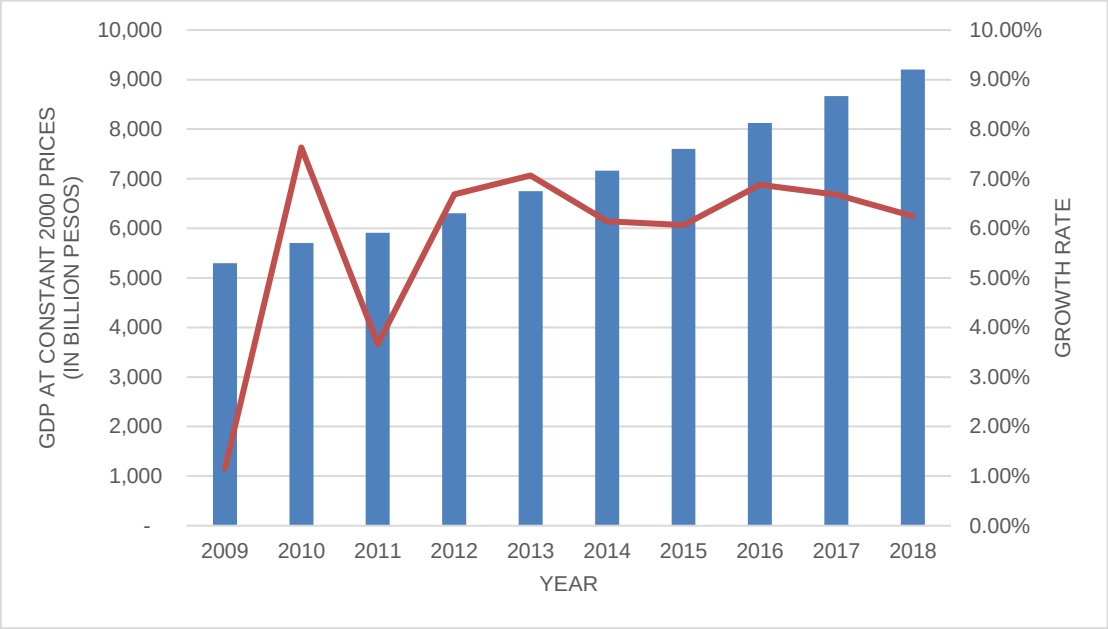
Population Density, 2015

Figure 2.2-4 Shares of Population, Land Area and Population Density: 2015

2.2.2 Economic Trend

The Gross Domestic Product (GDP) measures the total economic activity of a country. It refers to the monetary value of all finished goods and services produced within a nation's borders in a specific time period. The Philippine GDP trend for the past 10 years is shown in **Figure 2.2-5**.

- The Philippines recorded a high and steady economic growth from 2013 to 2018, ranging from 6.1% to 7.1% per year.
- The country's economy grew at a rate of 6.2% in 2018, slower than the 6.7% growth recorded in the previous year.

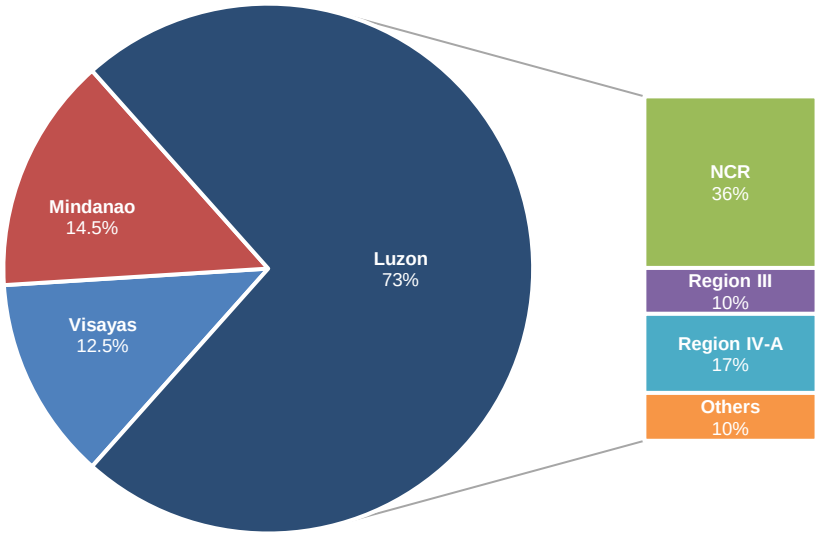


Source: Philippine Statistics Authority, 2018

Figure 2.2-5 Philippine GDP and GDP Growth Rate for the Past 10 years

The Gross Regional Domestic Product (GRDP) is the sum of the gross value added (GVA) of all producer units in a region. The GDP shares of the three major island groups are shown in **Figure 2.2-6**.

- Luzon had the largest share among the three major island groups in 2018, comprising 73% of the Philippine GDP.
- NCR continued to have the greatest contribution to the country's GDP at 36.0%.
- The majority of the country's economic activities took place inside the Mega Manila Area. After NCR, Region IV-A (CALABARZON) and Region III (Central Luzon) comprised the largest shares of the Philippine GDP at 17% and 10%, respectively. Overall, the three regions alone accounted for 63% of the country's economic output.



Source: Philippine Statistics Authority, 2018

Figure 2.2-6 GDP Share of the Major Island Groups: 2018

The GRDP includes regional estimates on the three major economic sectors, including their subsectors. The components of the GRDP are shown in **Table 2.2-2**.

Table 2.2-2 Components of the GRDP

Sector	Sub-sector
Primary	Agriculture
	Hunting
	Forestry
	Fishing
Secondary	Mining and Quarrying
	Manufacturing
	Construction
	Electricity, Gas and Water Supply (EGWS)
Tertiary	Transport, Storage and Communication (TSC)
	Trade and Repair of Motor Vehicles, Motorcycles, Personal and Household Goods
	Financial Intermediation (FI)
	Real Estate, Renting and Business Activity (RERBA)
	Public Administration and Defense; Compulsory Social Security (PAD)
	Other Services (OS)

Source: Philippine Statistics Authority, 2018

The values of the GDP and GRDP of the regions in the country are shown in **Table 2.2-3**. The industrial structure of the country is shown in **Table 2.2-4**. GRDP growth rates per region are shown in **Figure 2.2-7**, **Figure 2.2-8** and **Figure 2.2-9**.

Table 2.2-3 GDP and GRDP at Constant 2000 Prices: 2012 - 2017

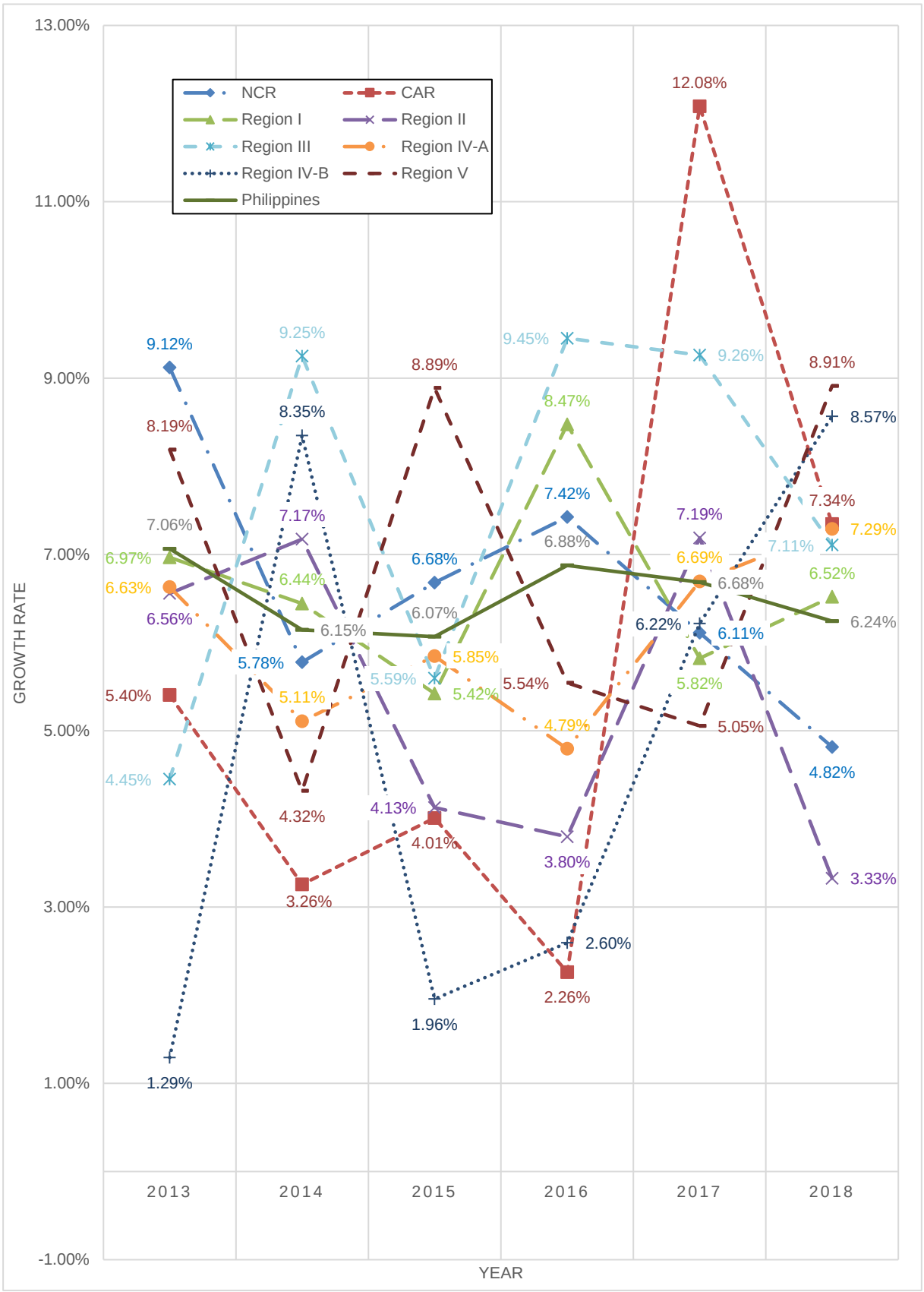
REGION		GRDP (IN BILLION PESOS) AT CONSTANT 2000 PRICES						REGIONAL SHARE (%)						GROWTH RATE (%)				
		2012	2013	2014	2015	2016	2017	2012	2013	2014	2015	2016	2017	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
PHILIPPINES		**6,305.2**	**6,750.6**	**7,165.5**	**7,600.2**	**8,122.7**	**8,665.7**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**7.1%**	**6.1%**	**6.1%**	**6.9%**	**6.7%**
NCR	NATIONAL CAPITAL REGION	2,250.0	2,455.2	2,597.1	2,770.6	2,976.2	3,158.1	35.7%	36.4%	36.2%	36.5%	36.6%	36.4%	9.1%	5.8%	6.7%	7.4%	6.1%
CAR	CORDILLERA ADMINISTRATIVE REGION	118.2	124.6	128.7	133.8	136.9	153.4	1.9%	1.8%	1.8%	1.8%	1.7%	1.8%	5.4%	3.3%	4.0%	2.3%	12.1%
I	ILOCOS REGION	197.6	211.4	225.0	237.2	257.3	272.3	3.1%	3.1%	3.1%	3.1%	3.2%	3.1%	7.0%	6.4%	5.4%	8.5%	5.8%
II	CAGAYAN VALLEY	113.1	120.5	129.1	134.4	139.5	149.6	1.8%	1.8%	1.8%	1.8%	1.7%	1.7%	6.6%	7.2%	4.1%	3.8%	7.2%
III	CENTRAL LUZON	586.2	612.3	668.9	706.3	773.1	844.7	9.3%	9.1%	9.3%	9.3%	9.5%	9.7%	4.5%	9.2%	5.6%	9.5%	9.3%
IV-A	CALABARZON	1,097.8	1,170.6	1,230.4	1,302.3	1,364.7	1,456.1	17.4%	17.3%	17.2%	17.1%	16.8%	16.8%	6.6%	5.1%	5.8%	4.8%	6.7%
IV-B	MIMAROPA	109.3	110.7	119.9	122.3	125.4	133.2	1.7%	1.6%	1.7%	1.6%	1.5%	1.5%	1.3%	8.3%	2.0%	2.6%	6.2%
V	BICOL REGION	126.5	136.9	142.8	155.4	164.1	172.4	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	8.2%	4.3%	8.9%	5.5%	5.1%
	LUZON SUBTOTAL	**4,598.7**	**4,942.1**	**5,241.8**	**5,562.4**	**5,937.3**	**6,339.7**	**72.9%**	**73.2%**	**73.2%**	**73.2%**	**73.1%**	**73.2%**	**7.5%**	**6.1%**	**6.1%**	**6.7%**	**6.8%**
VI	WESTERN VISAYAS	258.2	267.0	280.9	305.5	323.5	350.8	4.1%	4.0%	3.9%	4.0%	4.0%	4.0%	3.4%	5.2%	8.8%	5.9%	8.4%
VII	CENTRAL VISAYAS	397.9	427.3	460.3	482.9	524.6	551.2	6.3%	6.3%	6.4%	6.4%	6.5%	6.4%	7.4%	7.7%	4.9%	8.6%	5.1%
VIII	EASTERN VISAYAS	143.4	150.1	146.5	153.2	171.6	174.7	2.3%	2.2%	2.0%	2.0%	2.1%	2.0%	4.6%	-2.4%	4.6%	12.0%	1.8%
	VISAYAS SUBTOTAL	**799.5**	**844.3**	**887.6**	**941.6**	**1,019.7**	**1,076.7**	**12.7%**	**12.5%**	**12.4%**	**12.4%**	**12.6%**	**12.4%**	**5.6%**	**5.1%**	**6.1%**	**8.3%**	**5.6%**
IX	ZAMBOANGA PENINSULA	131.7	137.2	146.3	157.6	164.9	168.7	2.1%	2.0%	2.0%	2.1%	2.0%	1.9%	4.2%	6.6%	7.7%	4.6%	2.3%
X	NORTHERN MINDANAO	237.7	250.5	268.4	283.8	305.0	323.0	3.8%	3.7%	3.7%	3.7%	3.8%	3.7%	5.4%	7.1%	5.7%	7.5%	5.9%
XI	DAVAO REGION	241.2	257.4	281.3	304.4	333.4	369.8	3.8%	3.8%	3.9%	4.0%	4.1%	4.3%	6.7%	9.3%	8.2%	9.5%	10.9%
XII	SOCCSKSARGEN	170.9	185.3	196.8	203.2	213.2	230.6	2.7%	2.7%	2.7%	2.7%	2.6%	2.7%	8.4%	6.2%	3.3%	4.9%	8.2%
XIII	CARAGA	78.1	84.5	92.4	96.6	98.5	102.7	1.2%	1.3%	1.3%	1.3%	1.2%	1.2%	8.2%	9.4%	4.5%	2.0%	4.3%
ARMM	AUTONOMOUS REGION IN MUSLIM MINDANAO	47.5	49.3	50.8	50.6	50.8	54.5	0.8%	0.7%	0.7%	0.7%	0.6%	0.6%	3.8%	3.0%	-0.4%	0.4%	7.3%
	MINDANAO SUBTOTAL	**907.0**	**964.2**	**1,036.1**	**1,096.2**	**1,165.7**	**1,249.3**	**14.4%**	**14.3%**	**14.5%**	**14.4%**	**14.4%**	**14.4%**	**6.3%**	**7.4%**	**5.8%**	**6.3%**	**7.2%**

Source: Philippine Statistics Authority, 2018

Table 2.2-4 GDP and GRDP per Economic Sector: 2012 - 2017

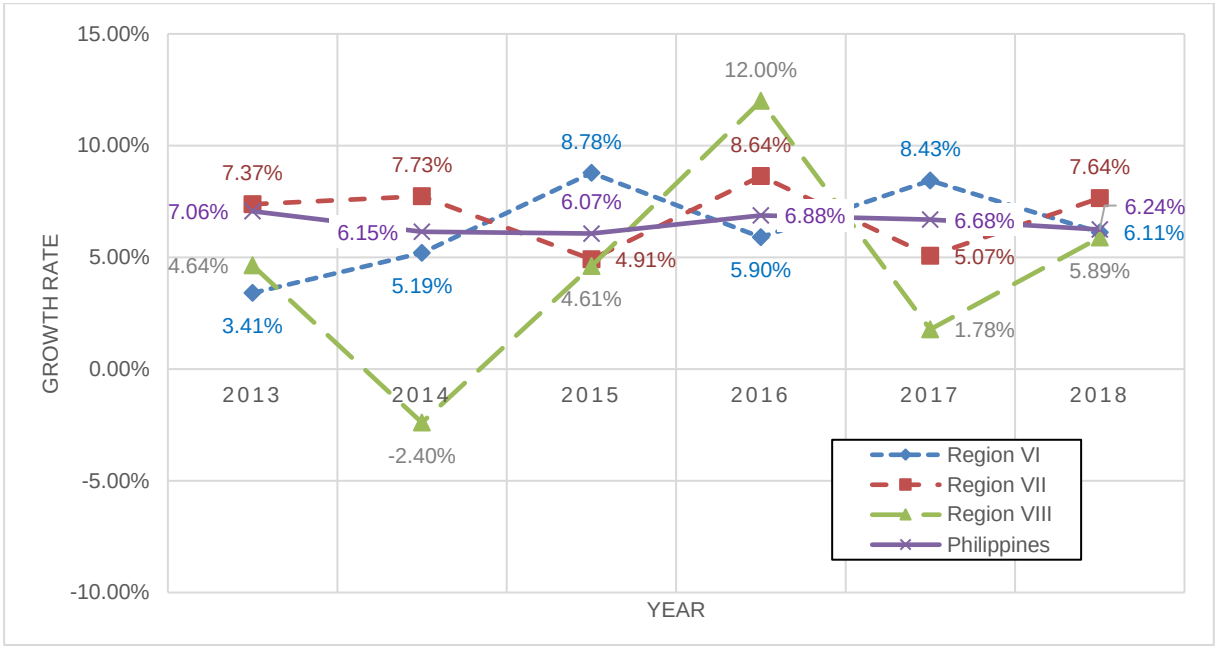
REGION		GDP/GRDP (IN BILLION PESOS) AT CONSTANT 2000 PRICES																	
		PRIMARY						SECONDARY						TERTIARY					
		2012	2013	2014	2015	2016	2017	2012	2013	2014	2015	2016	2017	2012	2013	2014	2015	2016	2017
Philippines		699.0	707.0	718.8	719.7	710.9	739.0	2031.4	2219.1	2391.3	2545.4	2750.0	2947.1	3574.8	3824.6	4055.4	4335.0	4661.8	4979.6
NCR	National Capital Region	5.0	4.8	5.0	5.2	5.3	5.3	395.5	472.3	487.9	521.4	548.3	559.3	1849.5	1978.1	2104.2	2244.0	2422.7	2593.4
CAR	Cordillera Administrative Region	13.1	13.2	13.2	12.7	12.1	12.7	61.1	63.7	65.3	67.6	67.4	80.0	44.0	47.7	50.1	53.6	57.4	60.7
I	Ilocos Region	49.8	50.8	53.2	52.5	51.6	52.8	49.2	54.4	58.0	62.8	73.4	78.2	98.6	106.1	113.8	121.8	132.3	141.2
II	Cagayan Valley	46.4	46.8	49.1	48.9	47.5	50.4	12.4	15.3	16.7	17.9	20.0	22.8	54.2	58.4	63.3	67.6	72.1	76.4
III	Central Luzon	102.6	108.2	114.7	115.3	116.1	120.6	246.9	249.3	289.0	309.3	358.2	407.8	236.7	254.9	265.3	281.7	298.9	316.3
IV-A	CALABARZON	68.7	71.2	70.3	72.1	74.6	74.1	675.2	717.6	764.0	807.5	836.7	901.4	353.9	381.8	396.1	422.6	453.4	480.5
IV-B	MIMAROPA	27.3	26.5	27.1	27.8	25.9	26.7	37.8	36.8	43.1	41.0	41.8	43.8	44.2	47.4	49.7	53.4	57.7	62.7
V	Bicol Region	32.0	33.4	33.8	33.0	33.0	33.8	24.1	26.8	28.2	35.2	37.9	39.2	70.3	76.7	80.8	87.2	93.3	99.3
VI	Western Visayas	65.1	62.8	61.4	61.0	59.9	65.2	45.9	50.3	57.1	70.4	77.9	84.7	147.2	153.9	162.4	174.1	185.8	200.9
VII	Central Visayas	28.5	28.4	27.9	28.5	28.4	30.4	146.9	160.9	179.2	179.1	204.3	210.4	222.6	238.0	253.3	275.3	291.9	310.4
VIII	Eastern Visayas	32.2	30.1	26.3	25.4	26.0	26.0	54.7	62.5	60.4	63.4	75.8	74.5	56.5	57.4	59.7	64.4	69.9	74.2
IX	Zamboanga Peninsula	29.3	29.6	30.4	31.0	29.5	29.4	45.7	47.9	52.9	59.6	64.3	63.8	56.7	59.7	63.0	67.0	71.0	75.5
X	Northern Mindanao	58.9	60.8	62.8	65.2	66.8	69.9	79.8	85.3	92.6	97.1	106.7	112.9	99.0	104.4	113.0	121.5	131.5	140.2
XI	Davao Region	43.2	39.7	40.7	41.3	40.7	41.4	70.6	81.9	93.4	104.8	121.6	144.8	127.4	135.8	147.3	158.4	171.1	183.6
XII	SOCCSKSARGEN	50.9	52.7	55.1	53.9	48.8	53.1	56.5	63.1	67.6	69.3	78.3	84.9	63.5	69.5	74.1	80.0	86.1	92.6
XIII	Caraga	16.6	17.8	18.1	16.5	16.2	16.4	26.5	28.4	32.6	36.0	34.6	35.3	35.1	38.3	41.8	44.1	47.6	51.1
ARMM	Autonomous Region in Muslim Mindanao	29.4	30.1	29.9	29.4	28.6	30.8	2.6	2.5	3.4	2.8	2.9	3.2	15.5	16.6	17.5	18.3	19.3	20.5

Source: Philippine Statistics Authority, 2018



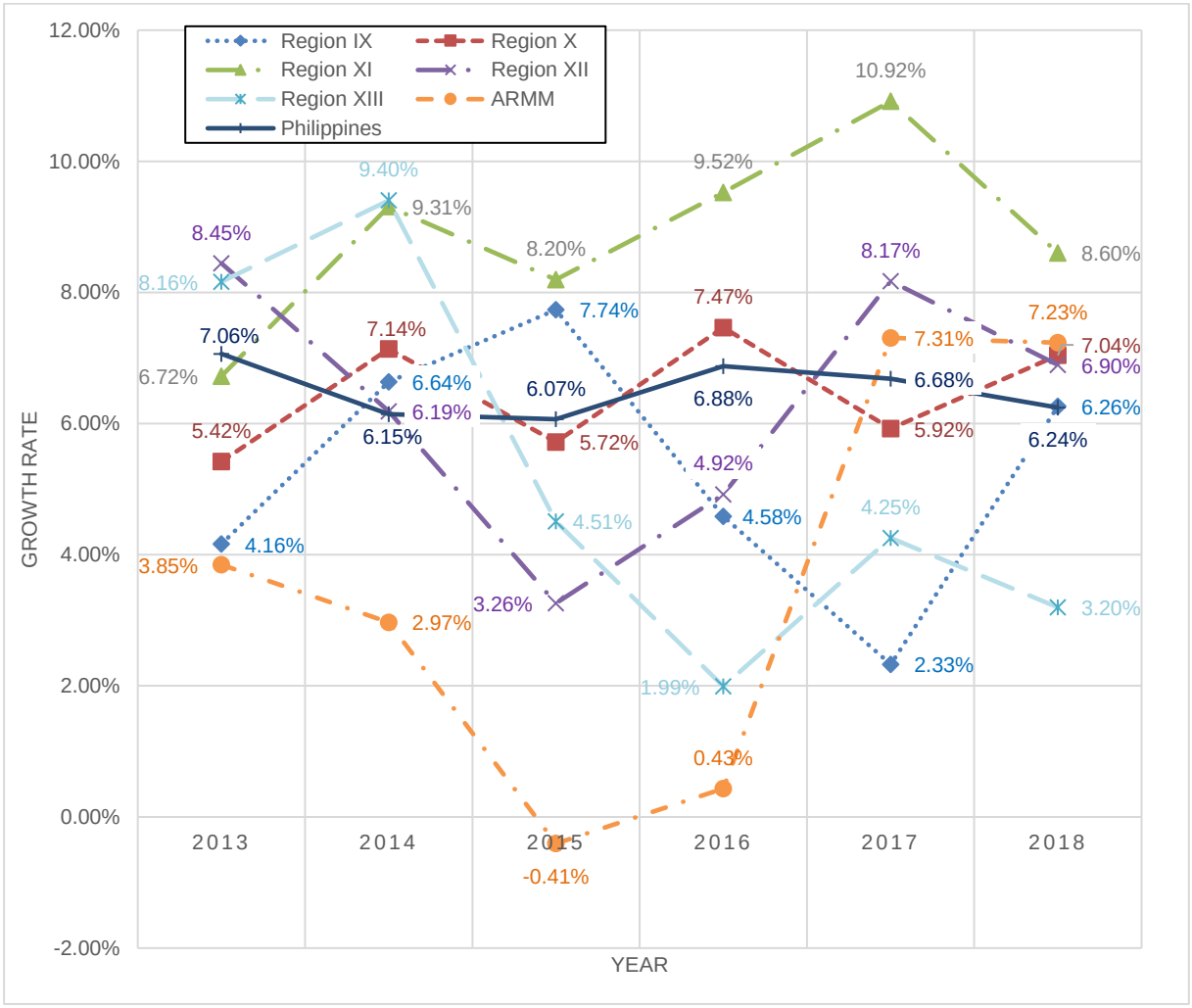
Source: Philippine Statistics Authority, 2018

Figure 2.2-7 GDP and GRDP Growth Rate of Regions in Luzon



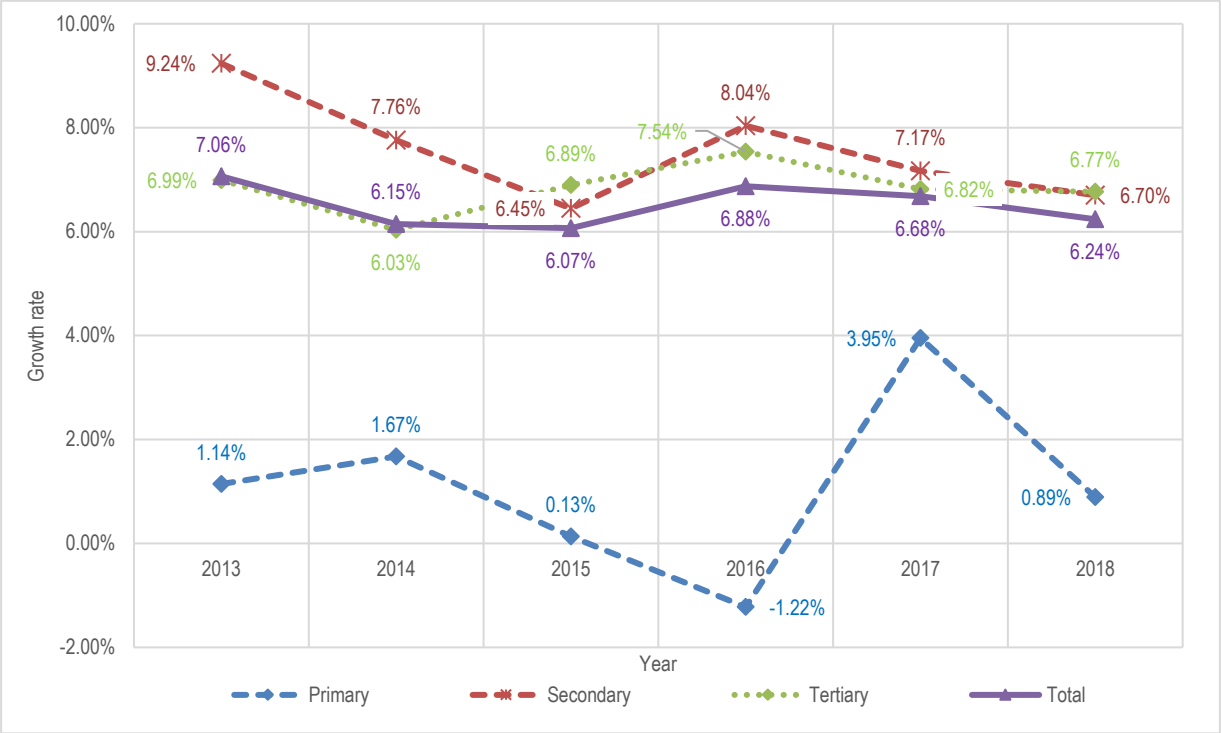
Source: Philippine Statistics Authority, 2018

Figure 2.2-8 GDP and GRDP Growth Rate of Regions in Visayas



Source: Philippine Statistics Authority, 2018

Figure 2.2-9 GDP and GRDP Growth Rate of Regions in Mindanao



Source: Philippine Statistics Authority

Figure 2.2-10 Sectoral GDP and GRDP Growth Rate

Philippines

- All seventeen (17) regions recorded positive values of economic growth rate from 2017 to 2018.
  - Eight (8) regions experienced accelerated growth in 2018 – Bicol Region (8.9%), MIMAROPA (8.6%), Central Visayas (7.6%), CALABARZON (7.3%), Northern Mindanao (7.0%), Ilocos Region (6.5%), Zamboanga Peninsula (6.3%) and Eastern Visayas (5.9%).
  - The nine (9) other regions still experienced economic growth, but at a slower pace than the previous year – Davao Region (8.6%), CAR (7.3%), ARMM (7.2%), Central Luzon (7.1%), SOCCSKSARGEN (6.9%), Western Visayas (6.1%), NCR (4.8%), Cagayan Valley (3.3%) and Caraga (3.2%).
- Growth is mainly driven by the tertiary (6.8%) and secondary (6.7%) sectors, as shown in **Figure 2.2-10**. The major industries which contributed to the growth include Public Administration and Defense (15.2%) and Construction (14.9%).
- The shares of the three sectors to the country's GDP are as follows:
  - Primary – 8.1%
  - Secondary – 34.1%
  - Tertiary – 57.8%

National Capital Region (NCR)

- NCR continued to have the greatest contribution to the country's GDP at 36%. Similarly, NCR contributed 1.8 percentage points out of the 6.2% Philippine GDP growth rate in 2018, the greatest among all regions in the country.
- NCR posted a 4.8% economic growth rate in 2018, lower than the 6.1% growth recorded in 2017.

- The shares of the three sectors to NCR's GRDP are as follows:
  - Primary – 0.2%
  - Secondary – 17.0%
  - Tertiary – 82.8%
- The main drivers for the economic development of NCR in 2018 were Construction (16.9%) and Public Administration and Defense (16.1%) subsectors.

Luzon

- Luzon (including NCR) had the largest share among the three major island groups in 2018, comprising 73% of the Philippine GDP.
- Six out of the eight regions in Luzon recorded growth rates above the national average in 2018. Caraga (3.2%), NCR (4.8%) and Cagayan Valley (3.3%) posted the slowest economic growth among all regions in the country.
- Bicol Region's economy accelerated by 8.9% in 2018, surpassing all other regions in the country in terms of economic growth. Its growth is mainly attributed to the development of the Construction (21.7%) and Public Administration and Defense (14.0%) subsectors.
- CALABARZON and MIMAROPA posted record growth rates in 2018. CALABARZON's 7.3% growth was its fastest in six years, while MIMAROPA's 8.6% growth was the region's fastest since 2010.
- CAR continued to record high economic growth in 2018, after having the fastest growth among all regions in the previous year. In 2017, the region posted a record growth rate of 12.1%, much faster than the 2.3% growth recorded in 2016.
- Central Luzon's GRDP growth rate was consistently high and above the national level from 2010 to 2018, except only for two years (2013 and 2015). The rapid economic growth of the region is expected, given the development of business, tourism and trade hubs in Subic and Clark.

Visayas

- Visayas comprised just 12.5% of the Philippine GDP in 2018, the smallest share among the country's three major islands.
- Of all the regions in Visayas, only Central Visayas posted an economic growth rate above the national level in 2018 at 7.6%. The faster growth was attributed to the expansion of the secondary sector, with Manufacturing and Construction sub-sectors growing at rates of 8.3% and 14.2%, respectively.
- From 2010 to 2016, Central Visayas consistently recorded growth levels above the national average, except for one year (2015). Lying at the center of the archipelago, the region's economic growth is consistently boosted by the rising number of local and foreign tourist arrivals, particularly in Cebu. Apart from white sand beaches and heritage sites, Cebu has three highly urbanized cities and is home to 80% of the domestic shipping operators in the country.
- The economy of Eastern Visayas recovered in 2018 with a growth of 5.9%, after slowing down at a rate of 1.8% in 2017. Its growth was boosted by the recovery of the Construction (17.4%) subsector, which was also essential in the region's highest-ever recorded growth of 12.4% in 2016.

Mindanao

- Mindanao accounted for 14.5% of the country's GDP in 2018.
- Davao Region was the second fastest growing economy in 2017 and 2018 and its growth was consistently above the national average from 2011 to 2018, except only for one year (2013). Its

regional center, Davao City, serves as the primary hub for trade, commerce and industry in Mindanao.

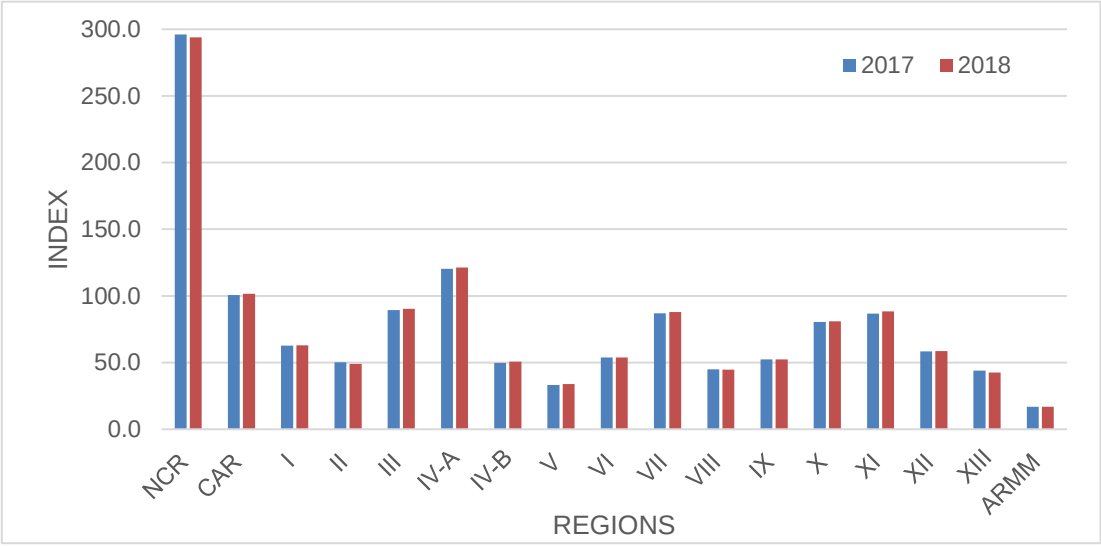
- Brunei Indonesia Malaysia Philippines - East ASEAN Growth Area (BIMP-EAGA), was launched in Davao City in 1994 as a regional economic foundation in Southeast Asia. According to a study conducted by BIMP-EAGA in 2012, Davao was the only Philippine city to be featured in the top 100 fastest-growing urban areas in the world, with a projected annual growth rate of 2.5% over a 15-year period.
- After being named Mindanao's slowest economy from 2011 to 2016, ARMM experienced an economic surge in 2017 and 2018 with growth rates of 7.3% and 7.2%, respectively. In 2018, the region recorded the fastest growth in the primary sector at 5.8%, with the Fishing subsector accelerating to 7.3% from 4.5% growth in the previous year.

2.2.3 Per Capita GDP and GRDP

The real and nominal per capita GDP/GRDP trends from 2013 to 2018 are shown in **Table 2.2-5** and **Table 2.2-6,** respectively. The comparison between 2017 and 2018 per capita GRDP index is shown in **Figure 2.2-11**.

Per capita GDP/GRDP characteristics of the Study Area are as follows:

- The average real per capita GDP of the country increased by 4.6%, from PhP 82,593 in 2017 to PhP 86,370 in 2018.
- NCR recorded the highest real per capita GRDP among all regions in the country in 2018 at PhP 253,893. NCR's average economic output per person is nearly three times the national average.
- Other than NCR, only CALABARZON and CAR posted real per capita GRDP higher than the national average at PhP 104,708 and PhP 87,722, respectively.
- Bicol Region recorded the highest increase in per capita GRDP from 2017 to 2018 at 6.8%, followed by Davao Region and MIMAROPA at 6.6% and 6.4%, respectively.
- Davao Region had the highest medium-term (2013-2018) increase in terms of average real per capita GRDP at 7.1%. ARMM had the lowest average real per capita GRDP increase from 2013 to 2018 at 0.37%.



Source: Philippine Statistics Authority, 2018

Figure 2.2-11 Per Capita GRDP Index with Reference to the National Average: 2017 and 2018 (at Constant 2000 Prices)

Table 2.2-5 Per Capita GDP and GRDP at Constant 2000 Prices: 2013-2018

Region		Per Capita GRDP at Constant 2000 Prices (PHP)						Growth Rate
		2013	2014	2015	2016	2017	2018	2013-2018
PHILIPPINES		68,746	71,741	74,833	78,682	82,593	86,370	4.67%
NCR	NATIONAL CAPITAL REGION	195,013	202,904	218,987	232,739	244,589	253,893	5.42%
CAR	CORDILLERA ADMINISTRATIVE REGION	72,773	73,971	75,048	75,401	83,153	87,722	3.81%
I	ILOCOS REGION	42,646	44,894	46,180	49,474	51,703	54,434	5.00%
II	CAGAYAN VALLEY	35,571	37,645	38,436	39,344	41,571	42,387	3.57%
III	CENTRAL LUZON	56,557	60,670	63,641	68,634	73,863	78,016	6.64%
IV-A	CALABARZON	84,657	86,644	92,184	94,811	99,346	104,708	4.34%
IV-B	MIMAROPA	38,141	40,706	39,575	39,837	41,069	43,715	2.77%
V	BICOL REGION	24,014	24,719	25,770	26,686	27,487	29,369	4.11%
VI	WESTERN VISAYAS	35,883	37,289	39,653	41,420	44,368	46,440	5.29%
VII	CENTRAL VISAYAS	59,200	62,743	64,846	69,322	71,743	76,024	5.13%
VIII	EASTERN VISAYAS	35,002	33,771	33,771	37,144	37,121	38,598	1.97%
IX	ZAMBOANGA PENINSULA	38,001	39,887	41,873	43,043	43,326	45,265	3.56%
X	NORTHERN MINDANAO	54,721	57,609	60,290	63,771	66,408	70,000	5.05%
XI	DAVAO REGION	54,196	58,256	61,335	65,913	71,621	76,378	7.10%
XII	SOCCSKSARGEN	41,835	43,493	44,178	45,459	48,277	50,644	3.90%
XIII	CARAGA	33,051	35,672	35,553	35,679	36,235	36,651	2.09%
ARMM	AUTONOMOUS REGION IN MUSLIM MINDANAO	14,388	14,613	13,646	13,366	14,012	14,657	0.37%

Table 2.2-6 Per Capita GDP and GRDP at Current Prices: 2013-2018

Region		Per Capita GRDP at Current Prices (PHP)						Growth Rate
		2013	2014	2015	2016	2017	2018	2013-2018
PHILIPPINES		117,503	126,493	131,171	140,255	150,661	163,475	6.83%
NCR	NATIONAL CAPITAL REGION	341,130	364,900	398,650	432,155	465,850	500,947	7.99%
CAR	CORDILLERA ADMINISTRATIVE REGION	127,240	132,893	131,530	133,791	147,634	161,888	4.93%
I	ILOCOS REGION	72,294	78,490	79,653	86,608	92,629	102,819	7.30%
II	CAGAYAN VALLEY	62,134	69,730	67,707	70,880	78,020	83,158	6.00%
III	CENTRAL LUZON	93,986	104,495	106,975	115,769	127,609	139,833	8.27%
IV-A	CALABARZON	135,461	141,843	145,786	148,873	158,029	172,310	4.93%
IV-B	MIMAROPA	65,262	72,741	66,309	66,793	73,520	83,614	5.08%
V	BICOL REGION	42,795	45,848	46,876	49,859	52,920	58,600	6.49%
VI	WESTERN VISAYAS	61,811	66,713	71,356	76,324	83,215	92,043	8.29%
VII	CENTRAL VISAYAS	102,219	112,110	116,448	127,494	134,385	148,067	7.69%
VIII	EASTERN VISAYAS	58,361	59,643	59,930	67,475	68,218	73,996	4.86%
IX	ZAMBOANGA PENINSULA	65,186	70,031	73,634	77,045	80,274	86,368	5.79%
X	NORTHERN MINDANAO	95,365	104,204	109,981	120,623	128,802	140,224	8.02%
XI	DAVAO REGION	96,806	107,404	113,881	126,772	141,166	155,657	9.96%
XII	SOCCSKSARGEN	72,368	77,594	77,396	82,397	89,228	97,034	6.04%
XIII	CARAGA	52,287	59,427	58,541	60,447	63,823	67,228	5.16%
ARMM	AUTONOMOUS REGION IN MUSLIM MINDANAO	28,967	30,163	26,862	27,691	30,610	32,220	2.15%

CHAPTER 3

REGIONAL DEVELOPMENT PLAN AND URBAN DEVELOPMENT PLAN OF MEGA CITY AREAS

CHAPTER 3
REGIONAL DEVELOPMENT PLAN AND URBAN DEVELOPMENT PLAN OF MEGA CITY AREAS

3.1 National and Regional Development Plan

3.1.1 National Development Plan

(1) Long-term Vision 2040

The 25-year long-term vision, *AmBisyon Natin 2040*, was released by the Duterte Administration in 2016, taking a participatory approach involving a large number of citizens in focus group discussions and the national survey initiated by the previous Administration. The vision and major goals are stated as follows:

Long-term Vision for the Nation:
By 2040, the Philippines shall be a prosperous, predominantly middle-class society where no one is poor. Our peoples will enjoy long and healthy lives, are smart and innovative, and will live in a high-trust society.

Major Goals:
By 2040, the Philippines will be a predominantly middle-class society. Poverty and hunger will have been eradicated. There will be sufficient good quality local jobs available.

The vision aims at building a middle-class society together eradicating poverty. In order to achieve this vision of middle-class life, namely "a strongly rooted, comfortable, and secure life (*Matatag, Maginhawa at Panatag*)," a family needs to earn a monthly family income of at least PHP120,000 in 2015 price for a household of four persons living in National Capital Region (NCR).[1] In other words, the per capita income should grow more than three-fold by 2040 and the Philippines will join the high-income country group by reaching the per capita GDP of nearly USD 10,000.[2]

To realize the vision, the Government of the Philippines (GOP) has identified four specific objectives and nine priority sectors, as follows:

Four Objectives:
(a) Investment in human capital so that Filipinos are equipped to learn and adapt to new technology and the changing profile of society;
(b) Investment in high-quality infrastructure to make the cost of moving people, goods, and services competitive
(c) Sound urban development that takes advantage of scale and agglomeration economies to make the cities more competitive and livable; and
(d) Adequate and inclusive finance to enable households to build up savings and to provide capital for MSMEs and households considering the desire of many to run their own businesses.

Nine Priority Sectors:
- Housing and urban development
- Manufacturing (food processing, housing-related goods and services, transport)
- Connectivity (roads, ports, airports, bridges, communication)
- Education services
- Financial services
- Health services
- Tourism-related services
- Agricultural development
- Countryside development

[1] NEDA. PDP 2017-2022
[2] World Bank. 2018. Growth and Productivity in the Philippines: Winning the Future.

(2) The Philippine Development Plan (PDP) 2017-2022

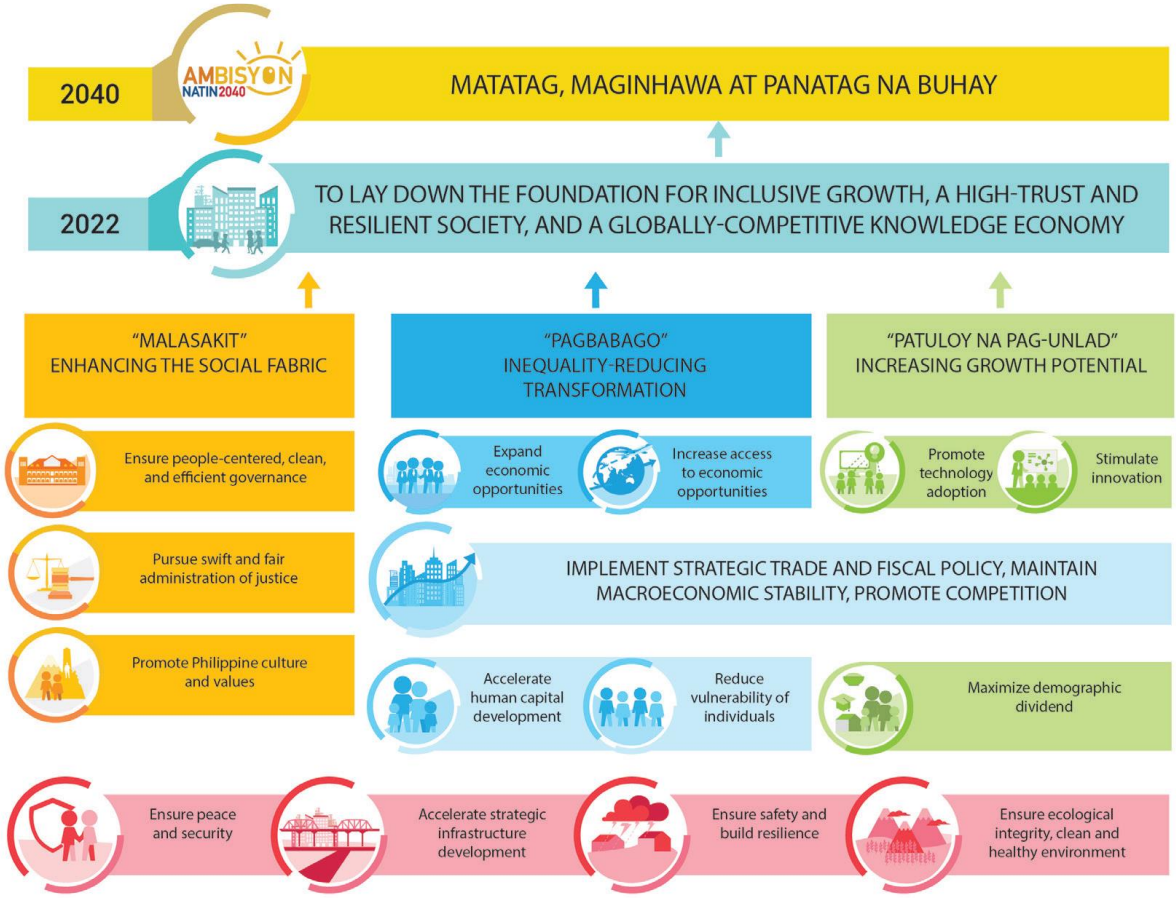
1) Overall Objectives, Targets and Strategic Framework

Guided by the 25-year long-term vision, *AmBisyon Natin* 2040 and the current Administration's 0-10 Point Socioeconomic Agenda, the Philippine Development Plan (PDP) 2017-2022 was formulated "to lay down the foundation for a more inclusive growth, a high trust society, and a globally-competitive economy." The targets by 2022 are set in the PDP, as shown below:

Targets:

- The Philippines will be an upper middle-income country by 2022.
- Growth will be more inclusive as manifested by a lower poverty incidence in the rural areas, from 30% in 2015 to 20% in 2022.
- The Philippines will have a high level of human development by 2022.
- The unemployment rate will decline from the current 5.5% to 3-5% in 2022.
- There will be greater trust in government and in society.
- Individuals and communities will be more resilient.
- Filipinos will have a greater drive for innovation.

The strategies categorized by three objectives of "enhancing the social fabric," "inequality-reducing transformation", and "increasing growth" are proposed with cross-cutting strategies for national security, infrastructure development, socioeconomic resiliency, and ecological integrity. For infrastructure development, which produces the foundation of sustainable development, infrastructure investment of minimum 5% of GDP is set as a target of the "golden age of infrastructure."[3]



Source: NEDA. PDP 2017-2022. P.49

Figure 3.1-1 PDP 2017-2022 Overall Strategic Framework

[3] PDP 2017-2022. Page 52.

2) National Spatial Strategy (NSS)

The PDP 2017-2022 also revealed a National Spatial Strategy (NSS) with the principles of the strategy, based on the understanding of the importance of urban centers as "engines of economic growth and venues of growth and poverty reduction, and infrastructure to provide efficient connective networks of sustainable urban and rural communities."[4]

The objectives of the NSS include to decongest NCR and encourage growth of urban centers across the nation and to form a linked urban cluster for mitigation of spatial and socioeconomic disparity, by taking advantage of agglomeration. Three strategies, "concentration (regional agglomeration)," "connectivity," and "reduction of vulnerability," are adapted to materialize the stated objectives in spatial development. Under the "concentration" strategy, a network of settlement or hierarchy consisting of (1) metropolitan centers, (2) regional centers, and (3) sub-regional centers is proposed. The settlement network is discussed in the following Chapter. To make cities growth centers, adequate infrastructure, affordable housing, and service systems should also be provided.

Principles of National Spatial Strategy:

- Integration of leading and lagging areas and urban-rural linkages through transportation networks
- Improvement of access to social services
- Identification of locations of major infrastructure to maximize their benefits
- Improvement of local, national, and international connectivity
- Promotion of sustainable development and resiliency

Three Strategies of Concentration, Connectivity, and Reduction of Vulnerability:

(a) Concentration (Regional Agglomeration):

- to build on the efficiencies and maximize the benefits of scale and agglomeration economies

(b) Connectivity:

- to connect the settlements to form an efficient network.
  - ➢ to equalize opportunities across space
  - ➢ to address socio-economic inequalities by linking lagging regions with leading ones

(c) Reduction of Vulnerability:

- to make vulnerability reduction an integral part of development
  - ➢ to reduce the risks on the communities exposed to the threats of climate change impact and disasters.

[4] NEDA. PDP 2017-2022. Pp 36.

3.1.2 Regional Development Plan 2017-2022

(1) CAR: Cordillera Regional Development Plan 2017-2022

1) Development Framework

Adopting the PDP's overall strategic framework, the CAR RDP sets the development vision, with six goals of "social and human development," "sustained economic growth," "environmental quality and sustainable use of resources," "cultural integrity and cultural identity," "regional integration," and "regional autonomy."

CAR Development Vision:

> *We, the people of the Cordillera, proud of our culture and heritage rooted in spirituality shall have a truly autonomous region of a united, enlightened and empowered citizenry who shall pursue sustainable development where responsibilities and benefits are shared by all.*

The macroeconomic targets are presented in **Table 3.1-1**. The Gross Regional Domestic Product (GRDP) will grow between Php177.168 and194.901 billion in 2022, by an average annual growth rate of 4.2-5.8%. In CAR, agriculture sector is important for poverty reduction since the sector absorbs a half of the labor force and the poverty incidence is the highest among the farmers. The sector aims to increase the production of palay, corn, vegetables, etc. increase value-added through agro-processing industry, to promote agri-business. The industry and services sectors are expected to grow rapidly. The CAR's contribution of the manufacturing sector is the second largest after CALABARZON. The service sector will continue to expand with the growth of Information Technology-Business Processing Outsourcing (IT-BPO), especially in Baguio City. As a result, the unemployment and poverty incidence will decline to 4% and 15.9% respectively.

Table 3.1-1 Selected Macroeconomic Targets of CAR 2017-2022

Indicator		Actual	Forecast	
		2015	2017	2022
GRDP and GVA Annual Growth Rate	GRDP	3.7	4.0 - 5.0	5.3 - 6.3
	AHFF	(4.1)	1.0 - 2.0	3.0 - 4.0
	Industry	3.2	3.0 - 4.0	4.5 - 5.5
	Services	6.5	6.0 - 7.0	6.5 - 7.5
Employment	Unemployment Rate (%)	4.8	4.6	4.0
	Underemployment Rate (%)	20.8	24.0	19.0
Poverty Incidence Rate (Population) (%)		19.7	19.0	15.9

Source: NEDA. Cordillera Regional Development Plan 2017-2022.

2) Regional Spatial Strategy

Following the NSS and the Luzon Spatial Development Framework (LSDF) 2014-2045, a spatial strategy of **"North and South Clusters Plus"** is proposed, which includes two components:

(i) the establishment of two primary or regional growth centers located in the southern and northern portions of the region

- BLISTT (Baguio City-La Trinidad-Itogon-Sablan-Tuba-Tublay) in the southern growth node as a center of industry tourism gateway, health, and education
- Eastern Kalinga (Tabuk-Pinukpuk-Rizal) as the northern growth node for agro-industry, tourism, and trade and commercial sector.

(ii) designation of secondary and tertiary growth centers dispersed across the region

The connectivity strategy primarily aims at enhancing connectivity between the region and other regions by air or land, and then at improving the linkage among the regional and provincial growth centers. For reduction of vulnerability, areas at risk from disasters from rain-induced landslides and flooding should receive focus. The development areas are identified as follows:

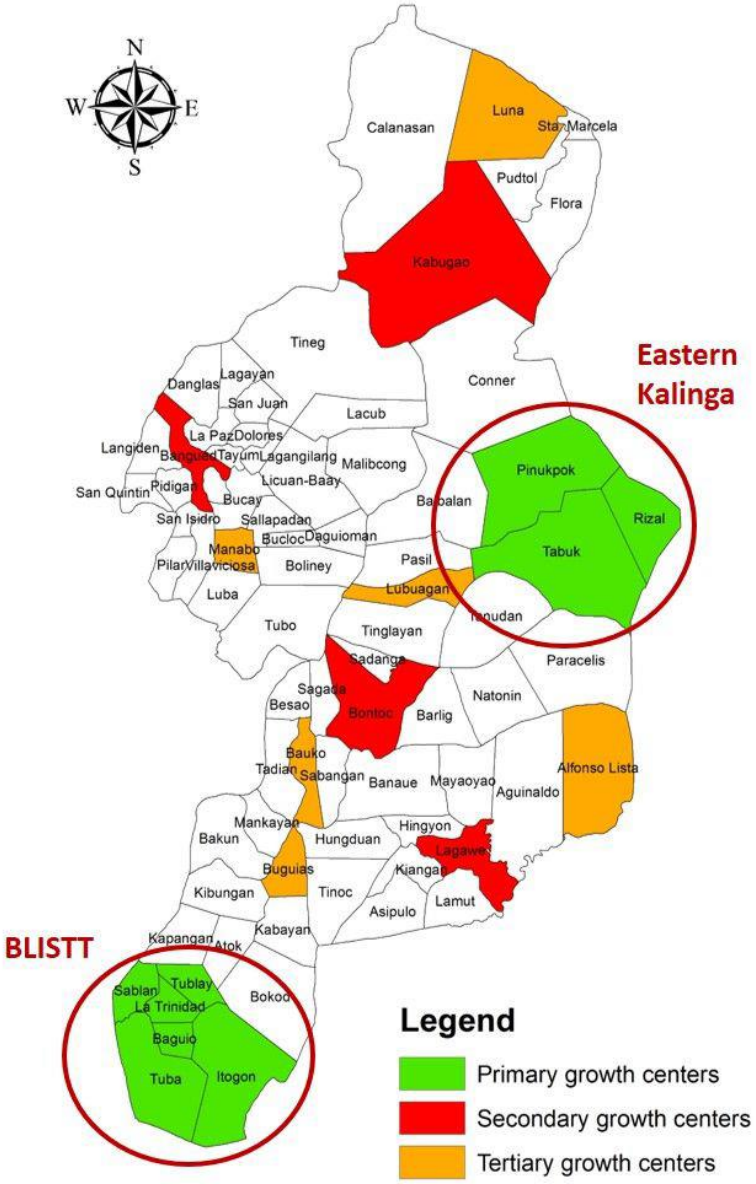
(a) Metro Bangued (Bangued, La Paz, Pidigan, Peñarubia and Tayum): primary service center for Abra

(b) Buguias-Mankayan area: agriculture trading and commercial center

(c) Paco Valley: agri-industrial area

(d) PALMANABA (Paracelis, Alfonso Lista and Mayoyao in Ifugao and Natonin and Barlig in Mountain Province): agri-industrial processing and ecotourism sites

(e) SABATABESA (Sabangan-Bauko-Tadian-Besao-Sagada): watershed protection, ecotourism, agro-processing, hydropower supply, education and trading, forest production, cattle production, and fruits, vegetables and coffee production



Source: Cordillera Regional Development Plan 2017-2022. Page 36.

Figure 3.1-2 Regional Hierarchy of Settlements

(2) Region I: Ilocos Regional Development Plan 2017-2022

1) Development Framework

The Ilocos Regional Development Plan has identified the mid-term and long-term visions for the region, with the visions for the economic development, social development, infrastructure, and environment and natural resources sectors stated below. The region aims to focus on development of agribusiness and tourism by 2022 and to diversify the economic sectors in the long-run by 2040.

Mid-term Vision 2017-2022:
"By 2022, Region 1 shall be the agri-business, and tourism hub in Northern Philippines with equitable economic opportunities for its globally competitive, happy, resilient and culturally diverse peoples."

Long-term Vision from 2035-2040:
"By 2040, Region 1 shall be the agri-business, industrial, trade, services and tourism hub in Northern Philippines with equitable economic opportunities for its globally competitive, happy, resilient and culturally diverse peoples."

Economic Development Sector:
"A robust and resilient agri-business and tourism hub in Northern Philippines supported by ecologically sound and socially just economy."

Social Development Sector:
"A better quality of life through expanded and accessible opportunities on globally competitive education and skills, decent and stable employment, health and social protection services, for a sustained human development resilient to natural calamities"

Infrastructure Sector:
"Adequate, reliable and sustainable infrastructure support for agriculture, commercial, industrial, tourism, Information Communication and Technology (ICT), and human resource development provided in accordance with appropriate design standards, plans and specifications

Environment and Natural Resources Sector:
"A region with sustained environment and natural resources protective and disaster resilient communities by 2022"

The macroeconomic targets are presented in **Table 3.1-2**.

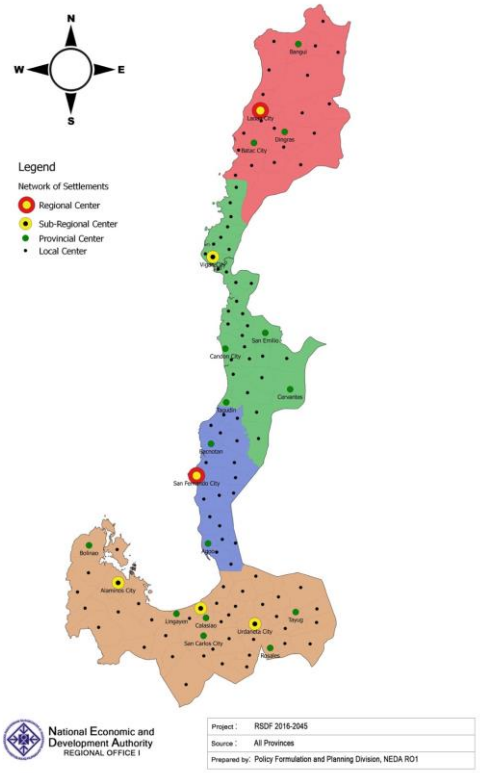
Table 3.1-2 Selected Macroeconomic Targets of Ilocos 2017-2022

Indicator		Actual	Forecast
		2015	2022
GRDP and GVA Annual Growth Rate (%)	GRDP	5.0	7.2 - 8.0
	AHFF	(1.3)	5.0
	Industry	7.5	7.6 - 8.4
	Services	6.8	7.8 - 8.6
Poverty Incidence Rate (Population) (%)		13.1	8.0

Source: NEDA. Ilocos Regional Development Plan 2017-2022.

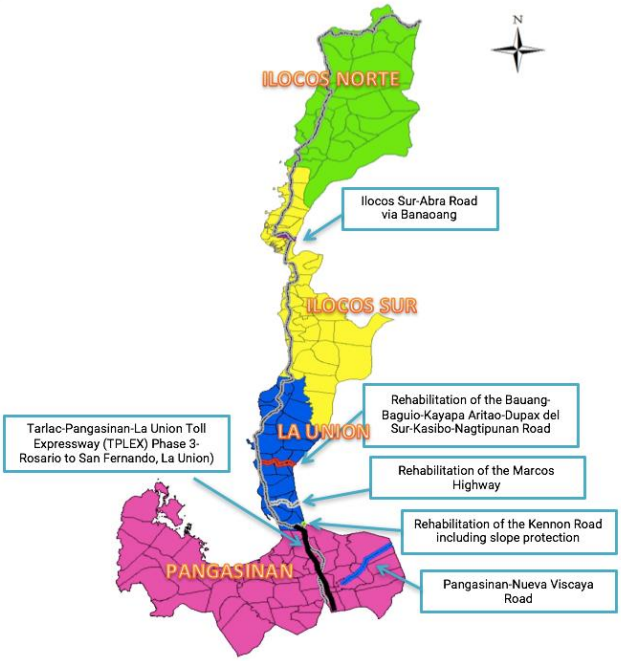
2) Regional Spatial Strategy

The regional spatial strategy is proposed under three key strategies of Concentration, Connectivity, and Vulnerability Reduction. The four-tiered settlement system for the concentration strategy and the proposed network for connectivity strategy are adapted as shown in **Figure 3.1-3** and **Figure 3.1-4** respectively.



Source: Ilocos Regional Development Plan 2017-2022. Page 22.

Figure 3.1-3 Network of Settlements in Ilocos Region



Source: Ilocos Regional Development Plan 2017-2022. Page 214.

Figure 3.1-4 Proposed Connectivity Network in Ilocos Region

(3) Region II: Cagayan Valley Regional Development Plan 2017-2022

1) Development Framework

The vision of Cagayan Valley toward 2022 is to be a "'Prime Water Resource, Agro-Industrial Hub, and Emerging Tourism Destination' in the country". The macroscopic targets are set as in **Table 3.1-3.**

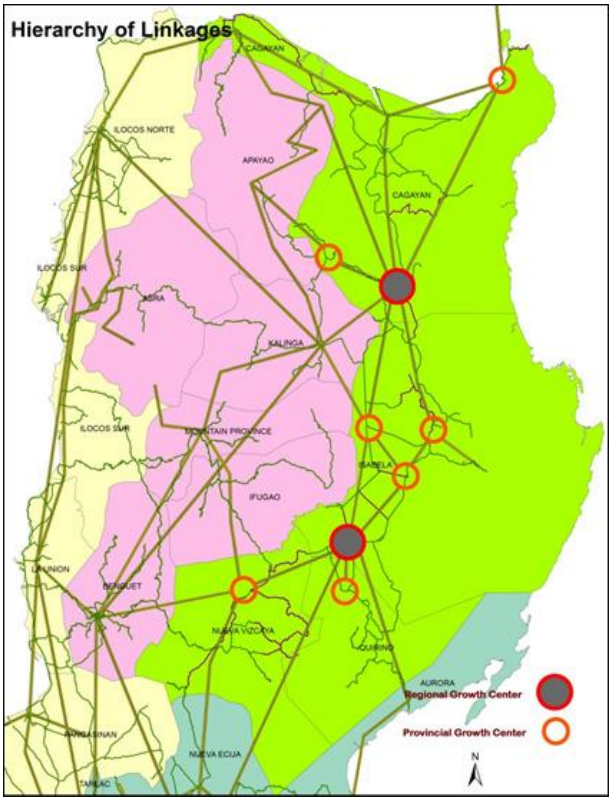
Table 3.1-3 Selected Macroeconomic Targets of Cagayan Valley 2017-2022

Indicator		Actual	Forecast
		2015	2022
GRDP and GVA Annual Growth Rate (%)	GRDP	3.7	6.5 - 7.5
	AHFF	(0.4)	4.5 - 5.5
	Industry	5.8	7.7 - 8.7
	Services	6.3	7.5 - 8.5
Employment	Unemployment Rate (%)	3.7	1 - 3
	Underemployment (%)	11.1	9 - 11
Poverty Incidence Rate (Population) (%)		15.8	8.2

Source: NEDA. Cagayan Valley Regional Development Plan 2017-2022.

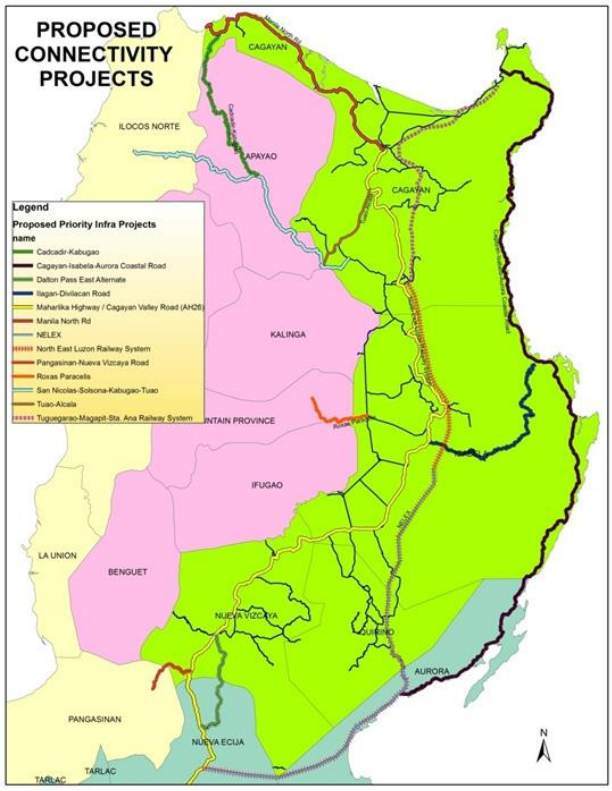
2) Regional Spatial Strategy

The Cagayan Valley Region takes "MIDRIB Peripheral Growth Optimization Strategy" as its spatial strategy. The growth centers and connectivity projects are proposed in **Figure 3.1-5** and **Figure 3.1-6**. As part of the concentration strategy, vertical expansion of built-up areas, protection of production and protected areas, and optimal land utilization, are adapted. The connectivity strategy focuses on the formulation of an efficient network of urban centers, distribution of relatively equal opportunities to the region, rural-urban linkages, reduction of socio-economic disparity, and supporting development of urban centers as the leading growth centers. Specific strategies are identified for connectivity strategy, including polycentric development, collaboration with surrounding regions for infrastructure development for public transport networks, cooperation for corridor development through collaborative investment in infrastructure, and construction of tourist routes. The strategy of reduction of vulnerability will focus on addressing geological and hydro-meteoroidal hazard risks found in the region. On average three strong typhoons that come to the region every two years significantly affect weak farmers.



Source: Cagayan Valley Regional Development Plan 2017-2022. Page 31.

Figure 3.1-5 Growth Centers and Linkages in Cagayan Valley



Source: Cagayan Valley Regional Development Plan 2017-2022. Page 37.

Figure 3.1-6 Proposed Land Connectivity Projects in Cagayan Valley

(4) Region III: Central Luzon Regional Development Plan 2017-2022

1) Development Framework

The vision for the development of Central Luzon Region is "to have globally competitive human resources, a highly productive and profitable agricultural sector, seamless and integrated physical access and, a transshipment and logistics hub in the Asia-Pacific Region." The selected macroeconomic targets are presented in **Table 3.1-4**.

Table 3.1-4 Selected Macroeconomic Targets of Central Luzon 2017-2022

Indicator		Actual	Targets	
		2015	2017	2022
GRDP and GVA Annual Growth Rate (%)	GRDP	5.6	5.9 - 6.9	6.3 - 7.3
	AHFF	0.6	3.0 - 4.0	5.0 - 6.0
	Industry	7.1	7.2 - 8.2	7.2 - 8.2
	Services	6.2	5.7 - 6.7	5.7 - 6.8
GRDP per capita (PhP)		63,455	68,327	91,020
Employment	Unemployment Rate (%)	6.6	6.3	4.9
Poverty Incidence Rate (Population) (%)		11.2	10.6	8.5

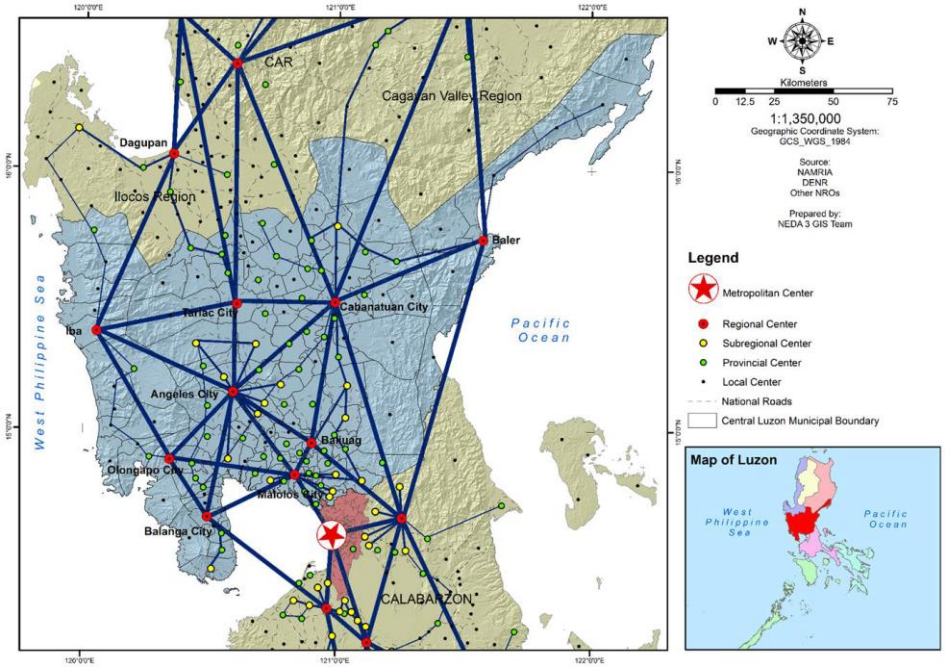
Source: NEDA. Central Luzon Regional Development Plan 2017-2022.

2) Regional Spatial Strategy

The Central Luzon RDP identified development issues and challenges, including:

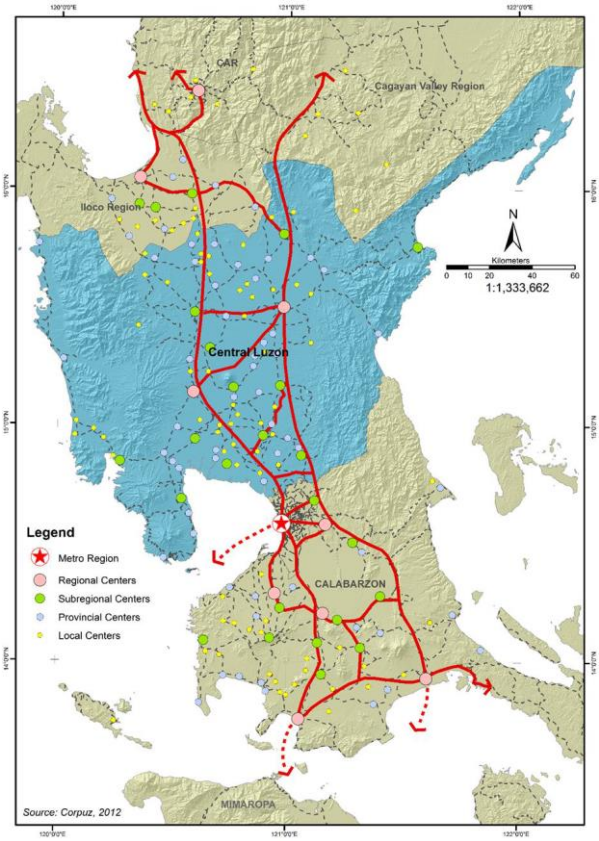
- Urban/settlement expansion and food security
- Efficient land use of urban areas
- Land use conflict between urban land use and agricultural and protected areas and vulnerability.

A five-tiered hierarchy of settlements guided by the W-growth corridor spatial strategy is proposed for Central Luzon as shown in **Figure 3.1-7**, with connectivity frameworks of **Figure 3.1-8** and **Figure 3.1-9**. The development of major urban centers in Central Luzon is expected to contribute to one of the objectives of the NSS, decongestion of Metro Manila, and also to enhance the linkage with the urban centers in northern Luzon, such as Metro Laoag in Ilocos and Metro Tuguegarao in Cagayan Valley. **Figure 3.1-10** suggests a concept of networks of settlements and land use. Reduction of vulnerability strategy for Central Luzon is proposed, with the principles of safety first, priority given to production areas over urban expansion, and ensuring alternative routes, among others.



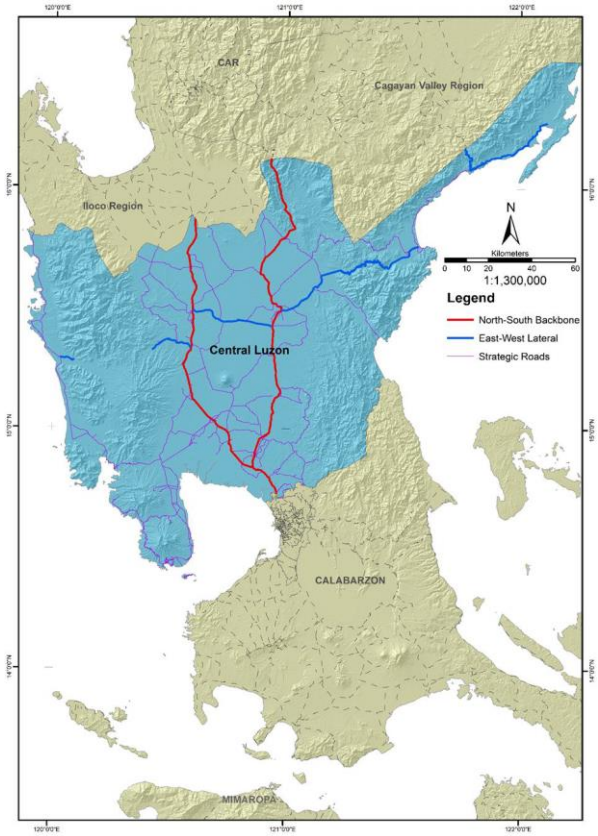
Source: Central Luzon Regional Development Plan 2017-2022. Page 29

Figure 3.1-7 Five-tiered Hierarchy of Settlements of Central Luzon



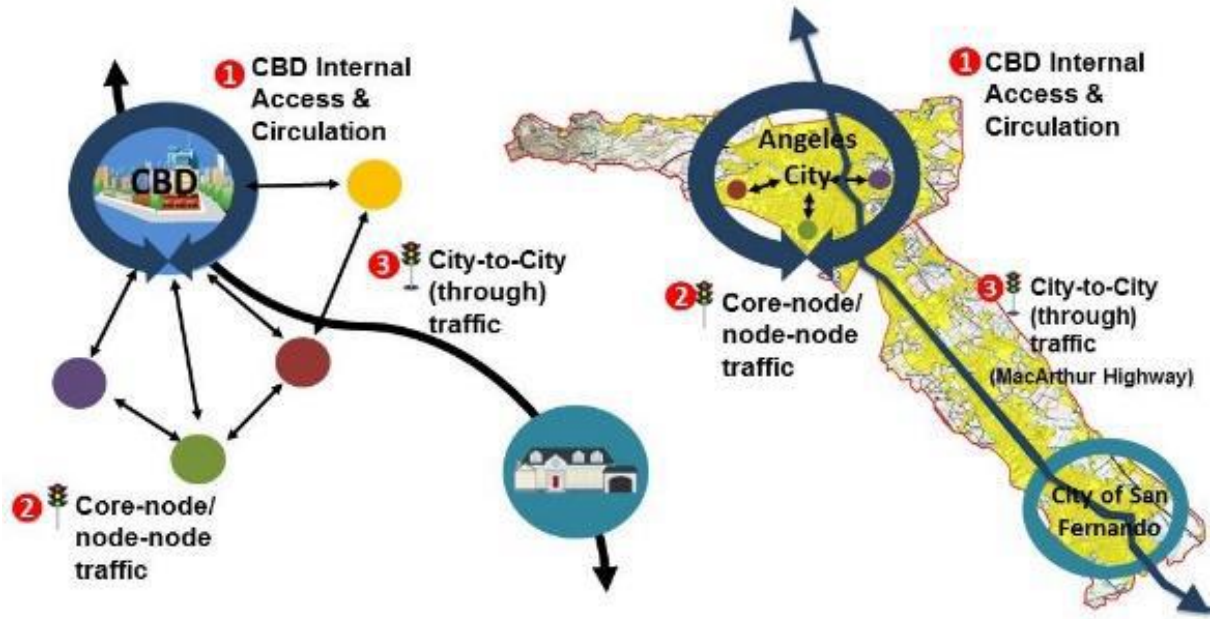
Source: Central Luzon RDP 2017-2022. Page 32.

Figure 3.1-8 The Twin-Spine Connectivity Framework Showing Linkages between Urban Centers



Source: Central Luzon RDP 2017-2022. Page 34

Figure 3.1-9 North-South Backbone/ East-West Lateral/ Strategic Road Development Framework



Source: Central Luzon Regional Development Plan 2017-2022. Page 234

Figure 3.1-10 Integrated Access, Circulation, & Land Use Planning Framework for Provinces, Cities, and Municipalities

(5) Region IV-A: CALABARZON Regional Development Plan 2017-2022

1) Development Framework

The vision for CALABARZON, as shown in the Regional Physical Framework Plan 2017-2046, is to be "a region of vibrant economic diversity and vitality with progressive, well-planned town clusters inhabited by God-loving people enjoying globally competitive, balanced and resilient ecosystems." The selected macroeconomic targets are presented in **Table 3.1-5**.

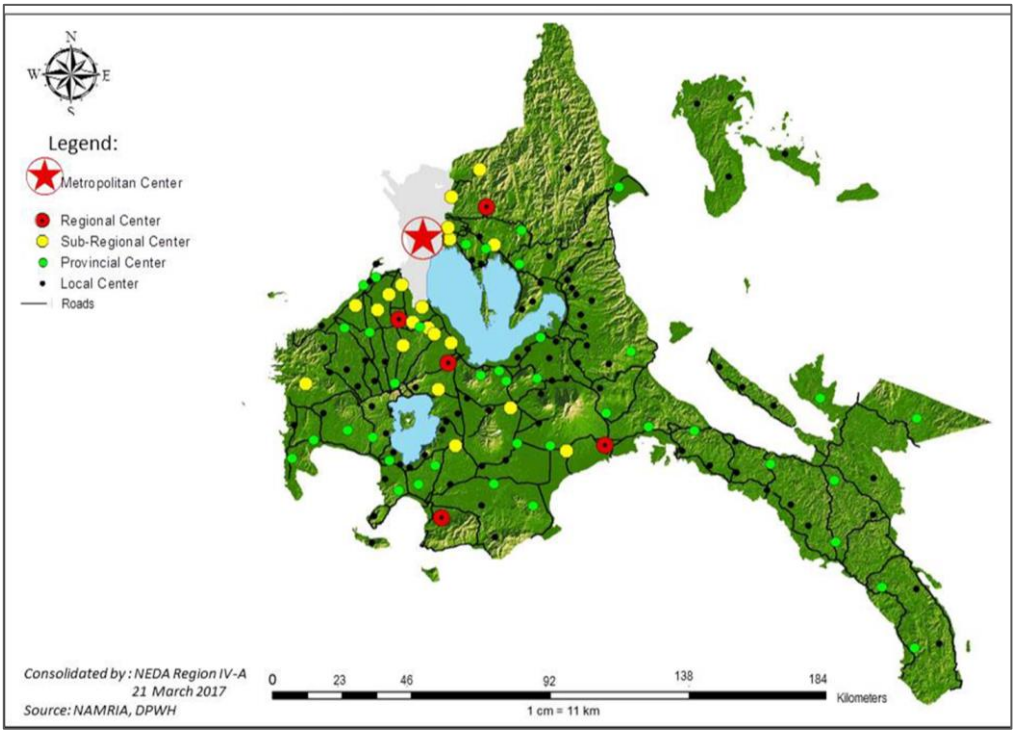
Table 3.1-5 Selected Macroeconomic Targets of CALABARZON 2017-2022

Indicator		Actual	Targets	
		2015	2017	2022
GRDP and GVA Annual Growth Rate (%)	GRDP	5.8	5.2 - 6.8	6.0 - 7.3
	AHFF	2.6	2.0 - 3 .5	2.8 - 4.5
	Industry	5.7	5.0 - 7.0	6.0 - 7.2
	Services	6.7	6.0 - 7.6	6.5 - 8.0
Employment	Unemployment Rate (%)	8	7 - 9	7 - 9
	Underemployment Rate (%)	18.2	17.5	15
Poverty Incidence Rate Reduced (Population) (%)		9.1	8.4	4.0

Source: NEDA. CALABARZON Regional Development Plan 2017-2022.

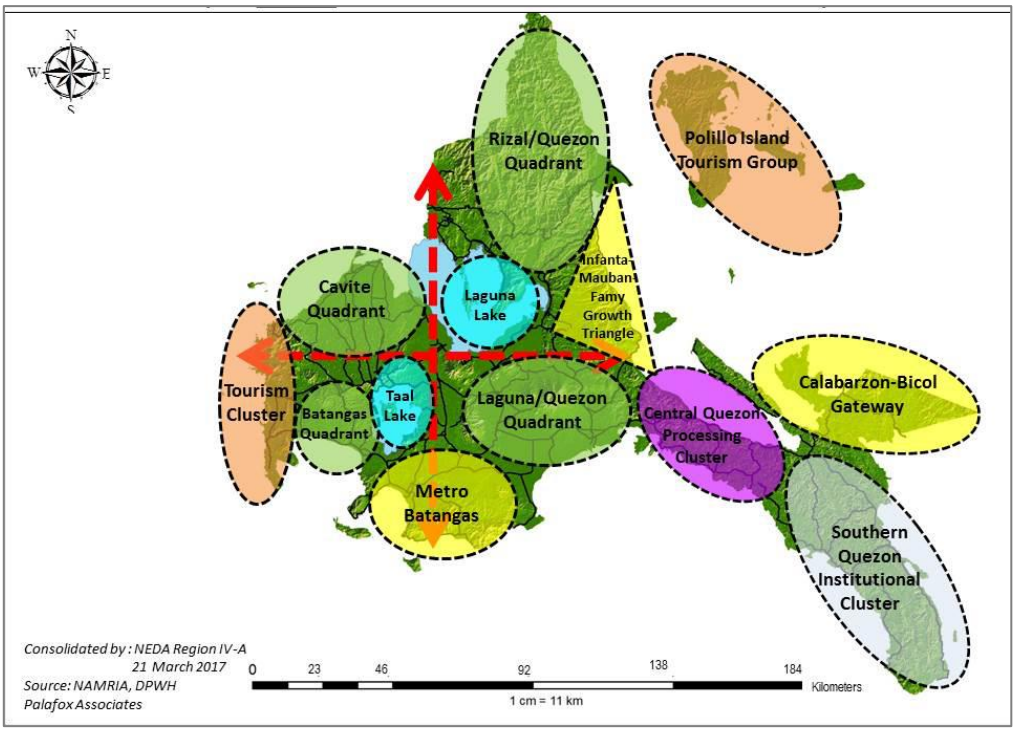
2) Regional Spatial Strategy

A regional development strategy for CALABARZON is formulated, taking the Centers, Corridors and Wedges (CCW) approach in which centers are major urban areas where active economic and business activities are observed; there exist corridors along major roads; and wedges are a group of settlements or residential areas with relatively rural characteristics where agriculture is the dominant sector. A five-tiered settlement network, Quadrant and Cluster Framework, and Proposed CALABARZON West-East Connection are presented in **Figure 3.1-11**, **Figure 3.1-12**, and **Figure 3.1-13**, respectively.



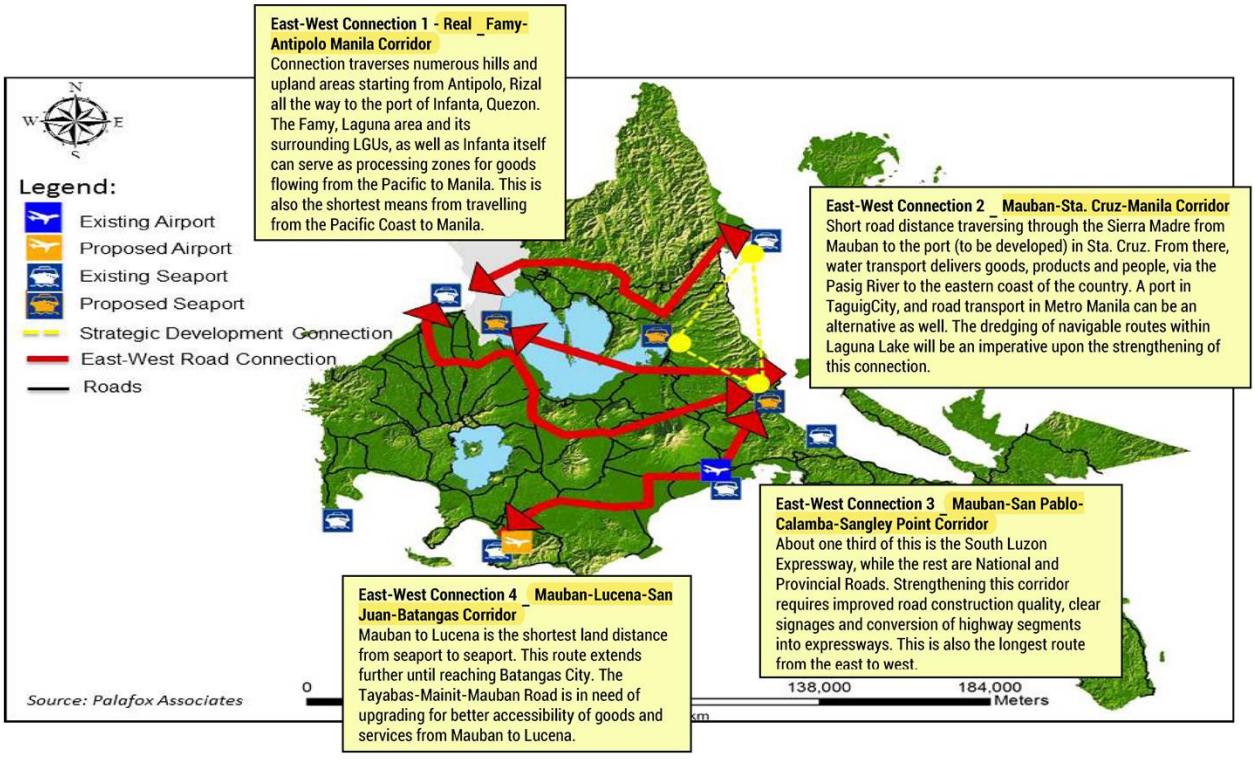
Source: CALABARZON Regional Development Plan 2017-2022. Page 25

Figure 3.1-11 Proposed Hierarchy of Settlements



Source: CALABARZON Regional Development Plan 2017-2022. Page 28

Figure 3.1-12 CALABARZON Quadrant and Cluster Framework Concepts



Source: CALABARZON Regional Development Plan 2017-2022. Page 30

Figure 3.1-13 Proposed CALABARZON West-East Connection

(6) Region IV-B: MIMAROPA Regional Development Plan 2017-2022

1) Development Framework

The MIMAROPA region envisions to become "the destination of investment, livelihood, residence, employment, adventure, rest, recreation and retirement" under the vision statement of "MIMAROPA: The destination of choice." The goal in RDP is "to lay the foundation for inclusive growth and a high trust society through a two-pronged approach of balanced growth opportunities and benefits and enhancing the social fabric." To achieve the vision and goal, the broad strategies identified are: "balance growth and development opportunities across provinces, economic sectors and people groups"; and "enhance the social fabric."[5] The key development issues of the region include: low level of GRDP, high poverty incidence especially among farmers, and dependency of the regional economy on the mining sector. The macroeconomic targets for MIMAROPA RDP are presented in **Table 3.1-6.**

Table 3.1-6 Selected Macroeconomic Targets of MIMAROPA 2017-2022

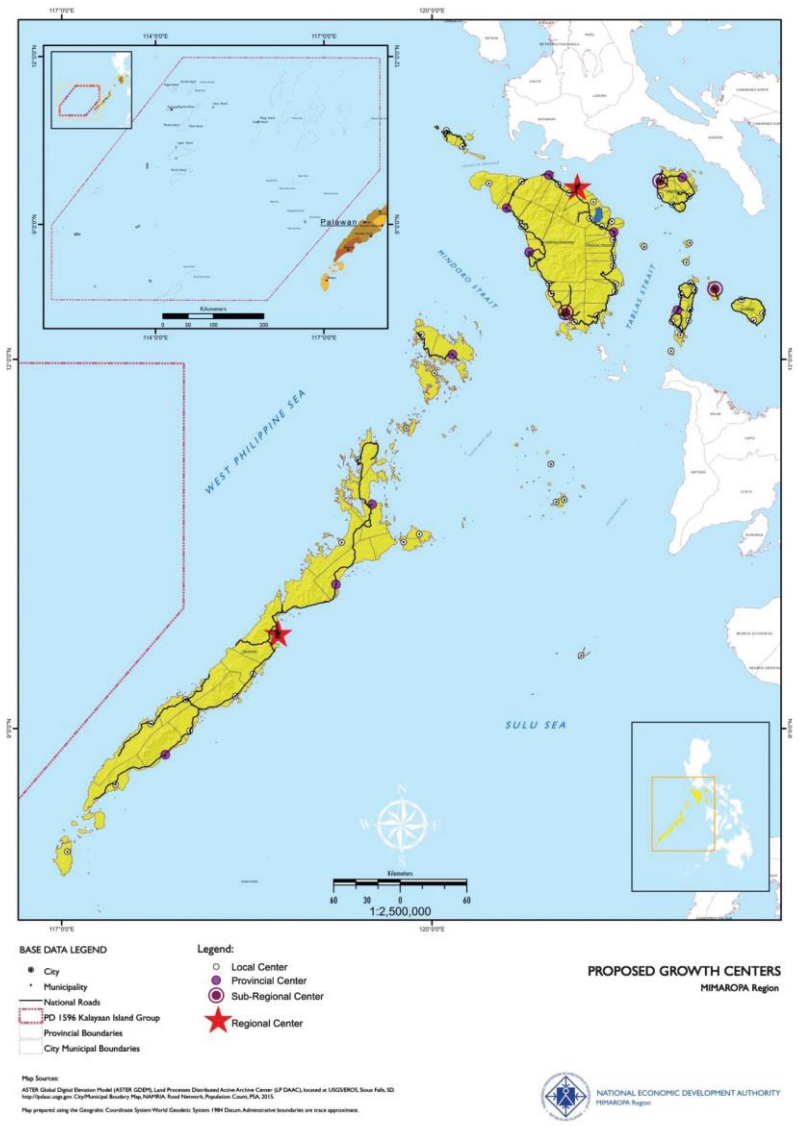
Indicator		Actual	Forecast
		2015	2022
GRDP and GVA Annual Growth Rate (%)	GRDP	1.5	6.2 - 7.2
	AHFF	2.8%	2.0 - 3.0
	Industry	-	-
	Services	-	-
Poverty Incidence Rate (Population) (%)		24.4	13.0 (2021)

Source: NEDA. MIMAROPA Regional Development Plan 2017-2022.

2) Regional Spatial Strategy

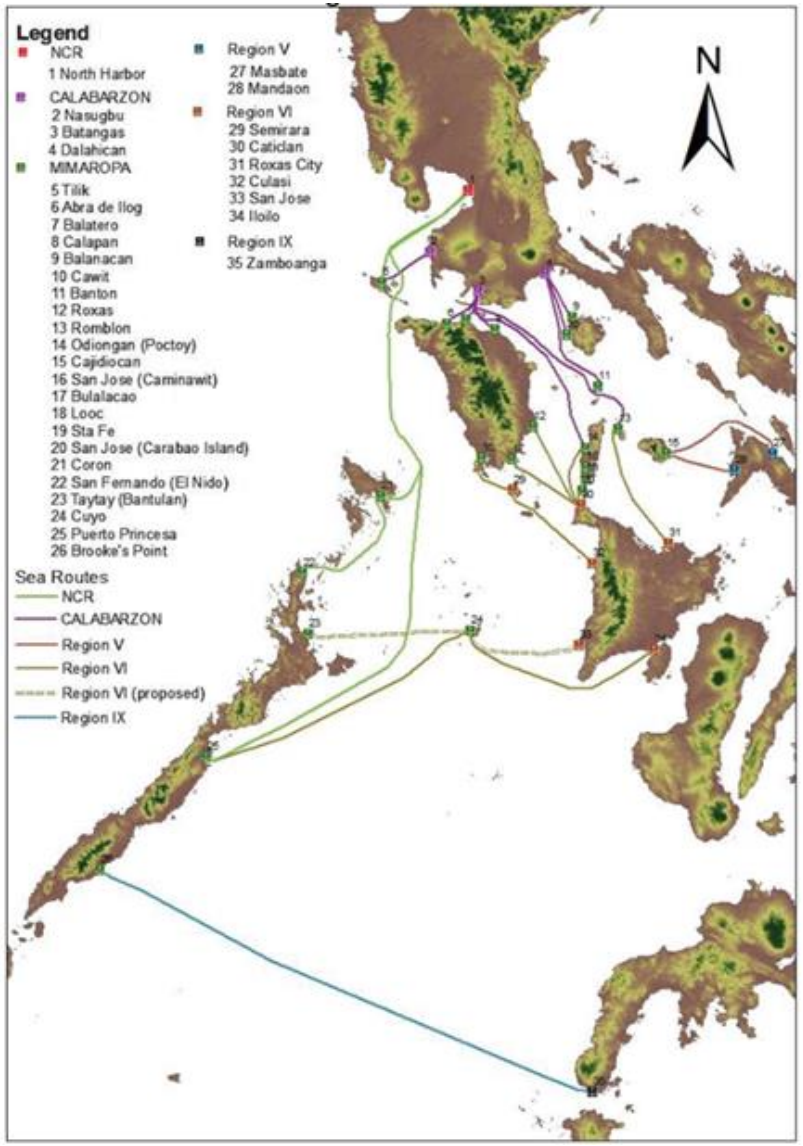
The RPD identifies a regional spatial strategy for MIMAROPA, with the role of provinces and their new emerging industries. In addition to the proposed settlement hierarchy under the concentration strategy, the role of Calapan City is emphasized as important as a regional government center where all government regional offices are supposed to be established. The connectivity strategy intends to build efficient multimodal transport of air, sea and land for reduction of transport cost and for increased access, by improving inter island connectivity and inter-regional integration. Such strategy is expected to contribute to industry development of tourism especially and eventually lead to the expansion of the regional economy. Regarding the reduction of vulnerability strategy, high landslide risks, caused by rainfall, deforestation and other human activities, and earthquake are found in Marinduque and Romblon; flooding risk exists in Oriental Mindoro. A list of geographically isolated and disadvantaged areas (GIDAs) susceptible to disaster, identified by the RDC is provided in the plan. **Figure 3.1-14** shows settlement centers in the region, and **Figure 3.1-15** and **Figure 3.1-16** present inter-region and intermodal connectivity.

[5] The MIMAROPA Regional Development Plan 2017-2022. Page 6-8.



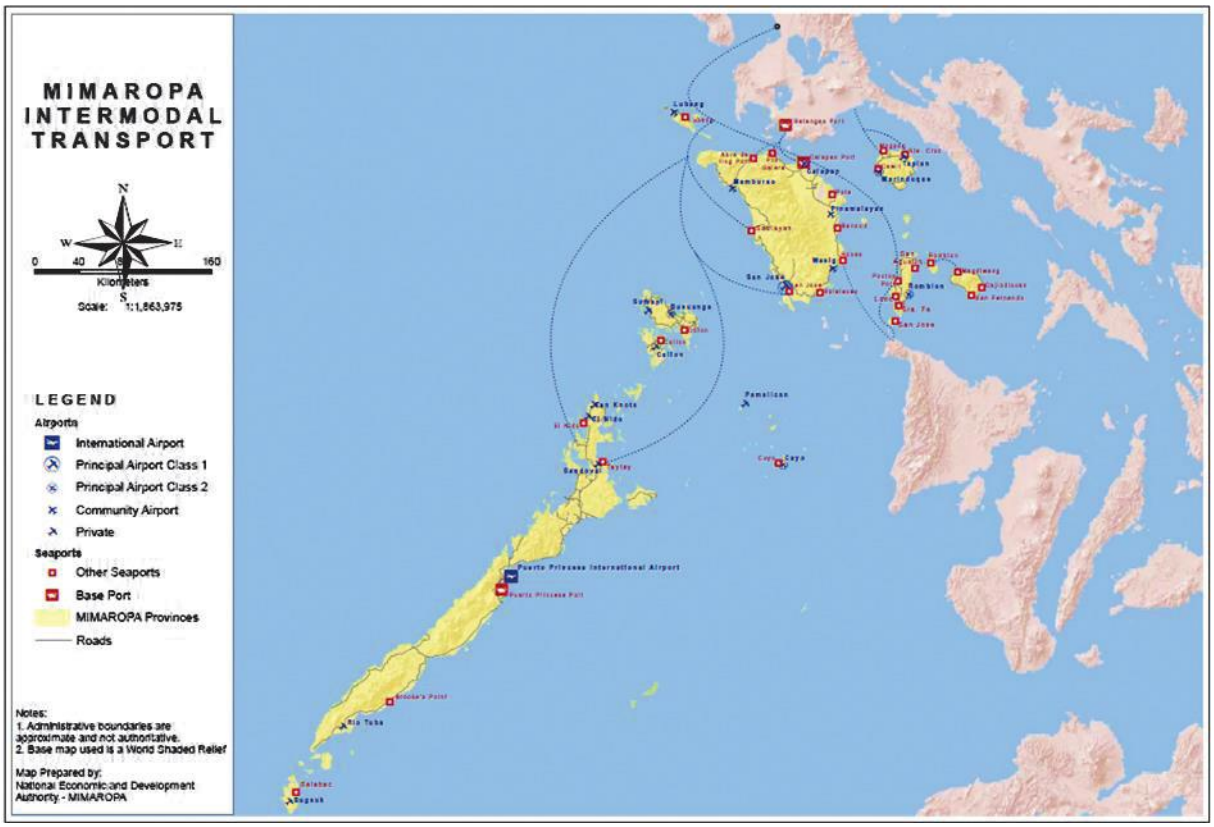
Source: MIMAROPA Regional Development Plan 2017-2022. Page 35

Figure 3.1-14 Proposed Growth Center in MIMAROPA



Source: MIMAROPA Regional Development Plan 2017-2022. Page 229

Figure 3.1-15 Inter-Region Sea Routes



Source: MIMAROPA Regional Development Plan 2017-2022. Page 38

Figure 3.1-16 Intermodal Transport Map in MIMAROPA

(7) Region V: Bicol Regional Development Plan 2017-2022

1) Development Framework

To achieve "a strongly rooted, comfortable, and secure life (Matatag, Maginhawa at Panatag)," the long-term vision of AmBisyon Natin 2040, the Bicol Regional Development Plan aims to achieve the reduction of poverty incidence among the population to 26.0%, and underemployment rate to no more than 20.0%. In the process, the Bicol Region determines to solve the development challenges to:

(a) reduce the cost of doing business to promote more investments in quality infrastructure, manufacturing, and tourism that will generate high paying and sustainable jobs for Bicolanos;

(b) attain high and sustainable economic growth;

(c) improve access to education, health, decent housing, and other social services;

(d) develop more resilient communities; and

(e) produce more competitive local government units (LGUs) and productive business sector.[6]

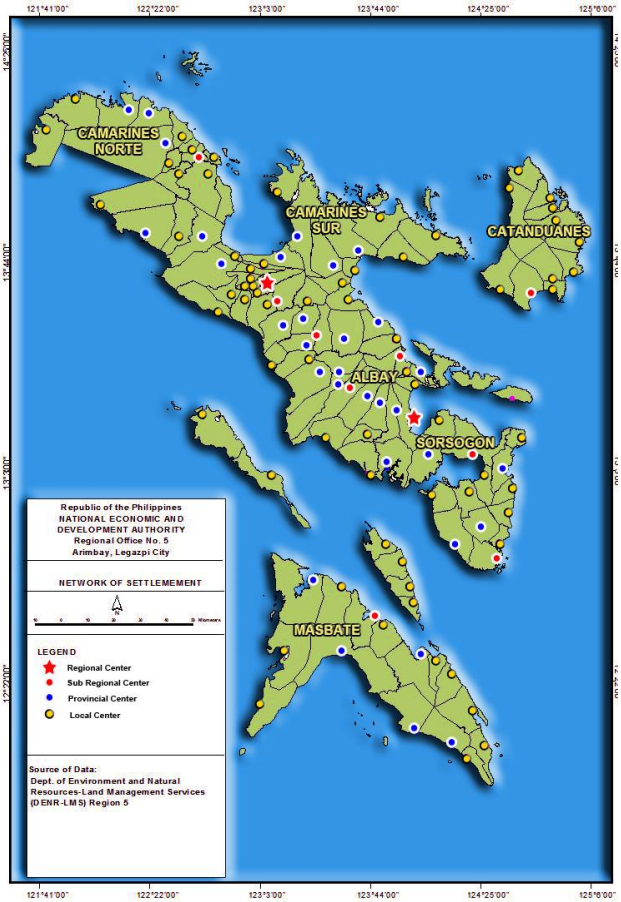
The RDP also identifies the roles of the Bicol Region in the country:

- As a geothermal energy supplier
- As a producer of agricultural commodities
- As an ecotourism destination
- As Luzon's gateway to the Visayas and Mindanao
- As an international gateway[7]

[6] Bicol Regional Development Plan 2017-2022. Page 6.
[7] Bicol Regional Development Plan 2017-2022. Page 12.

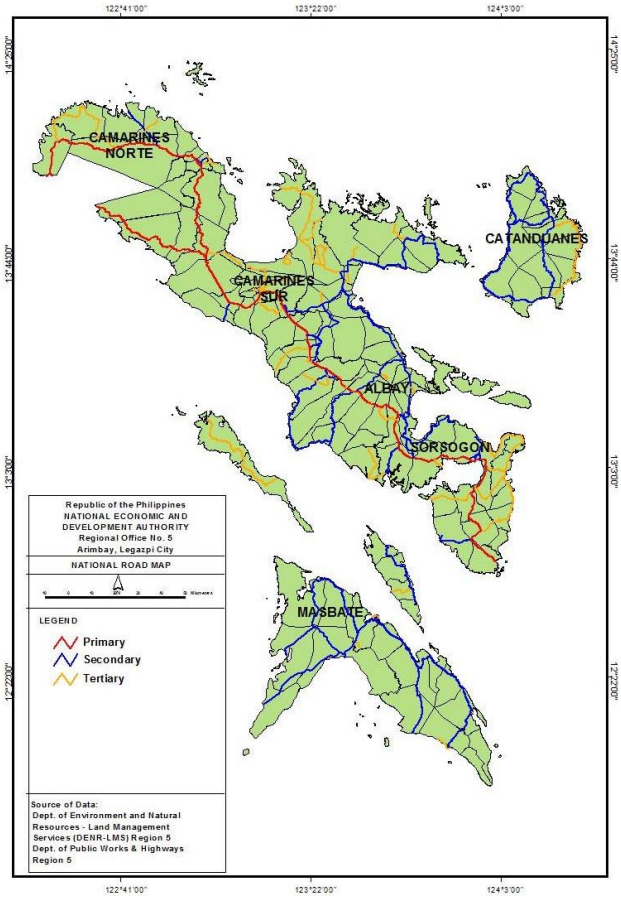
2) Regional Spatial Strategy

A regional spatial strategy for Bicol Region was formulated in the framework of LSDF and the NSS. **Figure 3.1-17**, **Figure 3.1-18** and **Figure 3.1-19** present a four-tiered settlement hierarchy, road network, and multi-hazard map, respectively.



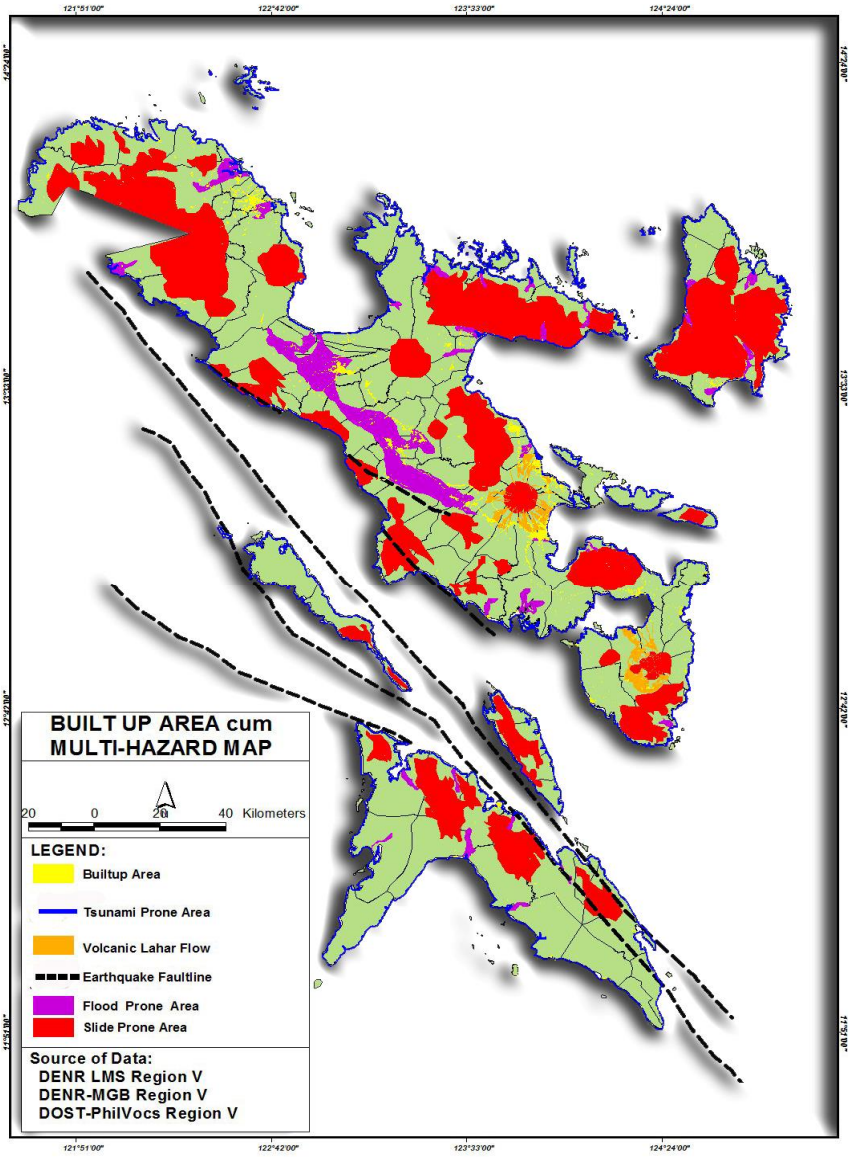
Source: Bicol RSDF in Bicol RDP 2017-2022. Page 40

Figure 3.1-17 Hierarchy of Settlements Map of the Bicol Region



Source: Bicol RSDF in Bicol RDP 2017-2022. Page 43

Figure 3.1-18 Road Network Map of the Bicol Region



Source: Bicol RSDF in Bicol Regional Development Plan 2017-2022. Page 40

Figure 3.1-19 Built-up cum Multi Hazard Map, Bicol Region

(8) Region VI: Western Visayas Regional Development Plan 2017-2022

1) Development Framework

The long-term vision for the Western Visayas Region is to be "a progressive region where people are prosperous, secure, healthy, happy and conscientious stewards of culture, heritage and natural resources."[8] While, the goal of the RDP 2017-2022 is to realize a "society that is PROGRESSIVE, where people are SECURE, HEALTHY, AND HAPPY. This will be manifested by an EMPOWERED PEOPLE and a PROGRESSIVE ECONOMY."[9] The selected macroeconomic targets are presented in **Table 3.1-7**. The strategies to achieve the targets focus on creating strong connection between the AFF sector and industry and service sectors, for example, linkage between tourism, a leading industry in the region, and agriculture which offers jobs to nearly 40% of labor force.

[8] Western Visayas Regional Development Plan 2017-2022. Page 6.
[9] Ditto. Page 53.

Table 3.1-7 Selected Macroeconomic Targets of Western Visayas 2017-2022

Indicator		Actual	Targets
		2016	2022
GRDP and GVA Annual Growth Rate (%)	GRDP	6.1	9.8 - 11
	AHFF	(1.9)	1.0 - 1.5
	Industry	11.5	16.3 - 18.5
	Services	6.7	7.9 - 8.2
Poverty Incidence Rate Reduced (Population) (%)		22.1	18.8

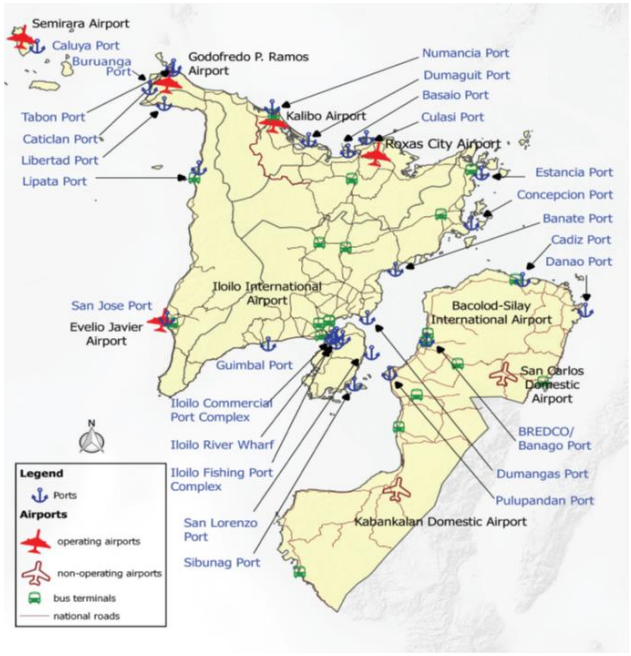
Source: NEDA. Western Visayas Regional Development Plan 2017-2022.

2) Regional Spatial Strategy

A regional spatial strategy is proposed for Western Visayas, with the hierarchy of settlements presented in **Figure 3.1-20** and identified locations with development potentials in agri-business, manufacturing, information and communications technology, tourism, and others. For example, the locations with high potential in development of the IT-BPO sector entail Iloilo, Bacolod, Roxas, and Kalibo. **Figure 3.1-22** shows areas for agro-industry and fishery. The connectivity strategy aims at improved mobility among settlements, production and tourism areas. Due to the characteristics of the region consisting of islands, improvement of port and airport including construction of new ports is expected. For reduction of vulnerability, hydro-meteorological and geologic and volcanic hazards are analyzed to identify highly susceptible areas to the disasters. In addition, climate change impact and adaptive capacity of sectors are also examined.

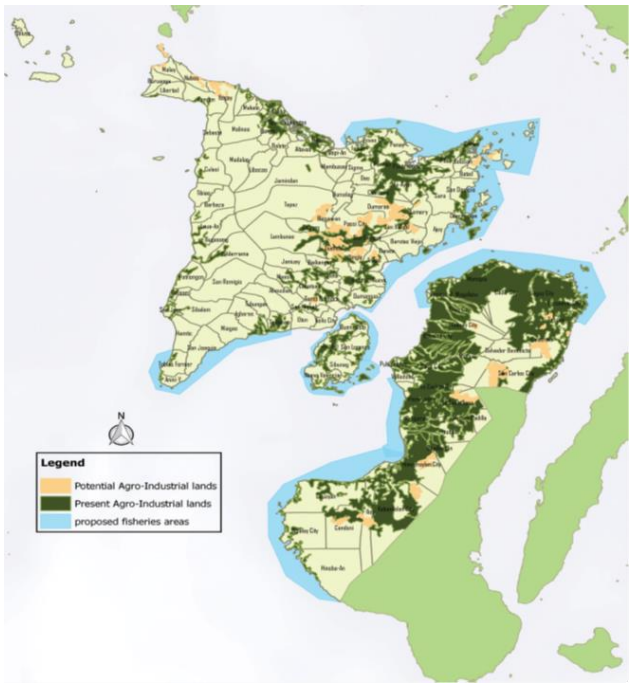
Source: VSDF 2015-2045, DRR CCA-Enhanced PDPFPs in Western Visayas Regional Development Plan 2017-2022

Figure 3.1-20 Hierarchy of Settlements



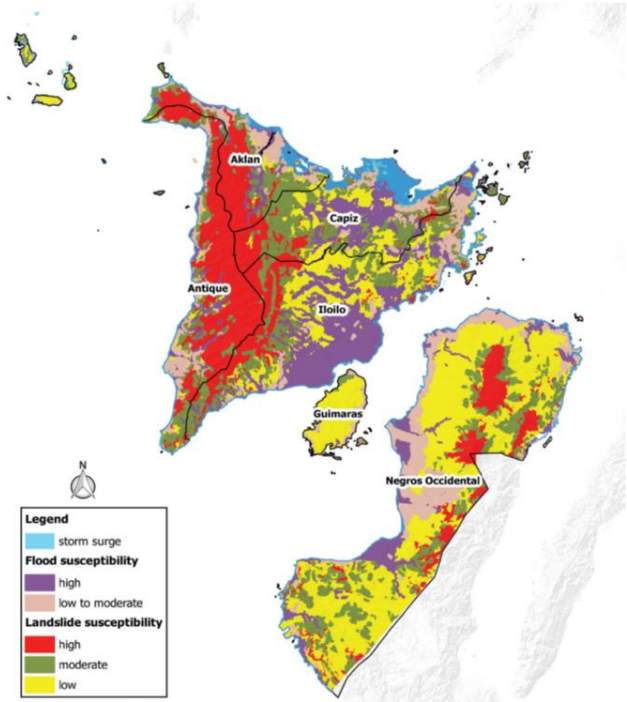
Sources: Western Visayas Regional Development Plan 2017-2022

Figure 3.1-21 Major Transportation Facilities



Source: Western Visayas Regional Development Plan 2017-2022

Figure 3.1-22 Agro-Industrial and Fisheries Areas for Development



Source: Western Visayas Regional Development Plan 2017-2022

Figure 3.1-23 Hydro-meteorological Hazards

(9) Region VII: Central Visayas Regional Development Plan 2017-2022

1) Development Framework

In pursuit of the long-term vision of AmBisyon Natin 2040, the Central Visayas Regional Development Plan 2017-2022 aspires to a) increase public trust in government; b) reduce inequality in access to development opportunities; and c) attain high and sustainable economic growth, for more inclusive growth[10]

The strategies for industry and services include: to expand economic opportunities by developing value chain and building linkages among agriculture, industry, and service sectors, promoting inclusive tourism development, and increasing FDIs among others. The plan identified inadequate infrastructure including transportation, communication and IT, and power supply, as one of constraints in enhancing competitiveness of the region. To address this development challenge, strategies for transportation aim to build a transport network for better access to markets, production areas, and industry locations, to make better intra- and inter island transport linkages, and to reduce traffic congestion in urban centers, among others.

Table 3.1-8 Selected Macroeconomic Targets of Central Visayas 2017-2022

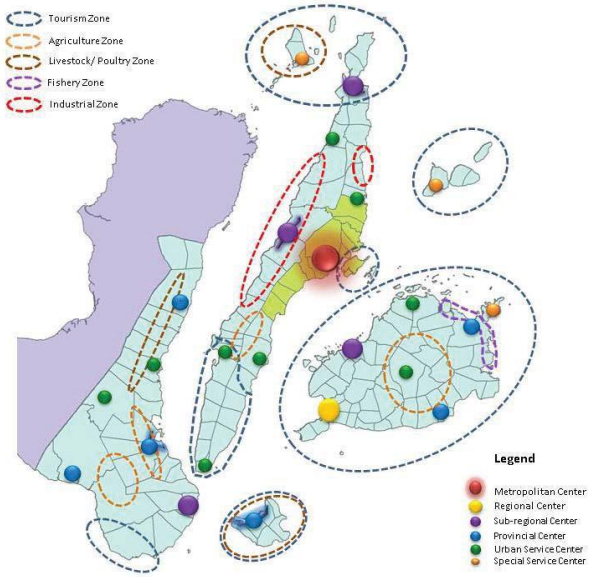
Indicator		Actual	Targets
		2017	2022
GRDP and GVA Annual Growth Rate (%)	GRDP	6.4 - 6.9	8.3 - 8.8
	AHFF	1.8 - 2.2	2.8 - 2.9
	Industry	7.9 - 8.4	10.0 - 10.5
	Services	5.9 - 6.4	7.5 - 8.0
Unemployment Rate (%)		4.5 - 4.8	3.0 - 3.3
Poverty Incidence Rate Reduced (Population) (%)		26.1	21.7

Source: NEDA. Central Visayas Regional Development Plan 2017-2022.

2) Regional Spatial Strategy

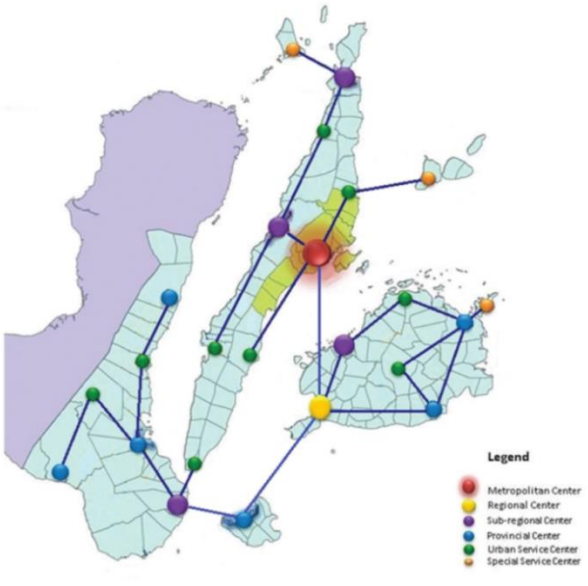
Spatial development in Central Visayas intends to achieve the goals of "the rational distribution of population, settlements, and economic activities; the economic integration of the provincial economies; the equitable access of economic opportunities and resources, and; the protection of the environment and reduction of vulnerability to hazards and climate change."[11] **Figure 3.1-24** and **Figure 3.1-25** present the settlement system; **Figure 3.1-26** and **Figure 3.1-27** show networks for connectivity. The strategy of vulnerability reduction seeks to protect conservation areas, specify high risk areas of disaster and the vulnerable population, apply mitigation measures, and create redundancy in transport network and infrastructure, etc.

[10] The Central Visayas Regional Development Plan 2017-2022. Page 135.
[11] Ditto. Page 26.



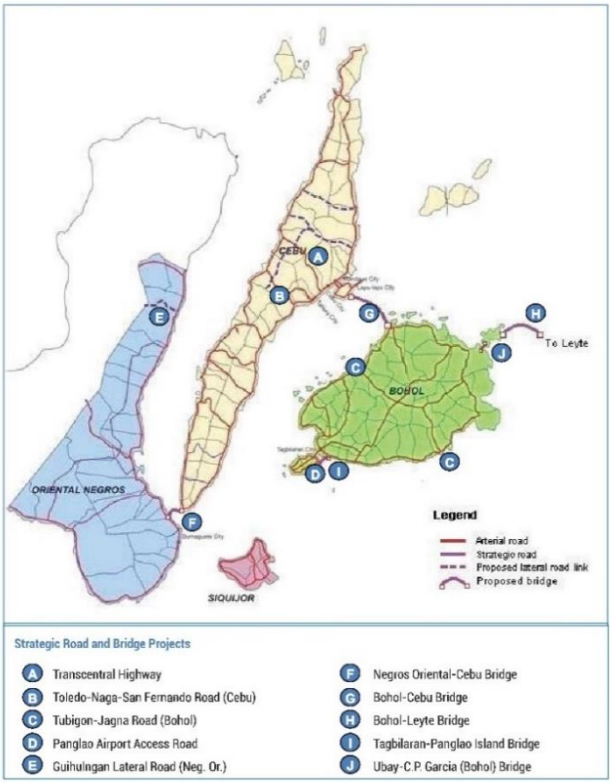
Source: Central Visayas Regional Spatial Development Framework 2016-2045 in Central Visayas RDP 2017-2022. Page 27.

Figure 3.1-24 Central Visayas Network of Urban Centers and Functions



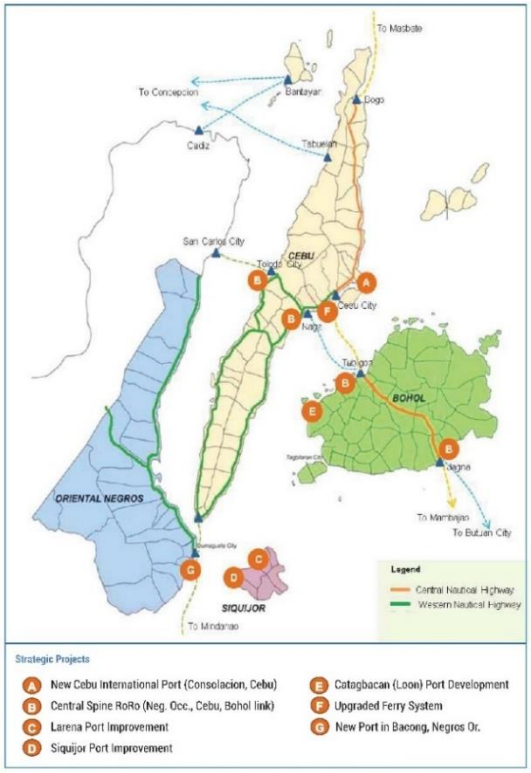
Source: Central Visayas Regional Spatial Development Framework 2016-2045 in Central Visayas RDP 2017-2022. Page 31.

Figure 3.1-25 Connectivity of Urban Centers/ Settlements



Source: Central Visayas Regional Spatial Development Framework 2016-2045 in Central Visayas RDP 2017-2022. Page 195.

Figure 3.1-26 Road Transport Network, Central Visayas



Source: Central Visayas Regional Spatial Development Framework 2016-2045 in Central Visayas RDP 2017-2022. Page 196.

Figure 3.1-27 Nautical Highway and Major Projects, Central Visayas

(10) Region VIII: Eastern Visayas Regional Development Plan 2017-2022

1) Development Framework

The long-term vision of Eastern Visayas in 2040 is to be "a resilient and prosperous region where people enjoy equitable socioeconomic opportunities for and benefits of sustainable human development." The Eastern Visayas Regional Development Plan 2017-2022 also holds up the two goals of "robust and sustained economic growth" and "reduced poverty and inequality in all dimensions." To achieve the goals and long-term vision, agriculture and fishery, manufacturing, and tourism are identified as the priority sectors that are expected to lead the regional economic growth by aiming to achieve: 1) resilient, high-earning and sustainable agriculture and fisheries sector, 2) expanded and diversified manufacturing subsector, and 3) vibrant tourism subsector.[12] The macroeconomic targets are summarized in **Table 3.1-9**.

The RDP identifies issues to be solved for enhancement of economic competitiveness, namely, weak and volatile economic expansion, insufficient decent jobs, high ratio of poverty disparity and income inequality, and less developed economic sectors such as tourism and industry. In addition, lack of infrastructure facilities is identified as an issue in industry sector development. To address the issues and achieve the goals, the RDP proposes development of quality infrastructure, and improvement of connectivity, as well as industry cluster development including economic zones.

Table 3.1-9 Selected Macroeconomic Targets of Eastern Visayas 2017-2022

Indicator			Actual	Targets	
		Base Year	Value	2017	2022
GRDP and GVA Annual Growth Rate (%)	GRDP	2015	3.90	5.2 - 5.7	6.8 - 7.0
	AHFF	2015	3.5	2.5 - 3.4	4.4 - 5.0
	Industry	2015	4,4	5.0 - 5.5	6.6 - 6.7
	Services	2015	6.8	6.5 - 6.9	7.8 - 8.0
Unemployment Rate (%)		2013	25.5	21.4	17.45
Poverty Incidence Rate (Population) (%)		2015	38.7	32.68	22.26

Source: NEDA. Eastern Visayas Regional Development Plan 2017-2022.

2) Regional Spatial Strategy

The regional concentration strategy, expressed by settlement hierarchy and connectivity networks in Eastern Visayas, is presented in **Figure 3.1-28** and **Figure 3.1-29**. A hazard map for vulnerability re-education is presented in **Figure 3.1-30**.

The Integrated Ecosystem Management (IEM) derived from the ridge-to-reef approach is utilized for the overarching strategy for spatial development in Eastern Visayas. By taking the three island groups of Leyte, Samar, and Biliran as a planning unit, five IEM zones are defined to identify appropriate actions, viz., 1) Zone A - Conservation, Protection, and Heritage Areas; 2) Zone B – Production Areas; 3) Zone C – Built-up Areas; 4) Zone D –Hazard-prone Areas; and 5) Zone E – Tourism Development Areas (TDAs).

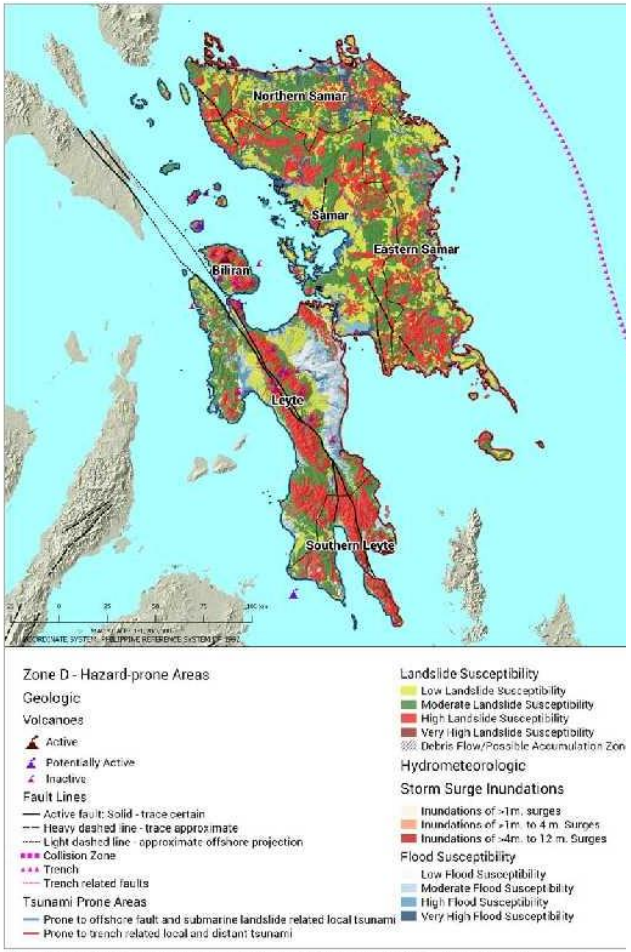
[12] The Eastern Visayas Regional Development Plan 2017-2022. Page 34.

Source: Eastern Visayas RDP 2017-2022. Page 22.

Figure 3.1-28 Connectivity of Settlements

Source: Eastern Visayas RDP 2017-2022. Page 23.

Figure 3.1-29 Connectivity to Other Regions



Source: Eastern Visayas RDP 2017-2022. Page 29.

Figure 3.1-30 Hazard Prone Area

(11) Region IX: Zamboanga Peninsula Regional Development Plan 2017-2022

1) Development Framework

The mid-term vision for Zamboanga Peninsula is to be "the Center of Sustainable Agri-fishery Industries of the Philippines." [13] To achieve inclusive economic development and internationally thriving agri-fishery industries, the following six issues should be resolved:

(a) To keep a high growth rate of Gross Regional Domestic Product (GRDP), despite the low growth rate of productivity of the agri-fisheries industry and the region's weak industry and services;

(b) To quicken reduction of poverty incidence

(c) To provide quality basic social services in pace with the population growth

(d) To develop and upgrade infrastructure

(e) To address environmental degradation

(f) To maintain sustainable peace and order

The macroeconomic targets are summarized in **Table 3.1-10**. Key issues in economic developments include low productivity, lack of Infrastructure and connectivity including logistics facilities, undeveloped tourism sector, among others. To attain the stated objectives and vision, strategies for better productivity, development of industry clusters using SEZs and cooperatives, and infrastructure development area adopted, by taking advantage of opportunities found in the region, such as rich natural resources and BIMP-EAGA arrangement.

Table 3.1-10 Selected Macroeconomic Targets of Zamboanga Peninsula 2017-2022

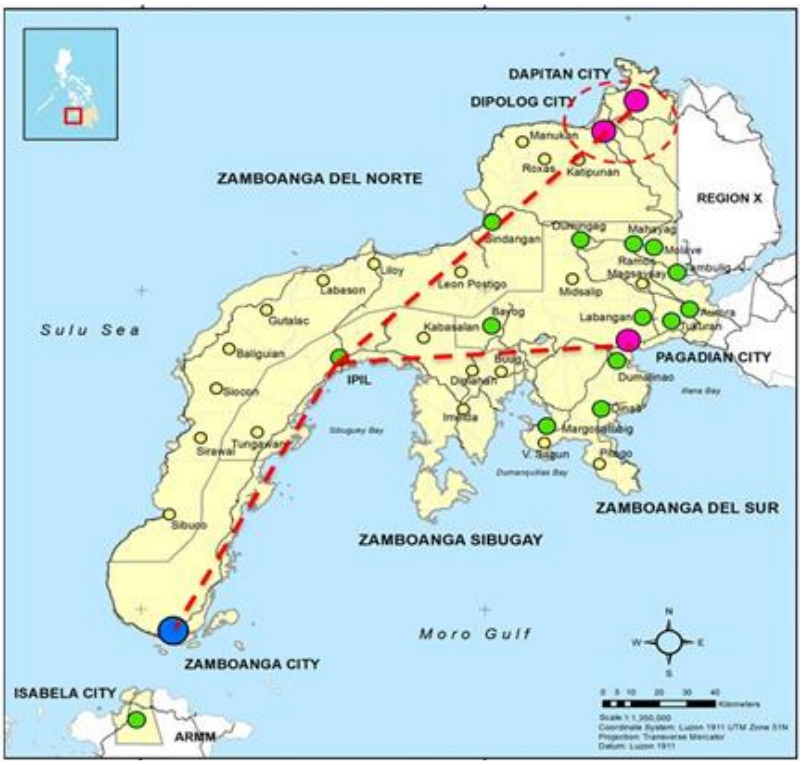
Indicator		Average	Targets
		2011-2015	2017-2022
Population Growth (%)		1.21	1.1 - 1.2
GRDP and GVA Annual Growth Rate (%)	GRDP	6.2	7.2 - 8.3
	AHFF	(0.56)	2.0 - 2.9
	Industry	11.1	13.3 - 15.2
	Services	6.56	6.2 - 6.7
Unemployment Rate (%)		3.5	2.0 - 3.0
Underemployment Rate (%)		22.0	18.0 - 21.0
Poverty Incidence Rate (Population) (%)		33.9*	30.0 - 32.0

*Source: NEDA. Zamboanga Peninsula Regional Development Plan 2017-2022. * Poverty Incidence: 2015 Data*

2) Regional Spatial Strategy 2016-2045

Adapting the Concentric Y-Strategy shown in **Figure 3.1-31,** the spatial development strategy is formulated to "(a) build efficient, productive and green urban areas for inclusive development; (b) improve connectivity within and beyond the borders of Zamboanga Peninsula; (c) reduce vulnerability of communities from risks due to natural hazards; (d) reduce poverty; and (e) ensure peace, security and safety."[14] **Figure 3.1-33** and **Figure 3.1-34** present the settlement network and transport network, respectively. In the proposed settlement hierarchy, Zamboanga City is categorized into a regional center; however, it should be reminded that the city will obtain metropolitan status by 2045, exceeding the population of 1 million.

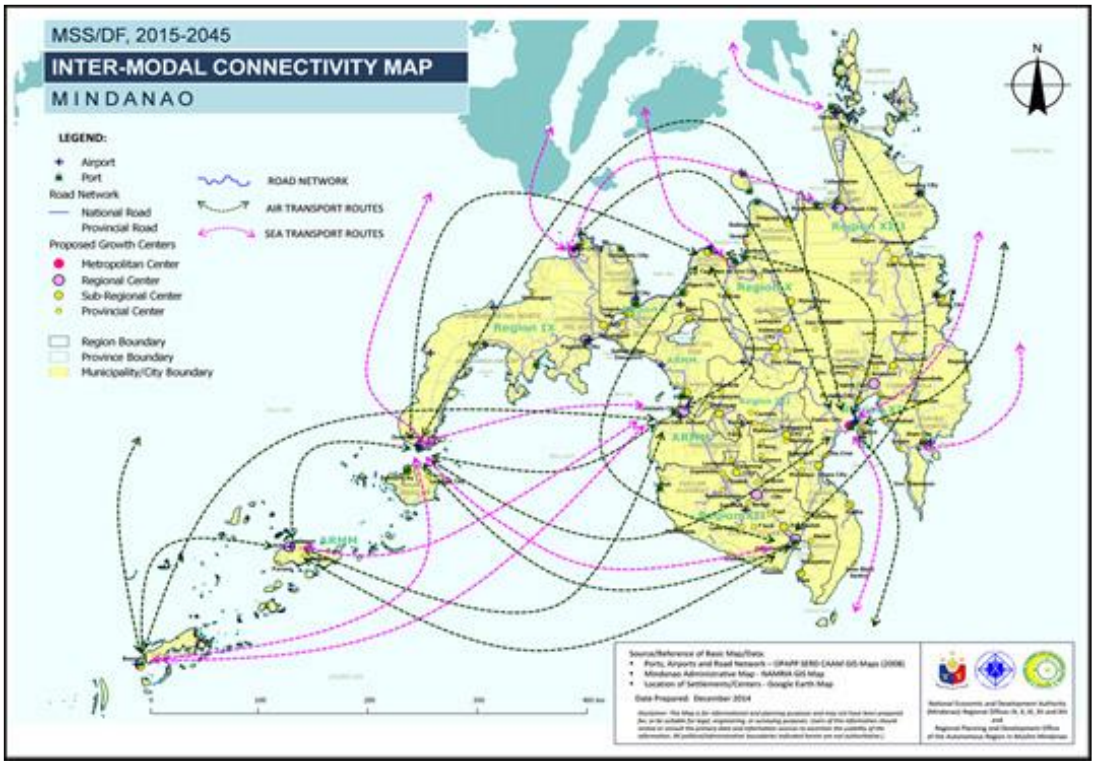
[13] Zamboanga Peninsula Regional Development Plan 2017-2022. Page 6.
[14] *Zamboanga Peninsula RDP 2017-2022 Page* 23.



Source: Zamboanga Peninsula RDP 2017-2022 Page 24.

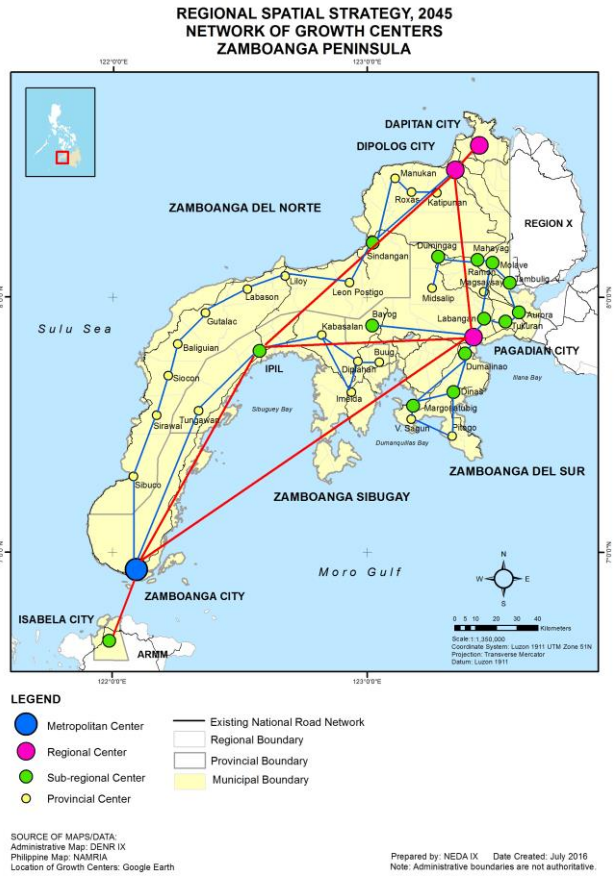
Figure 3.1-31 Concentric Y Strategy

For the connectivity strategy, inter-modal transport connecting major urban centers in Mindanao and other regions, and in neighboring countries should be established. In relation to the vulnerability reduction strategy, the conflict between urbanization and protection should be addressed as well.



Source: Zamboanga Peninsula RDP 2017-2022 Page 24.

Figure 3.1-32 Intermodal Connectivity Map

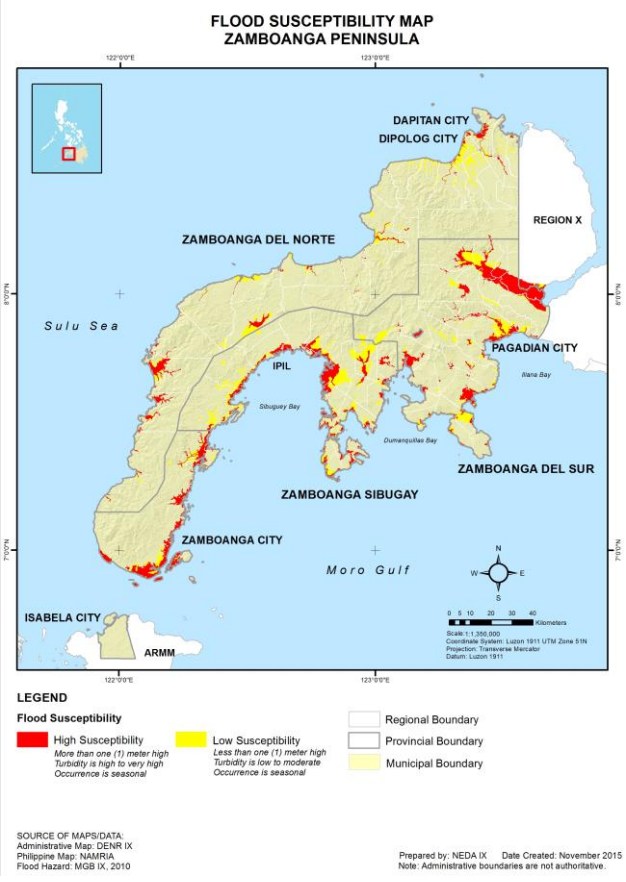


Source: Zamboanga Peninsula RDP 2017-2022 Page 29.

Figure 3.1-33 Regional Spatial Strategy 2045

Source: Zamboanga Peninsula RDP 2017-2022. Page 172.

Figure 3.1-34 Transport Network Map



Source: Zamboanga Peninsula RDP 2017-2022. Page 12.

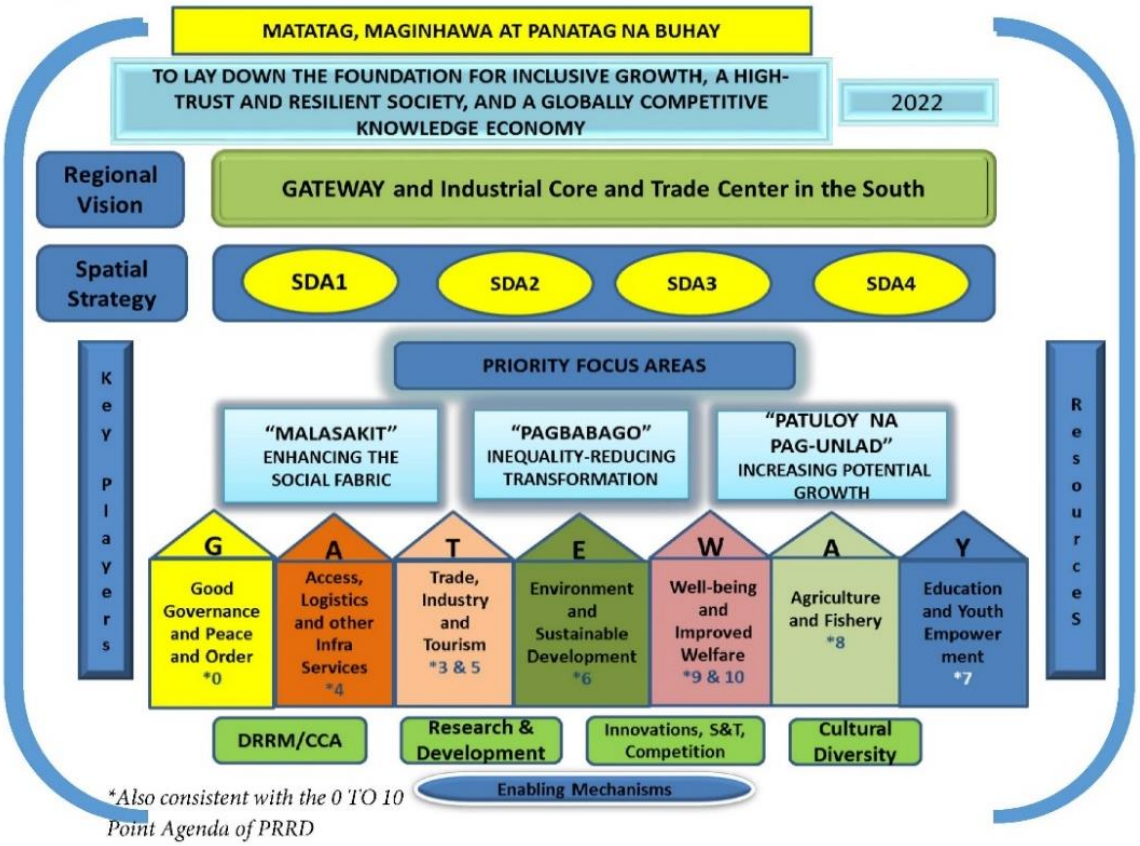
Figure 3.1-35 Flood Susceptibility Map

(12) Region X: Northern Mindanao Regional Development Plan 2017-2022

1) Development Framework

Anchoring to the long-term vision of *AmBisyon Natin 2040*, Northern Mindanao Region envisages to be "the gateway and leading industrial core and trade center in Southern Philippines, with dynamic men and women enjoying equal opportunities in sustainability, harnessing its agricultural and natural resources in building a decent, harmonies and safe environment."[15] This vision expresses the desire for the region to become a transshipment hub and industrial center as well as a major provider of high-value agricultural and fishery products. The development plan framework is presented in **Figure 3.1-36**. The priority focus areas (PFAs) with advantages are identified, including high value agricultural crops; livestock, poultry and fishery, fresh and processed foods; metal and engineering; tourism; and other emerging sectors. The macroeconomic targets are presented in **Table 3.1-11**.

The identified development issues include: low productivity, insufficient enterprises, formulation of value chain and industry cluster, market linkage, and Metropolitan Food Cluster/ agri-based product cluster approach, in the AFF sector; high cost of doing business, limited access to production networks, insufficient infrastructure, and market access among others, in the industry and service sectors; and poor connectivity in rural, production and left-behind area, traffic congestion, vulnerability to hazards, and improvement of airport capacity and port facilities in the transportation sector.



Source: Northern Mindanao RDP 2017-2022 Page 46.

Figure 3.1-36 Northern Mindanao Development Plan Framework

[15] Northern Mindanao *RDP 2017-2022 Page* 45.

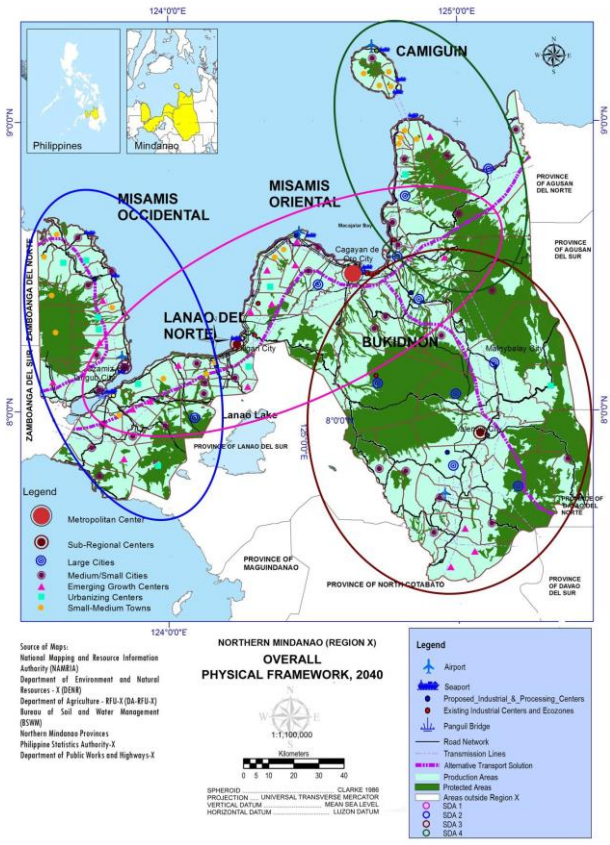
Table 3.1-11 Selected Macroeconomic Targets of Northern Mindanao 2017-2022

Indicator		Baseline	Average	Targets	
		Year	Value	2017	2022
GRDP and GVA Annual Growth Rate (%)	GRDP	2010-2015	6.3	5.1 - 6.7	6.1 - 8.2
	AHFF	2010-2015	3.7	4.0 - 5.5	4.5 - 7.0
	Industry	2010-2015	7.6	6.0 - 7.5	6.0 - 8.0
	Services	2010-2015	6.9	5.0 - 6.7	7.0 - 9.0
Underemployment Rate (%)		2015	24.9	24	<20
Poverty Incidence among Families (%)		2015	30.3	25 - 27 (2019)	22 - 24

Source: NEDA. Northern Mindanao Regional Development Plan 2017-2022.

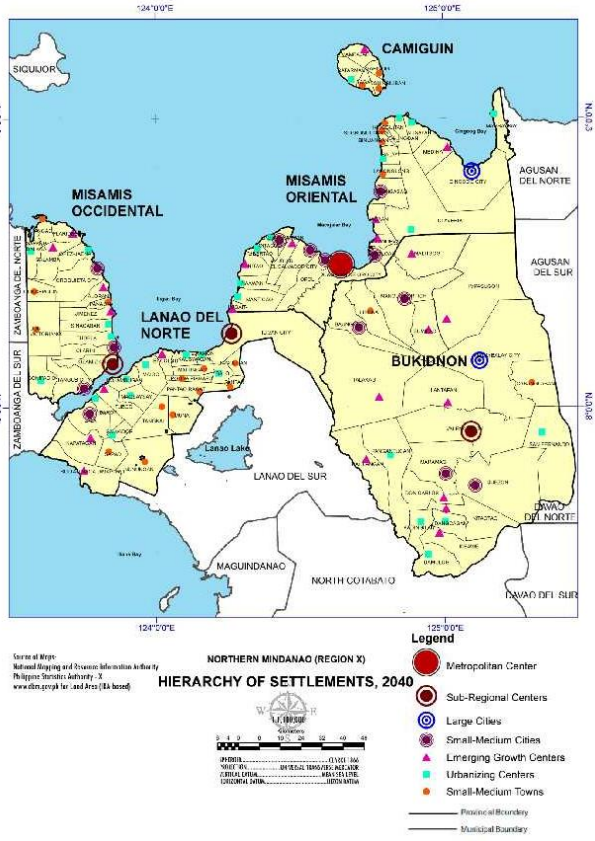
2) Regional Spatial Strategy

The Regional Spatial Strategy for Northern Mindanao is expressed in the Climate and Disaster Risk-Sensitive Regional Physical Framework Plan 2013-2040. Guided by the vision, the RPFP has proposed the physical framework, hierarchy of settlements, infrastructure framework, and vulnerability reeducation strategies, as shown from **Figure 3.1-37** to **Figure 3.1-40**.



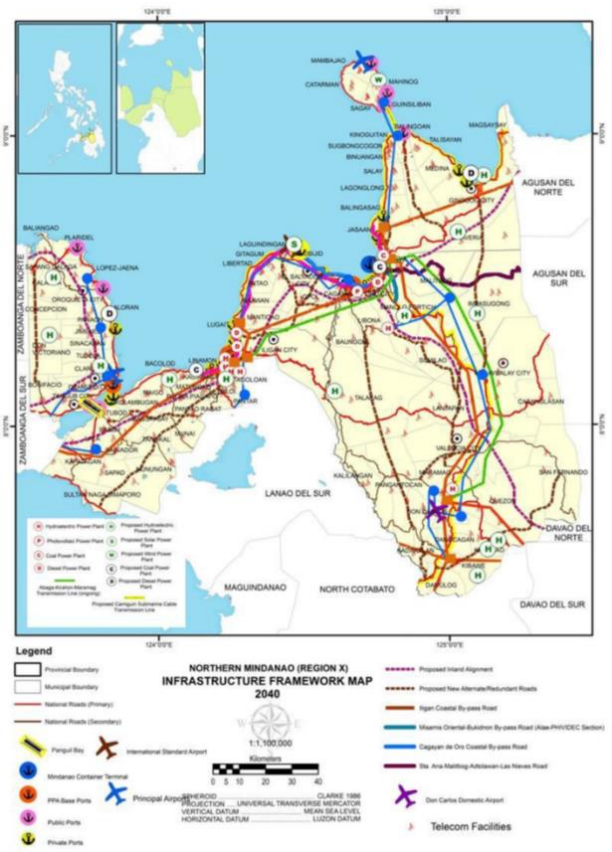
Source: NEDA. Northern Mindanao Regional Development Plan 2017-2022. Page 22.

Figure 3.1-37 Physical Framework 2040



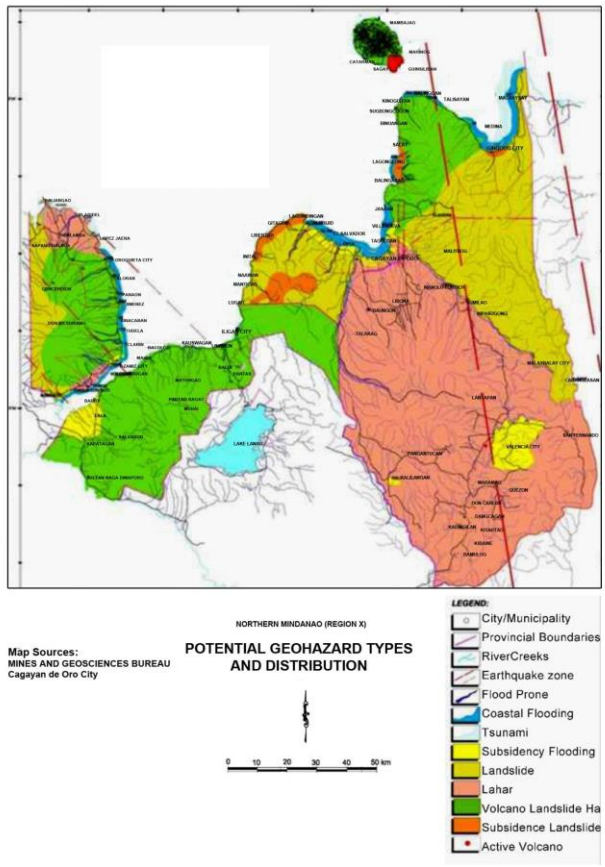
Source: NEDA. Northern Mindanao Regional Development Plan 2017-2022. Page 39

Figure 3.1-38 Hierarchy of Settlements



Source: NEDA. Northern Mindanao Regional Development Plan 2017-2022. Page 376.

Figure 3.1-39 Infrastructure Framework Map



Source: NEDA. Northern Mindanao Regional Development Plan 2017-2022. Page 24.

Figure 3.1-40 Potential Geohazard Types and Distribution

(13) Region XI: Davao Regional Development Plan 2017-2022

1) Development Framework

Adapting the objectives and strategies for the long-term vision, *AmBisyon Natin 2040*, and PDP 2017-2022, the Davao Region pursues to build "the foundation for inclusive growth, a high-trust and resilient society, and a globally competitive knowledge economy." The plan aims to achieve the macroeconomic targets presented in **Table 3.1-12**.

The development issues and challenges identified for each sector entail: AFF Sector: inadequate logistics and infrastructure support for the agriculture, inadequate delivery of services, inadequate capacity to cope with climate change risks, unsustainable fishery, contamination of river water for irrigation, issues on land use and tenure, and inadequate market linkages; industry and service sectors: lack or readiness to participate in the ASEAN economic integration, standards issue, high vulnerability to external market shock, slow infrastructure and logistics / supply chain development, weak R & D and technology adoption, human resource development, etc.; and in infrastructure: limited internal mobility connectivity of rural production areas and the market, and limited domestic and international connectivity. The strategies are identified to address those issues, such as pursuit of agro-industrial development (manufacturing development by industry cluster), massive investment in logistics and infrastructure, reduction of the cost of doing business, etc. for industry and service sector and for infrastructure sector, enhancement of internal circulation mobility and external linkage.

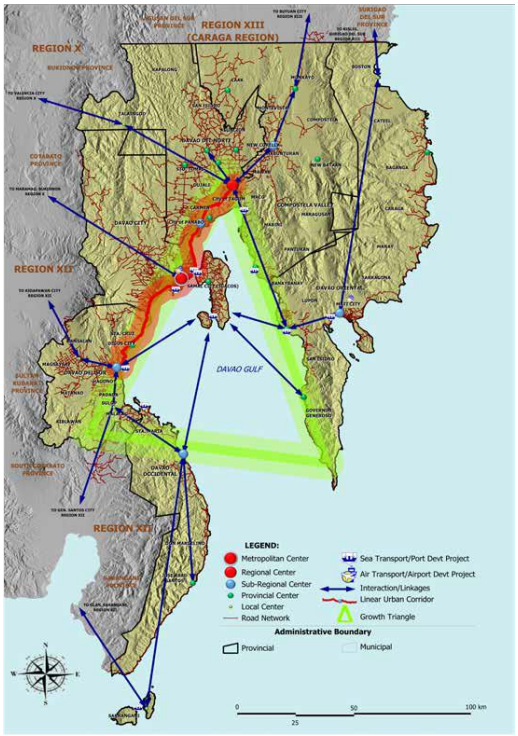
Table 3.1-12 Selected Macroeconomic Targets of Davao 2017-2022

Indicator		Baseline Year	Average Value	Targets 2022
GRDP and GVA Annual Growth Rate (%)	GRDP	2015	7.9	10.5 - 11.5
	AHFF	2015	1.4	1.5.5 - 2.5
	Industry	2015	11.6	14.0 - 15.0
	Services	2015	7.4	9.2 - 10.2
Underemployment Rate (%)		2015	16.1	13.0
Poverty Incidence among Families (%)		2015	16.6	13.6

Source: NEDA. Davao Regional Development Plan 2017-2022.

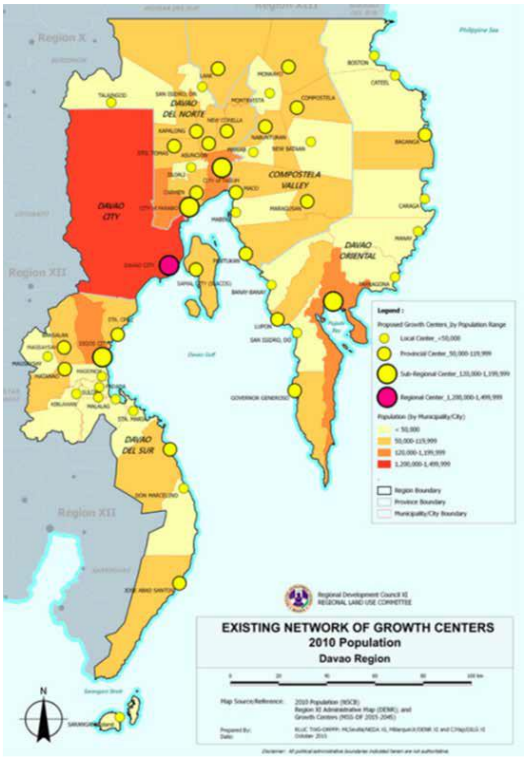
2) Regional Spatial Strategy

The spatial strategy for Davao Region is formulated by the Davao Region Spatial Development Framework (DRSDF) 2015-2045, guided by the Mindanao Spatial Strategy/Development Framework (MSS/DF) 2015–2045 and the NSS. As components of the spatial strategy, overall strategy of C. O. R. E. Growth Triangles anchoring in agri-industry centers along the Davao Gulf and settlement hierarchy are presented in **Figure 3.1-41** and **Figure 3.1-42**, respectively. High risks of hydro-meteorological and geologic hazard, including flooding, rain-induced landslides and active fault lines, are found in the Davao Region (see **Figure 3.1-43**).



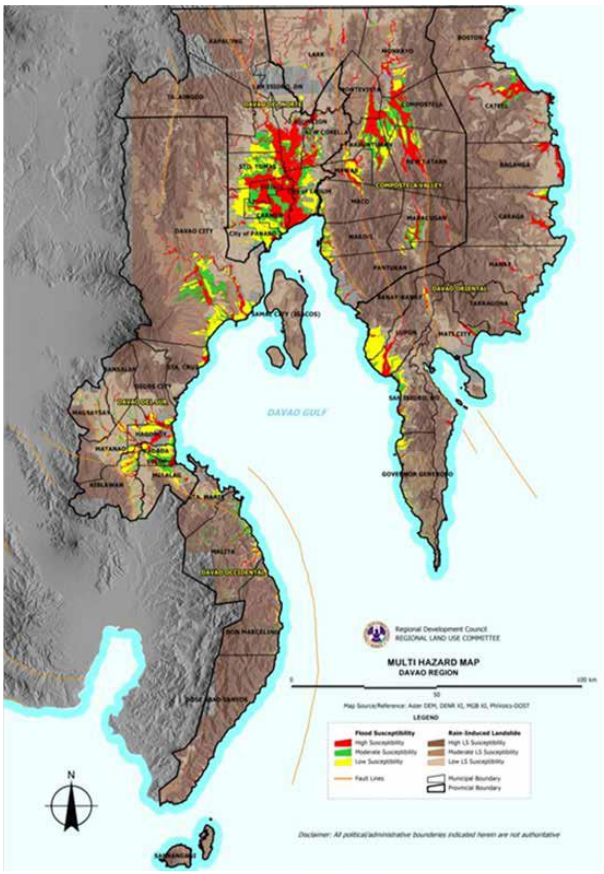
Source: Davao RDP 2017-2022. Page 34.

Figure 3.1-41 Overall Spatial Strategy



Source: Davao RDP 2017-2022. Page 30.

Figure 3.1-42 Existing Network of Growth Centers



Source: Davao RDP 2017-2022. Page 27.

Figure 3.1-43 Multi-hazards Map

(14) Region XII: SOCCSKSARGEN Regional Development Plan 2017-2022

1) Development Framework

The SOCCSKSARGEN Regional Development Plan 2017-2022 intends to archive the development goal, which is "to reduce poverty and to share equitably the gains of economic growth with the most disadvantaged sector." [16] The strategies to attain goals are:

(a) To transform agriculture into a competitive agribusiness industry;

(b) To ensure that all school-age population are given equal opportunities to basic, higher and technical-vocational education;

(c) To improve existing dilapidated hospital buildings, upgrading facilities and equipment, and engaging more health workers;

(d) To build resiliency of communities and reducing vulnerabilities of individuals and families;

(e) To accelerate build-up of resilient infrastructure facilities integrating DRR-CCA measures;

(f) To improve public financial management;

(g) To institutionalize the Restorative Justice Program, enhancing the three-pronged harmonized rehabilitation program and the Volunteer Probation Assistance (VPA) Program;

(h) To sustain and support the peace initiatives of the government; and

[16] The SOCCSKSARGEN Regional Development Plan 2017-2022. Page 6.

(i) To harmonize land uses from ridge-to-reef by integrating forest land use plans, watershed management plans, protected areas management plans, and other related forestry plans into the LGUs' CLUP and diversifying livelihood sources of upland farmers through multi-story agroforestry and partnership with private investors and forest products processors[17]

Table 3.1-13 Selected Macroeconomic Targets of SOCCSKSARGEN 2017-2022

Indicator		Baseline	Average	Targets
		Year	Value	2022
GRDP and GVA Annual Growth Rate (%)	GRDP	2016	5.4 - 6.0	8.9 - 9.4
	AHFF	2016	9.5	4.5 - 5.0
	Industry	2016	13.5	10 - 10.5
	Services	2016	7.4	10 - 10.5

Source: NEDA. SOCCSKSARGEN Regional Development Plan 2017-2022.

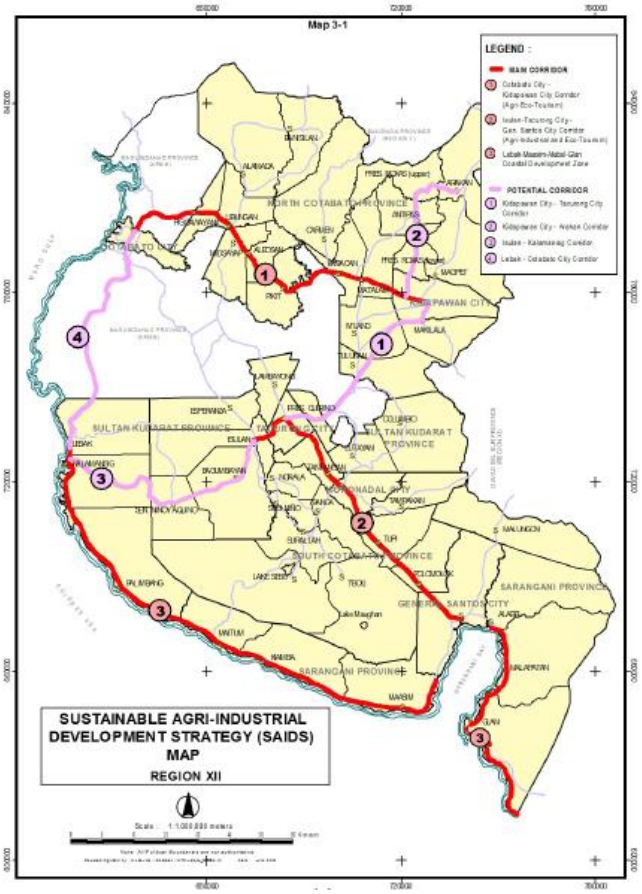
The development issues and strategies in each sector are summarized as follows. In the AFF sector where more than half of the region's labor forces are engaged, low productivity and production is pointed out as issues. In the industry sector, development issues include: no value added to agricultural product due to lack of the linkage of agriculture and industry, standardization, lack of financial capital for MSMEs, insufficient processing facilities, less diversified export products, lack of competitive products, cost for the certification of organic agriculture products, and lack of champion for industry clusters. Development issues in the service sector entail the need for competitive sector, economic zone development for employment generation, and less developed tourism sector. In the transport infrastructure sector, inefficient transport system including road and sea and airport facilities is identified as the essential issue.

2) Regional Spatial Strategy

To realize the vision of "an agri-industrial hub and ecotourism center in southern Philippines," the objectives of the spatial strategy are promotion of foundation of SEZs and also Tri-Corridor Development. The three corridors are the following:

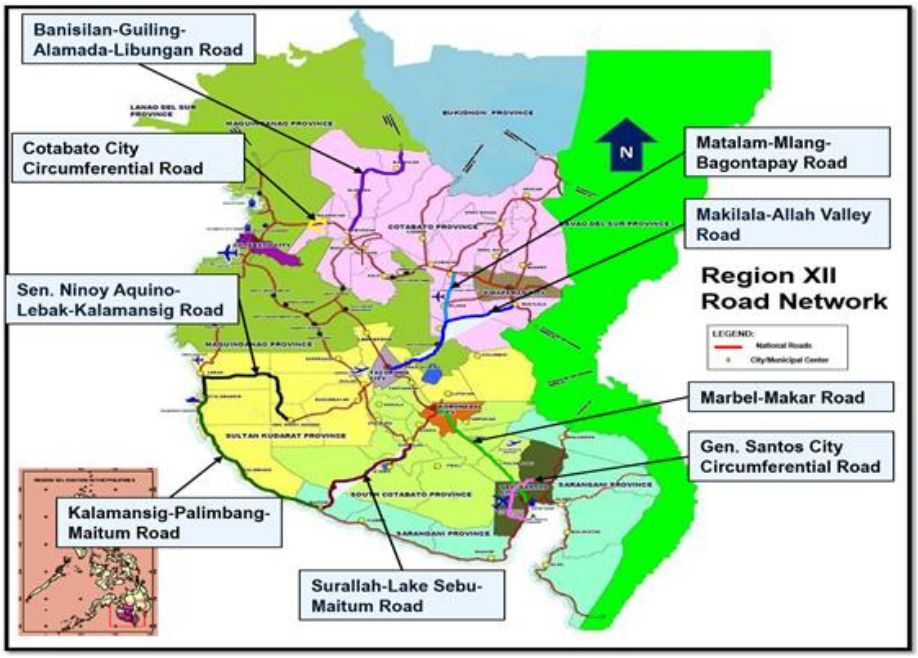
- Cotabato City-Kidapawan City (CK) Agri-Industrial and Eco-Tourism Corridor
- Isulan-General Santos (IGS) Agri-Industrial and Eco-Tourism Corridor
- Lebak-Maasim-Alabel-Glan (LMAG) Coastal Development Zone

[17] Ditto. Page 6-7.



Source: NEDA. SOCCSKSARGEN Regional Development Plan 2017-2022. Page 20.

Figure 3.1-44 The Regional Spatial Development Strategy 2015-2045



Source: NEDA. SOCCSKSARGEN Regional Development Plan 2017-2022. Page 157.

Figure 3.1-45 Kilos Abante Programs/Projects (KAPP), Roads

(15) Region XIII: Caraga Regional Development Plan 2017-2022

1) Development Framework

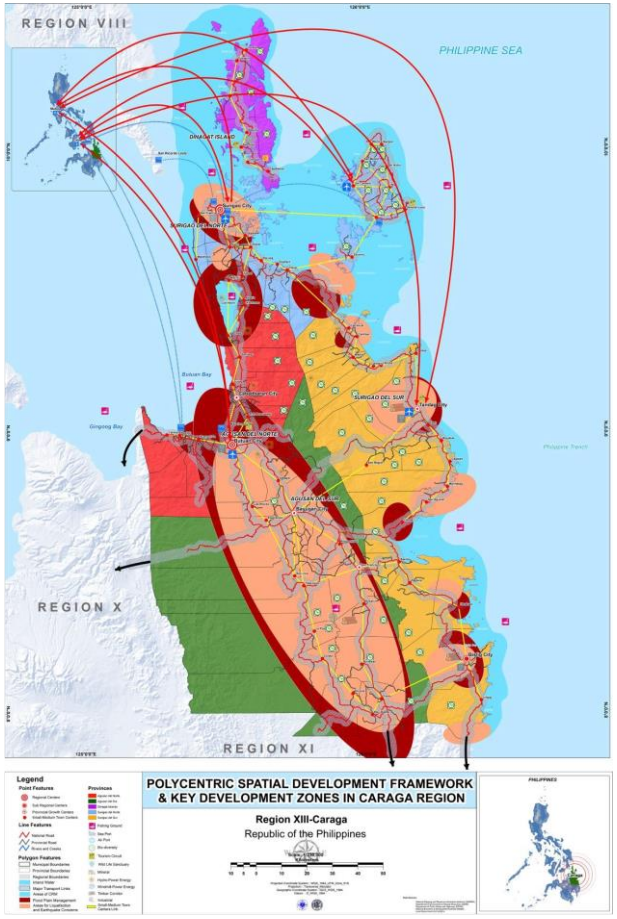
As its long-term vision, "with the blessings of the Almighty, Caraga Region is (to be) sustainably developed culturally responsive, and globally competitive, where everyone equitably enjoys the fruits of peace and prosperity" by 2040. For the planning period from 2017 to 2022 of the Caraga Regional Development Plan, the Region is envisaged to be the "Fishery, Agro-Forestry, Mineral and Ecotourism (FAME) Center of the Country."[18]

The development issues identified include: low performance of the AFF sector and decline of performance of mining and quarrying sector, and high unemployment and poverty incidence. The AFF sector adopts strategies to increase productivity, to solve land use conflict, to protect prime farms, to provide access to financial products, to expand access to markets, and to reduce vulnerability. In the industry and service sector, the strategies are formulated, with the intention to diversify the industry and service by value-adding activities and mainstream ecotourism, to reduce the negative impact of mining, to increase access to economic opportunities, and to reduce vulnerability to disasters. The strategies for infrastructure, especially transportation, aim to create more linkages of road and sea, to enhance sea networks and to promote strategic inter-island bridge, to improve connectivity to tourism sites, ports, production and conflict areas, and to relocate Butuan City Airport and upgrade it to an international airport.

2) Regional Spatial Strategy

In the Caraga Regional Spatial Development Framework (CRSDF) 2015-2045, a polycentric network of spatial structure was proposed, to achieve the goal of becoming the Fishery, Agroforestry, Mineral, and Ecotourism (FAME). The CRSDF also identified key development zones (KDZ) of food production, fishery development, forest planation, mineral development and ecotourism development. The polycentric structure, hierarchy of settlements, and major existing airports and seaports are presented in **Figure 3.1-46**, **Figure 3.1-47**, and **Figure 3.1-48**, respectively. **Figure 3.1-49** provides a multi-hazard map for the strategy of vulnerability reduction.

[18] Caraga Regional Development Plan 2017-2022. Page 9 and 10.



Source: Caraga RDP 2017-2022. Page 27

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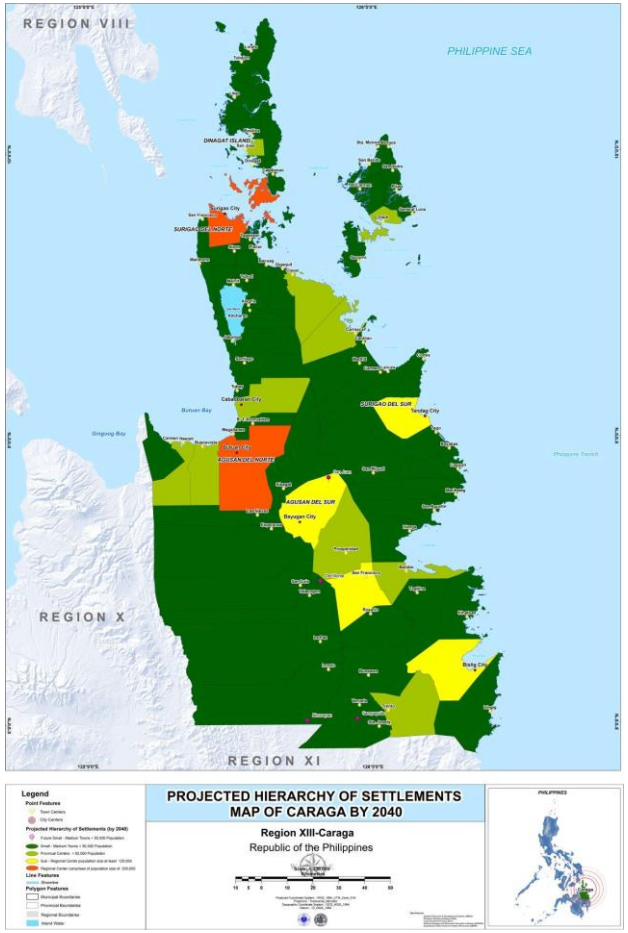
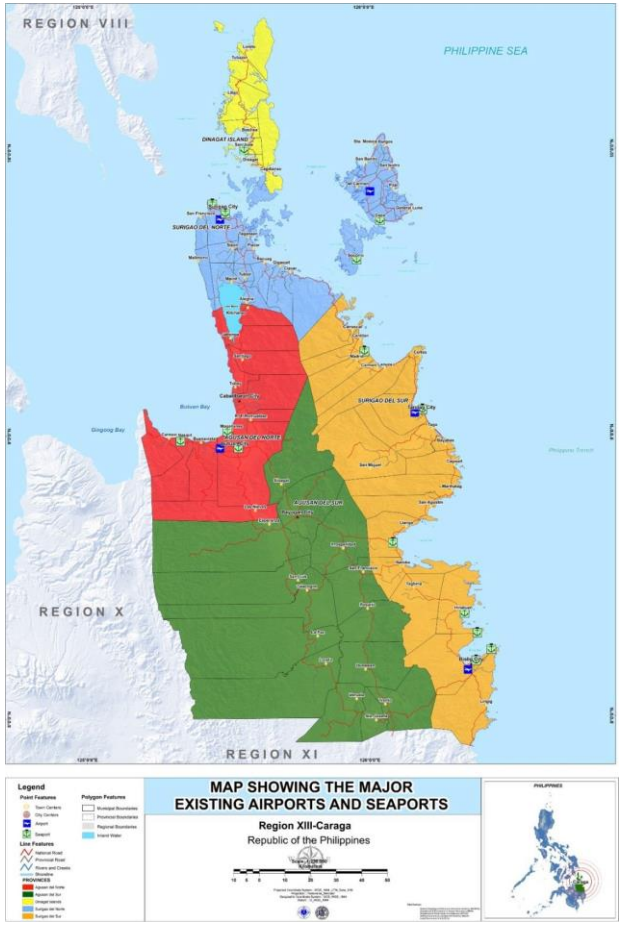
Figure 3.1-46 Polycentric Spatial Development Framework & Key Development Zones in Caraga Region



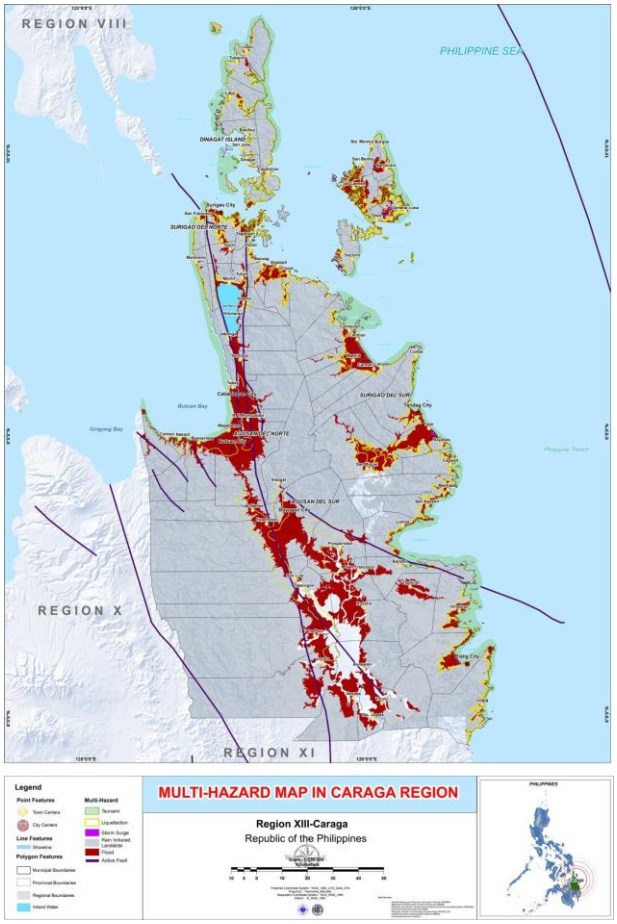
Source: Caraga RDP 2017-2022. Page 36.

Figure 3.1-47 Projected Hierarchy of Settlements in 2040



Source: Caraga RDP 2017-2022. Page 41.

Figure 3.1-48 Major Airport and Sea ports



Source: Caraga RDP 2017-2022. Page 43.

Figure 3.1-49 ***Multi-Hazard Map***

(16) ARMM Regional Development Plan 2017-2022

1) Development Framework

Guided by the long-term vision of the nation, the long-term vision of ARMM Region is that:

"by 2040, the peoples in the Bangsamoro are self-governing with a predominantly middle-class society living in safe communities, having a dynamic economy including a Halal ecosystem, enjoying inclusive peace and diverse cultures, who shall enhance sustainable development ensuring that responsibilities and benefits are shared by all."[19]

The priority for the planning period of 2017-2022 is peace and governance which create the foundation for development. The six development goals for ARMM from 2017 to 2022 are:

(a) Open, transparent, accountable and inclusive governance practiced and sustained in ARMM;

(b) Access of ARMM communities to basic services for human capital development improved;

(c) Environment for more secured community in ARMM improved and sustained;

(d) Investments, employment and income in ARMM increased;

(e) Infrastructure development for socio-economic growth in the region accelerated; and

(f) Integrity of ecosystems, adaptions to climate change, and disaster resilience of communities in ARMM enhanced.

[19] ARMM Regional Development Plan 2017-2022. Page 6.

For poverty reduction, a long-term strategy and short-term strategies are identified. The long-term poverty strategy aims to develop agri-processing industry by connecting the AHFF sector with industry. As a consequence, farmers will seek jobs in the industry sector. The short-term strategy takes a community-driven and development model, to secure the four basic needs, namely, food, water, light, and shelter.

Table 3.1-14 Selected Macroeconomic Targets of ARMM 2017-2022

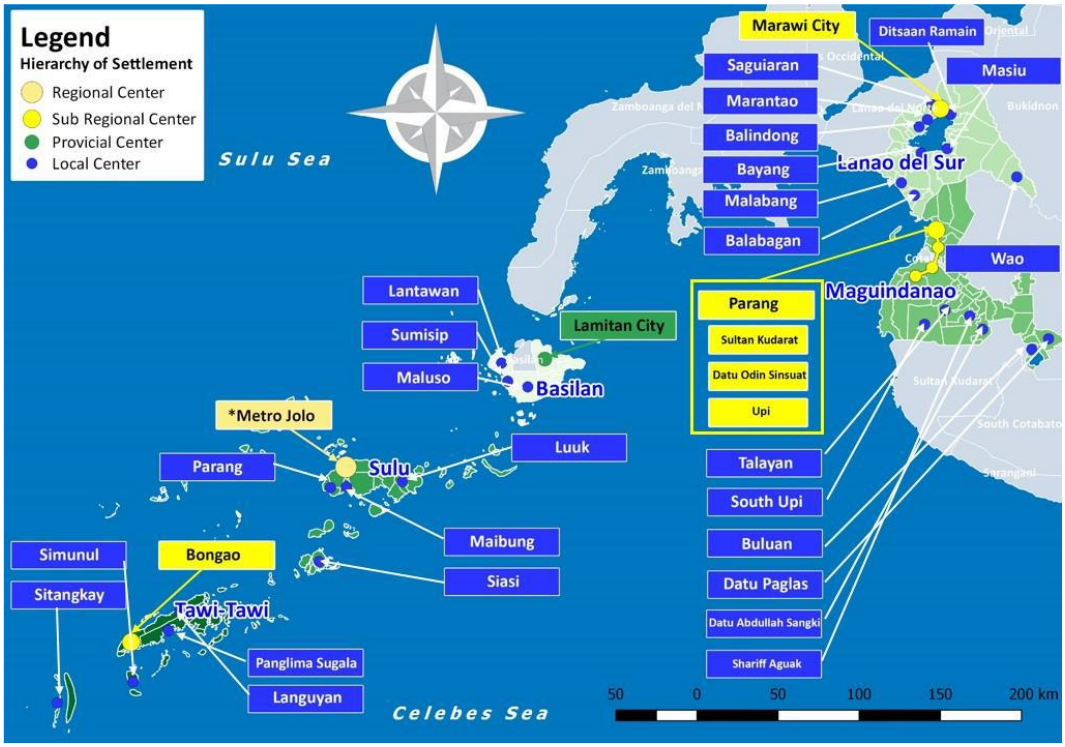
Indicator		Targets	
		2017	2022
GRDP and GVA Annual Growth Rate (%)	GRDP	3.0 - 3.51	5.25 - 5.68
	AHFF	1.38 - 1.59	2.44 - 2.65
	Industry	11.45 - 14.23	25.34 - 28.11
	Services	4.53 - 4.96	6.68 - 7.11
Poverty Incidence (5)		45.20	33.20

Source: NEDA. ARMM *Regional Development Plan 2017-2022.*

The AHFF sector in ARMM contributes nearly 60% of the regional output and offers jobs to more than half of the labor force. The AHFF sector can significantly benefit from the BIMP-EAGA by exporting Halal foods; however, the sector does not grow so easily because of low production, lack of technical support, lack of access to capital, insufficient infrastructure, high cost of inputs, low capacity, insufficient support to the halal food industry, and absence of climate change adaption plan, among others. These development challenges should be addressed by taking strategies for product increase (development of agri-processing centers, development of alternative markets, enhancement of cooperatives, Freeport management, involvement in BIMP-EAGA, etc.), availability of nutrition foods, securing of land tenure, and climate change adoption. The strategies proposed for industry and service sectors include: value-addition to agri-fishery products with halal standard compliance, creation of business-friendly environment, opportunities in tourism and halal services, introduction of Islamic finance and other financial institutions, investments in ecozones and maximization of BIMP-EAGA opportunities, and others.

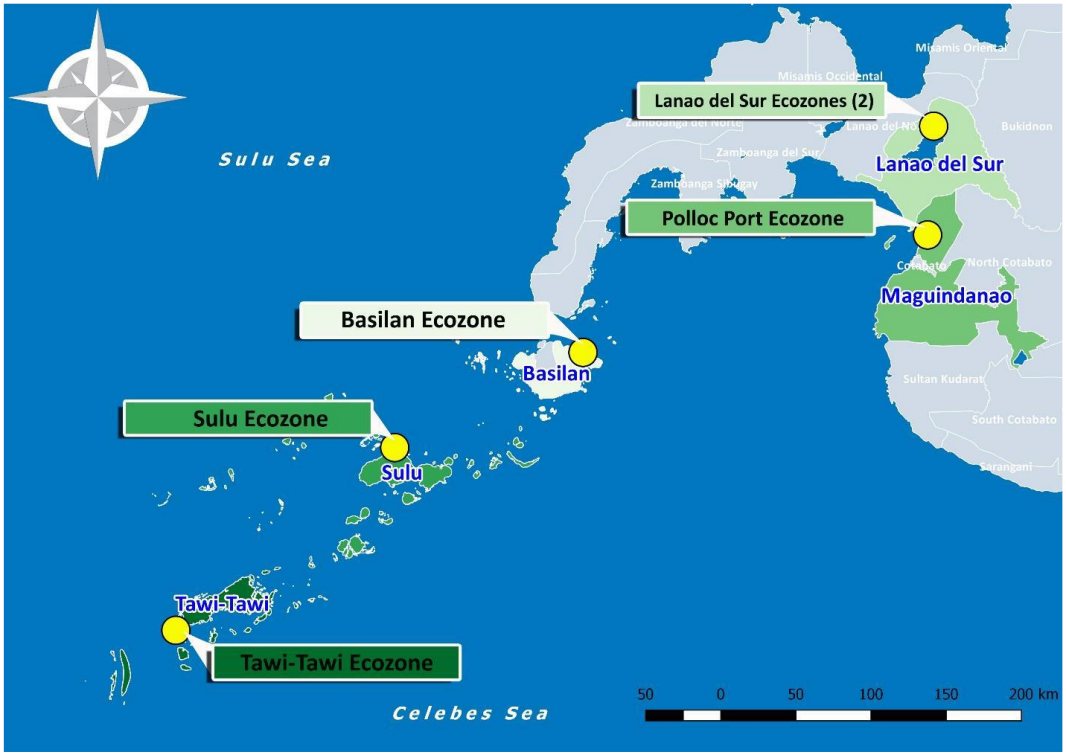
2) Regional Spatial Strategy

Anchoring in the NSS, the regional spatial strategy is formulated for acceleration of regional development. For the concentration strategy, the hierarchy of settlements and the air and sea transport network for connectivity are presented in **Figure 3.1-50**, **Figure 3.1-52** and **Figure 3.1-53**, respectively. **Figure 3.1-51** provides the location of ecozones which need to be connected by land or other means of transport.



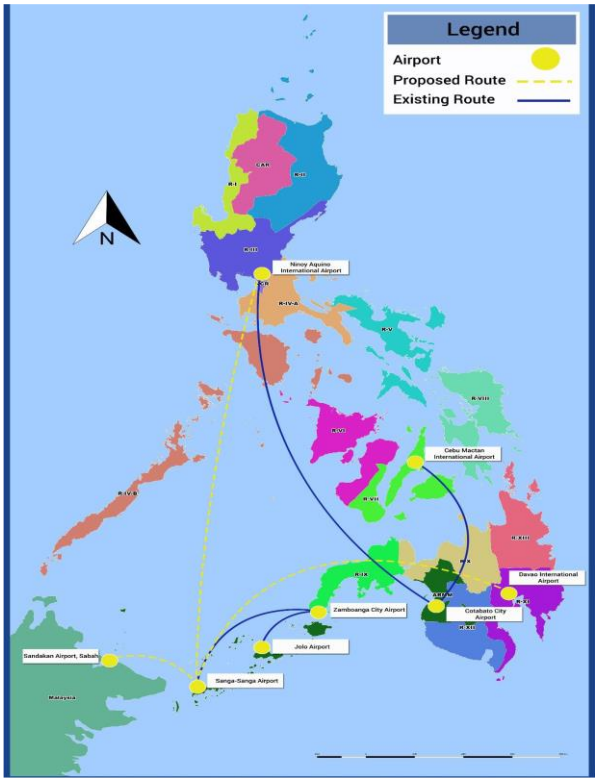
Source: NEDA. ARMM Regional Development Plan 2017-2022. Page 25.

Figure 3.1-50 Hierarchy of Settlement in ARMM



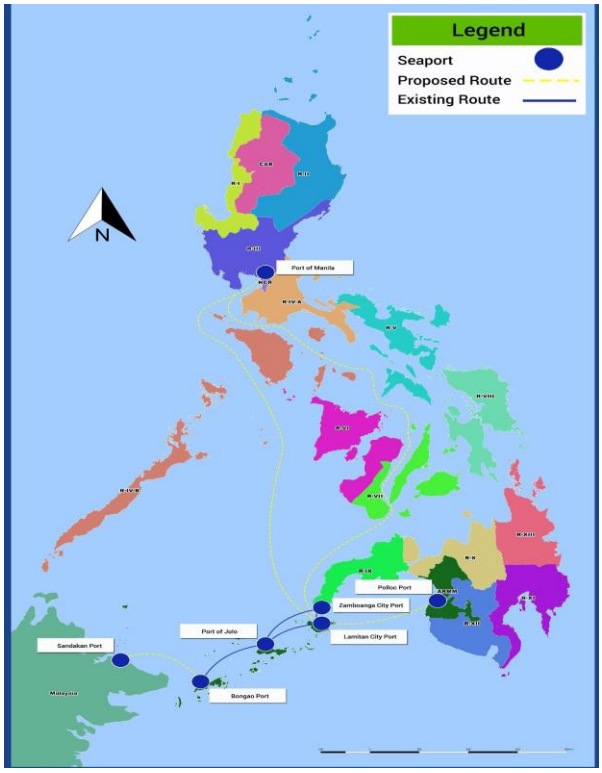
Source: NEDA. ARMM Regional Development Plan 2017-2022. Page 57

Figure 3.1-51 Actual and Proposed ARMM Ecozones



Source: NEDA. ARMM RDP 2017-2022. Page 30.

Figure 3.1-52 Air Connectivity



Source: NEDA. ARMM RDP 2017-2022. Page 32.

Figure 3.1-53 Sea Connectivity

3.2 National and Regional Physical Development Framework

3.2.1 National Physical Development Framework

(1) The Draft National Physical Framework Plan 2016 – 2045

The National Physical Framework Plan (NPFP) is a 30-year plan to direct the physical development of the nation. The first NPFP was formulated for the plan term of 1993-2022, succeeded by the National Framework for Physical Planning 2001-2030. This Section reviews the next NPFP under preparation, the draft National Physical Framework Plan 2016-2045.

The NPFP 2016-2045 aims to achieve the following g goal and objectives:

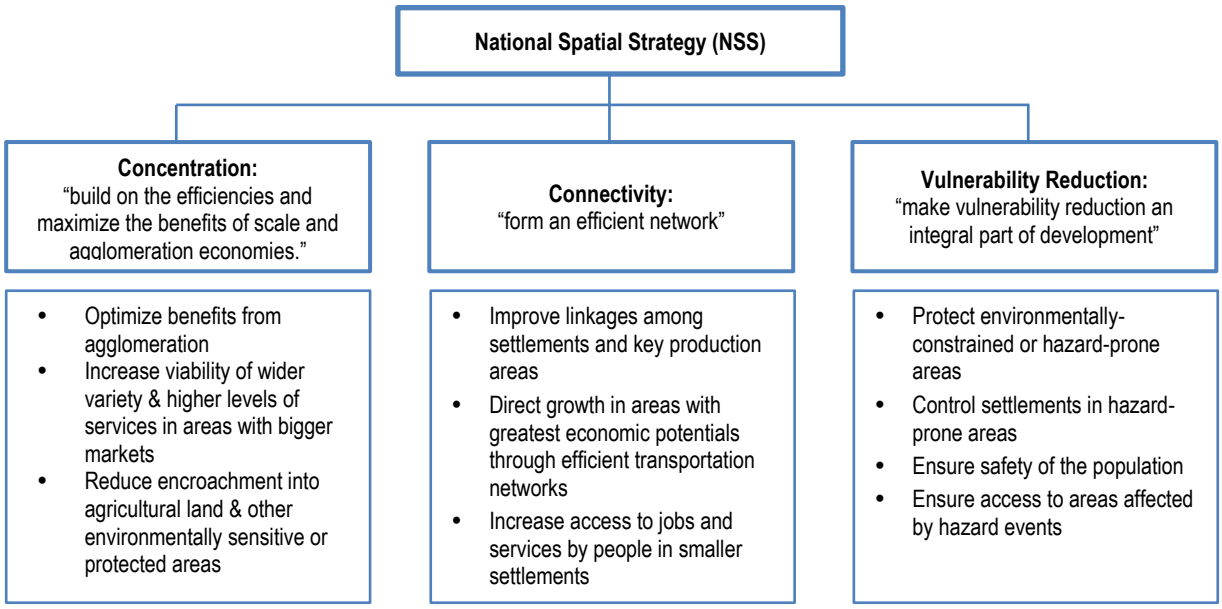
> **Goal:** Bring about efficient settlement, production and service delivery systems and sustainable use of land and other physical resource, while attaining inclusive growth, through physical and economic integration.
>
> **Objectives:**
>
> - Guide the location of investments
> - Improve the flow of people, goods and services
> - Protect and conserve the environment
> - Reduce disaster risk and vulnerability to natural hazards

The NSS is adopted as the main principle for balanced growth, which intends to nurture growth of urban centers across the nation for decongestion of the NCR or Metro Manila, taking advantage of the importance of urban areas in economic growth and poverty reduction. Recognizing the issues of conflict in land use between urbanization and production/ protection purpose, needs for urban management and efficient land use, importance of connectivity in competitiveness and development of urban centers, and the nation's high susceptibility to disaster and climate change, the NPFP endorses the three broad strategies of the NSS,

"concentration," "connectivity" and "vulnerability reduction" as its main strategy for the coming thirty years. (See **Figure 3.2-1**).

The settlement hierarchy consisting of "metropolitan centers," "regional centers," and "sub-regional centers" is proposed in accordance with the criteria of population, function, and others. Characteristics of settlement centers and metropolitan centers are described in

Table 3.2-1.



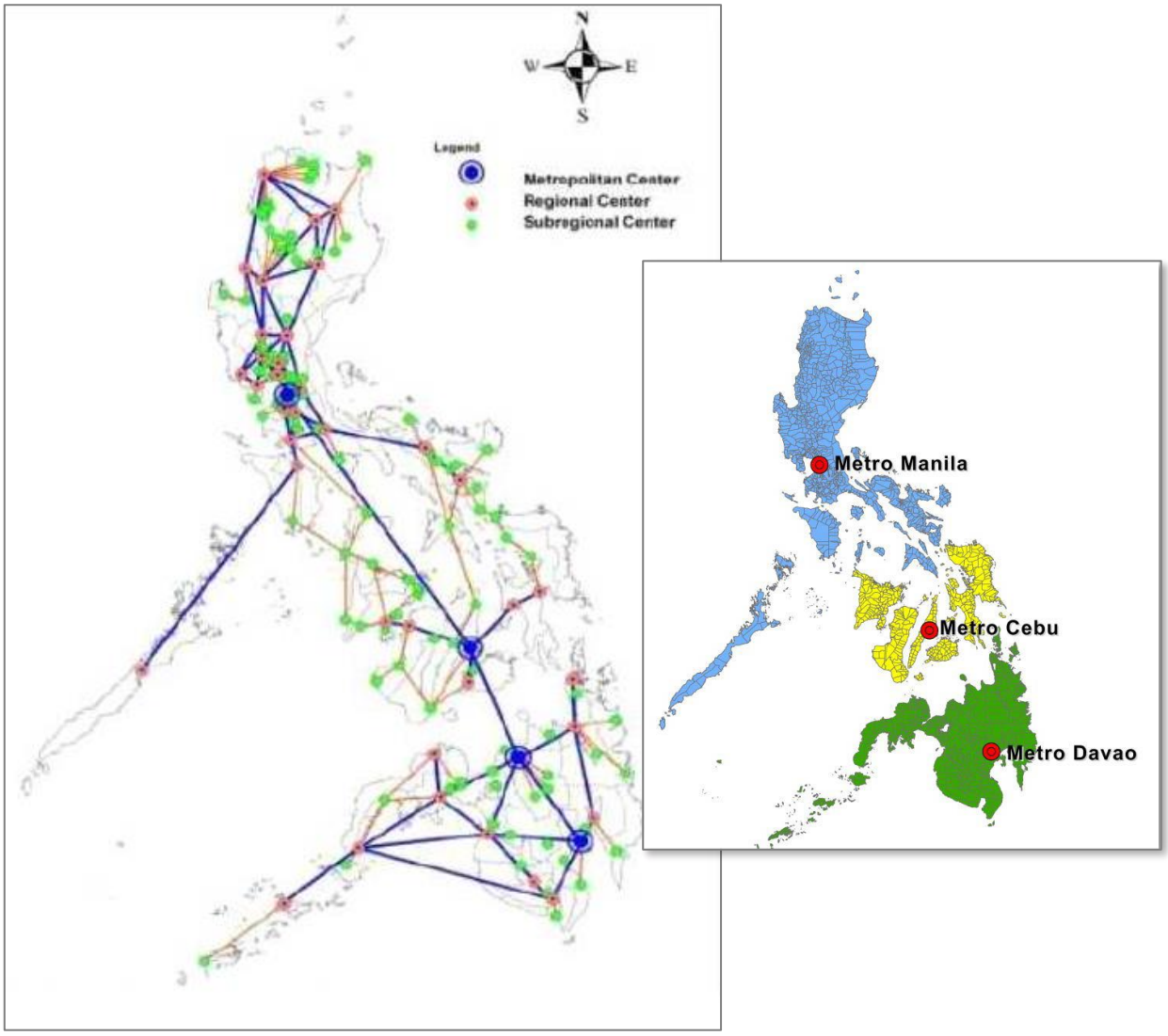
Source: NEDA. 2016. Draft National Physical Development Framework Plan 2016-2045

Figure 3.2-1 National Spatial Strategies

Table 3.2-1 Settlement Center Hierarchy and Characteristics

Settlement Centers	Characteristics
Metropolitan Centers (4)	• Serve as the economic and administrative centers • Primary international gateways • Have distinct functions in ✓ innovation and advanced services ✓ culture and tourism ✓ education and research ✓ transportation and trade ✓ manufacturing and technology development
Regional Centers (37)	• Serve as regional markets and service centers to provinces ✓ Regional Administrative Center ✓ International Gateway ✓ Tourism Hub • Direct linkages to Metro Manila and/or the metropolitan center in the Island Group (Luzon, Visayas, Mindanao)
Sub-Regional Centers (116)	• Form the market catchments of regional centers. • Connect to and serve as service centers of smaller provincial and local centers. ✓ Tourism Center/ Hub ✓ Agri-Industrial Center/ Hub ✓ Industrial Center / Hub ✓ Higher Education / Learning Center

Source: NEDA. 2016. Draft National Physical Development Framework Plan 2016-2045



Source: Three Major Metropolitan Centers: Luzon RDCOM and NEDA. LSDF 2015-2045. Page 44.
Proposed Network of Settlements: NEDA. 2016. Draft National Physical Development Framework Plan 2016-2045

Figure 3.2-2 Three Major Metropolitan Centers and Proposed Network of Settlements

3.2.2 Regional Physical Development Framework

(1) Luzon Spatial Development Framework (LSDF) 2015-2045

Due to its geographical advantage and proximity to Metro Manila, Luzon is endowed with well-educated human resources, fertile land and natural resources. However, the high development potential and vibrant economic activities results in issues of rapid suburbanization and sprawl in surrounding areas of Metro Manila, encroachment of production land, inefficient land use marked by relatively low density of urban areas, competition for land, and increasing disaster risk caused by development of land with high disaster risk.

Anchoring in the NSS, the Luzon Spatial Development Framework (LSDF) 2015-2045 was formulated to address these issues and proposed the three strategies of concentration, connectivity, and vulnerability reduction with priority projects and programs.

1) Concentration Strategy

A concentration strategy is proposed to realize the following objectives:

- Increased innovation, creativity and economic activities and, in particular, greater opportunities for employment and poverty reduction;
- Availability of a larger variety and higher levels of services; and,
- Reduced encroachment into agricultural land and other environmentally-sensitive, constrained, or protected areas (compared to low density sprawl).[20]

The proposed hierarchy of settlement with five-tiered network and priority projects for concentration strategy are presented in **Figure 3.2-3** and **Figure 3.2-7**.

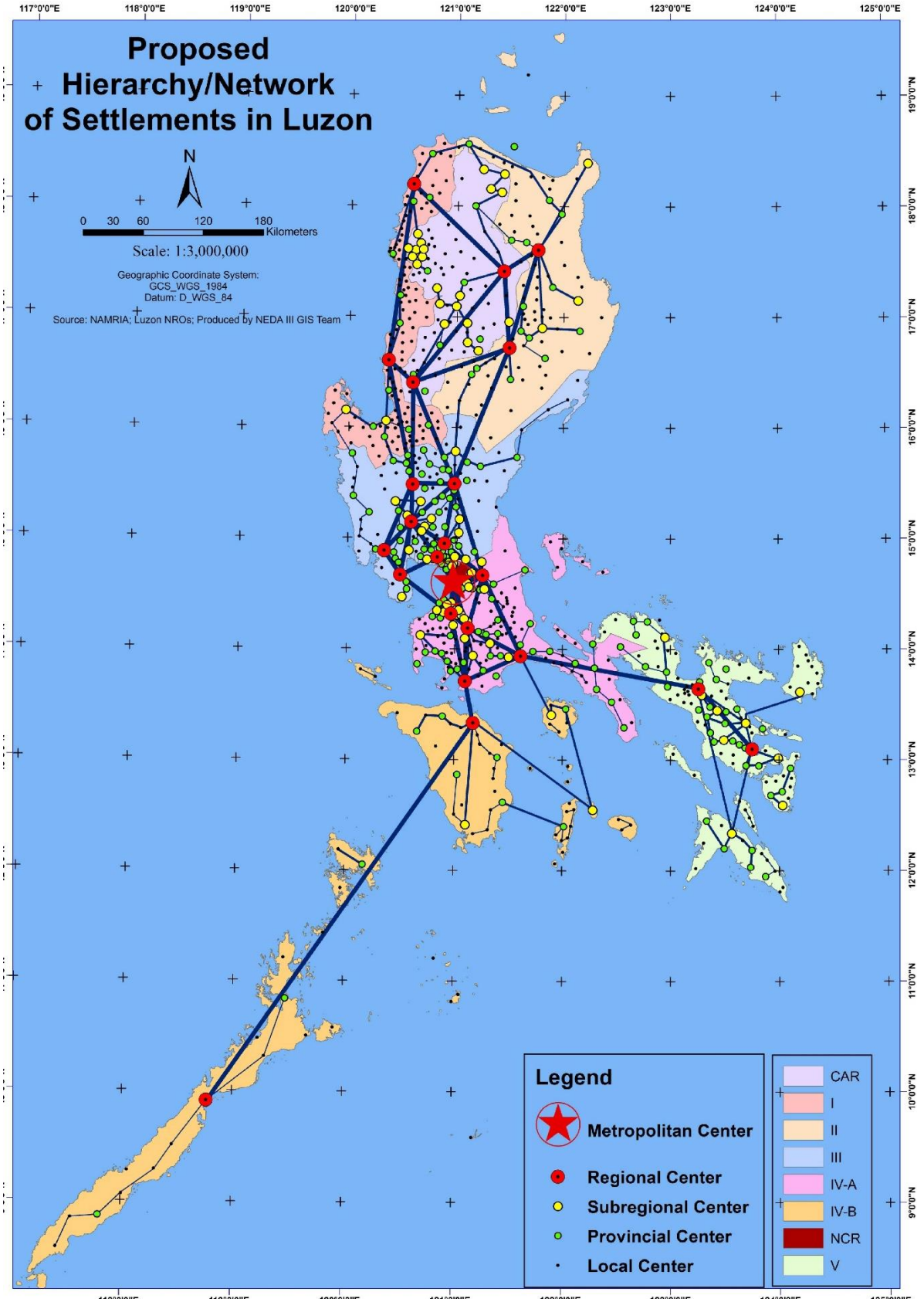
2) Connectivity Strategy

To improve the communication network, transportation (land, air, and sea) system, and economic infrastructure, the connectivity strategy is determined, with the following specific objectives:

- Increase access and to improve the efficiency of markets;
- Manage growth and the development of settlements according to specific urban and regional plans; and,
- Reduce vulnerability during emergency situations by increasing the redundancy of transportation routes, communication and other infrastructure facilities.[21]

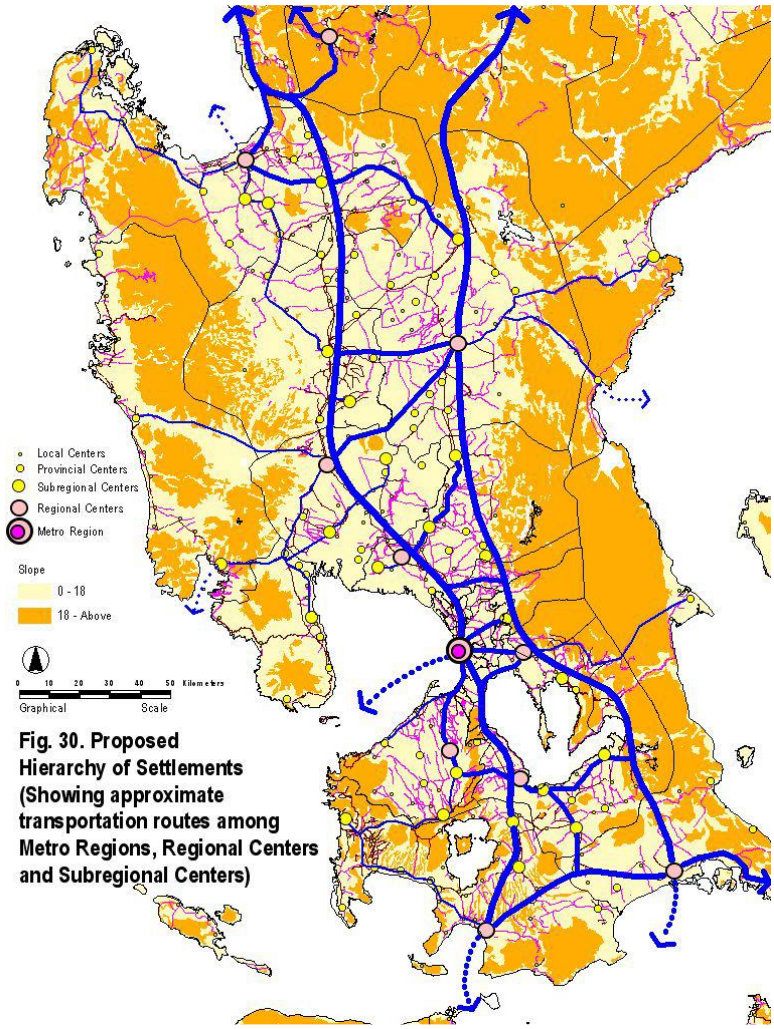
The networks of transportation in Luzon are formulated, based on the twin-spine spatial structure presented in **Figure 3.2-4** and existing infrastructure and development plans. (See **Figure 3.2-5** and **Figure 3.2-6**). The priority projects for connectivity are shown in **Figure 3.2-8**.

[20] Luzon Spatial Development Framework (LSDF) 2015-2045. Page 55.
[21] Ditto. Page 61.



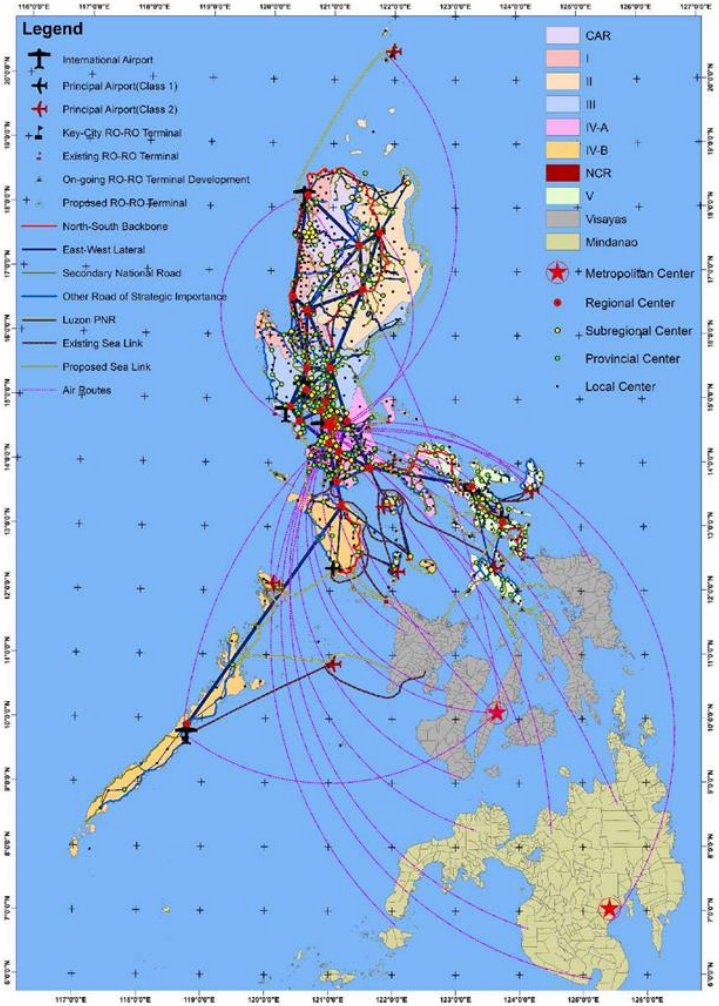
Source: Luzon Regional Development Committee (RDCOM) and NEDA. Luzon Spatial Development Framework Plan (LSDF) 2015-2045. Page 46.

Figure 3.2-3 Proposed Hierarchy/ Network of Settlements in Luzon



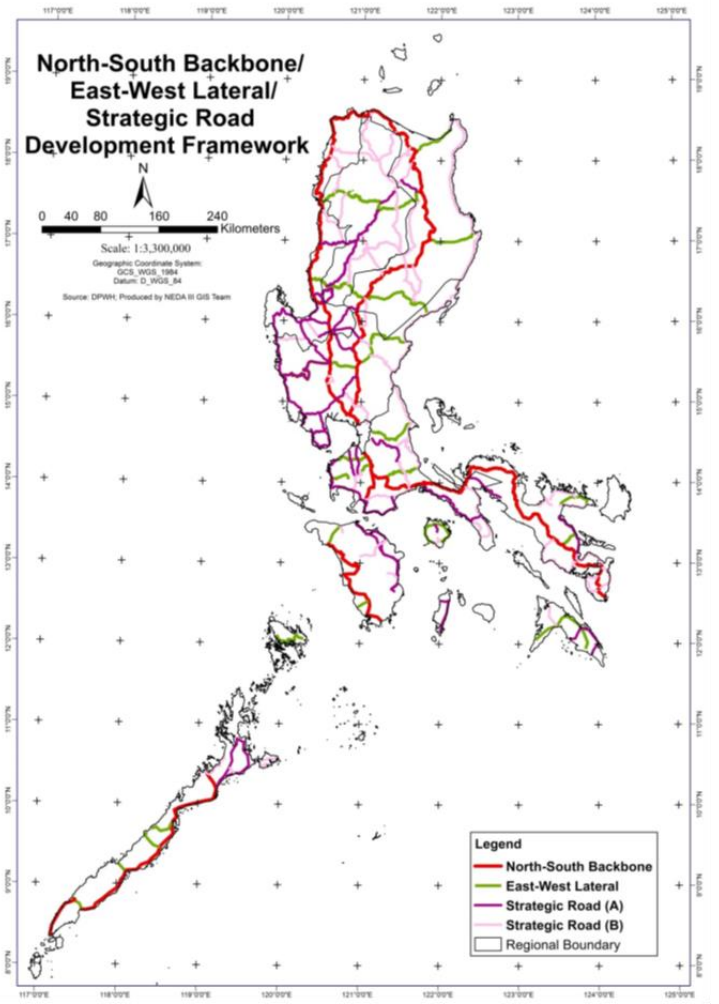
Source: Luzon RDCOM and NEDA. LSDF 2015-2045. Page 62.

Figure 3.2-4 Twin-Spine Spatial Structure in Metro Manila and Surrounding Regions



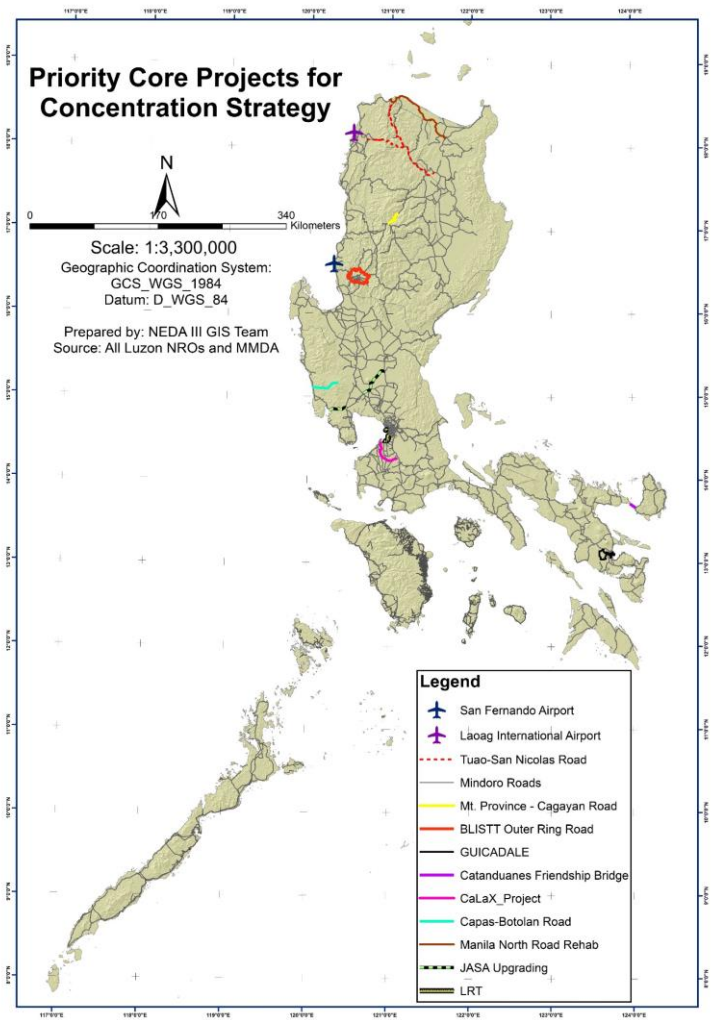
Source: Luzon RDCOM and NEDA. LSDF 2015-2045. Page 67.

Figure 3.2-5 Seaport and Airport Systems in Luzon



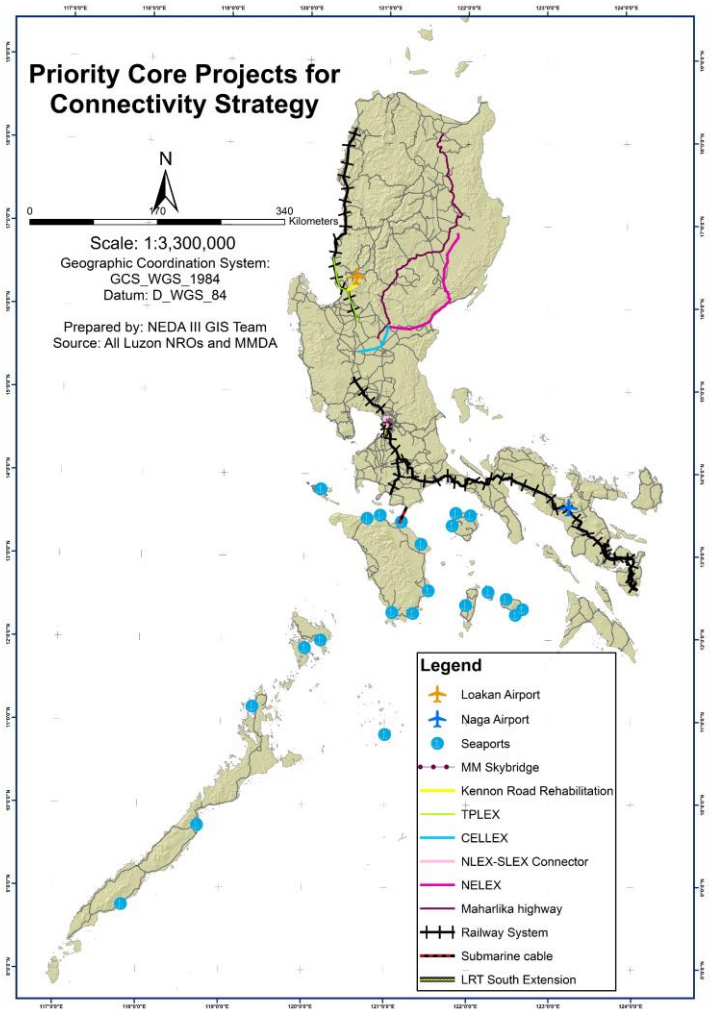
Source: Luzon RDCOM and NEDA. LSDF 2015-2045.Page 65.

Figure 3.2-6 North-South Backbone/East-West Lateral/ Strategic Road Development Framework in Luzon



Source: Luzon RDCOM and NEDA. LSDF 2015-2045. Page 100.

Figure 3.2-7 Priority Core Projects for Concentration Strategy in Luzon



Source: Luzon RDCOM and NEDA. LSDF 2015-2045. Page 99.

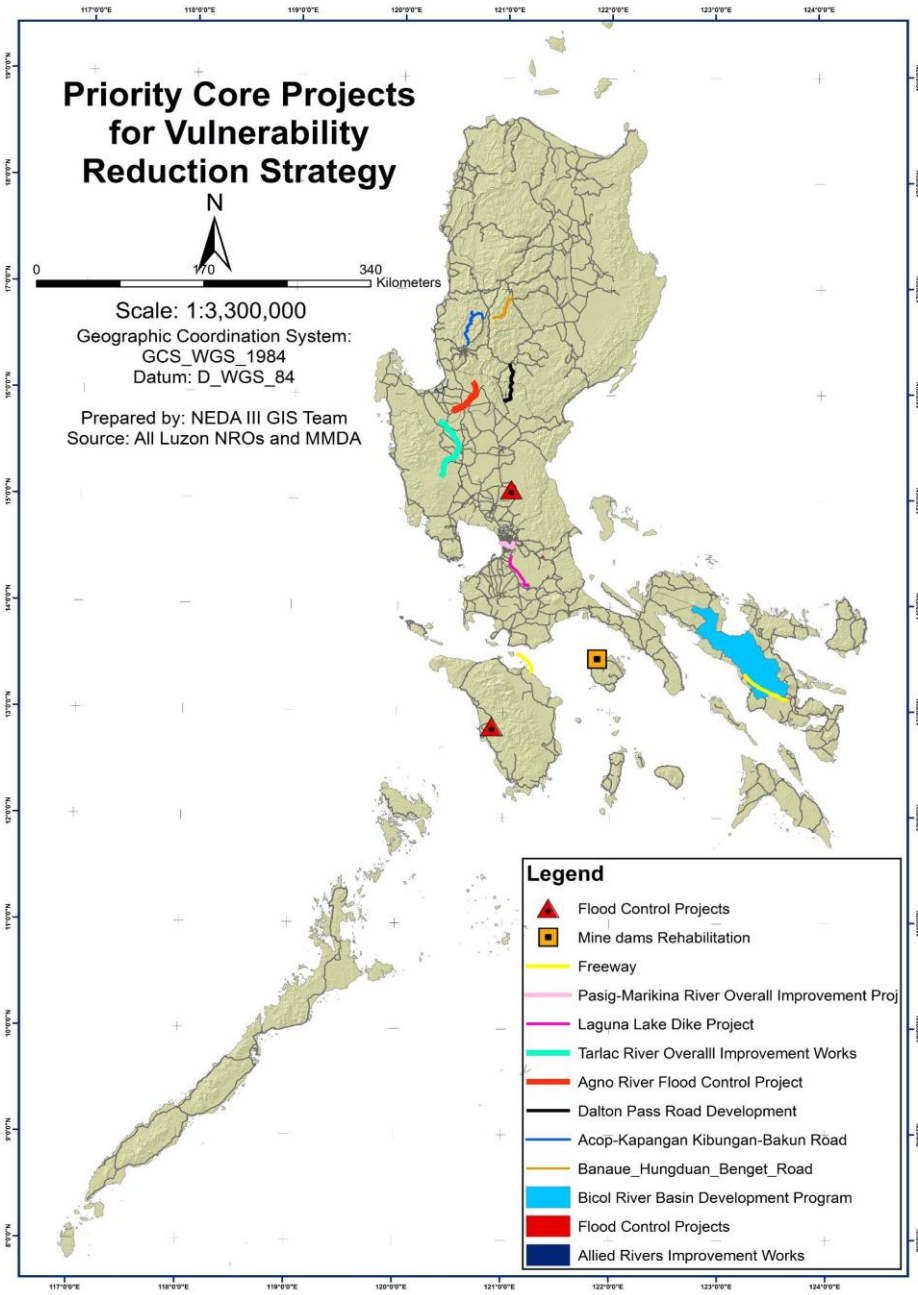
Figure 3.2-8 Priority Core Projects for Connectivity Strategy in Luzon

3) Vulnerability Reduction Strategy

The vulnerability reduction strategy is guided by the following principles:

- No compromise on safety
- Priority of production land use over urbanization land use
- Integration of eco-tourism, agri-forestry, and urban amenities
- Application of redundancy strategy by providing alternative routes
- Comprehensive approach including land use, infrastructure plans, education and awareness, and other DRRM measures.

The priority projects for vulnerability reduction strategy in Luzon are presented in **Figure 3.2-9**.



Source: Luzon RDCOM and NEDA. LSDF 2015-2045. Page 101.

Figure 3.2-9 Priority Core Project for Vulnerability Reduction Strategy in Luzon

(2) Visayas Spatial Development Framework (VSDF) 2015-2045

Though the growth of the Visayas economy has been sluggish compared with Luzon and Mindanao, there exist a number of advantages found in the Visayas, such as its central location in the country, land suitable for agricultural development in Western and Eastern Samar, marine and fishery resources, the existence of strong manufacturing and IT-BPO business industry, well-known international tourist spots and various tourism and attractions rooted in natural, cultural, and historic resources, etc.

Meanwhile, development issues that the Visayas is facing, include: constraints in mobility used by its archipelagic characteristics, vulnerability to disaster, scarcity and inefficient use of water, land and natural resources, persistent poverty and increasing informal settlers in urban areas, slow growth of the economic sector, and low productivity of agriculture, among others.

To address the development challenges and build desirable spatial structure, the future vision of the Visayas is: "a competitive, world-class economy, where its people - proud of their history, culture and heritage - live in progressive, peaceful, sustainable, and resilient communities." The objectives and strategies for concentration, connectivity, and vulnerability reduction are formulated as shown in **Figure 3.2-10**.

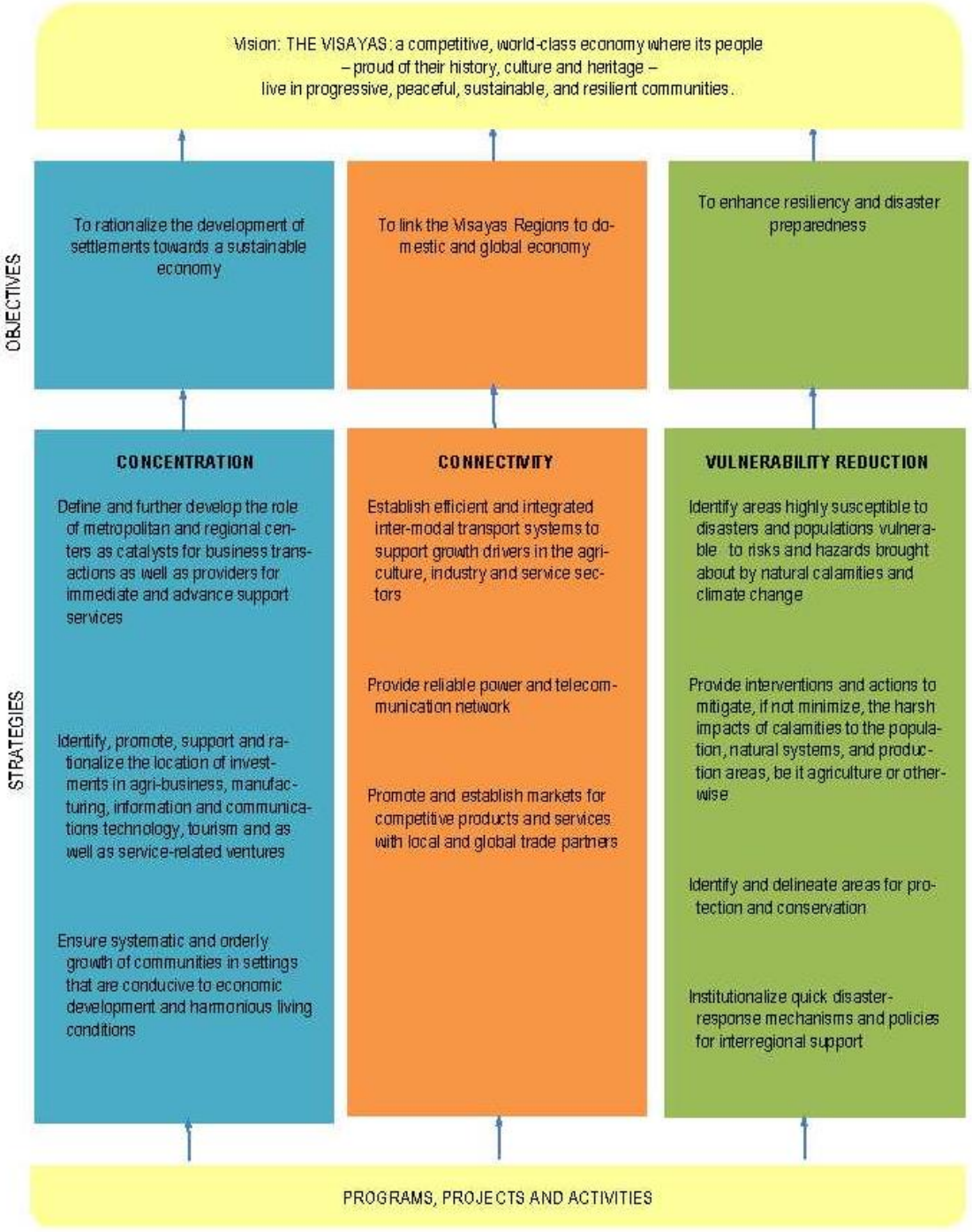
The proposed settlement hierarchy and the locations with development potential in industry, tourism and agri-business in the Visayas are presented in **Figure 3.2-11**, **Figure 3.2-13, Figure 3.2-14** and **Figure 3.2-15**. Related to the connectivity strategy, **Figure 3.2-12** shows the existing road networks, and **Figure 3.2-16** and **Figure 3.2-17** present the existing and new port and airport projects, respectively. The strategy of vulnerability reduction aims to identify high risk areas, and to reduce the vulnerability by enhancing spatial planning and introducing disaster risk mitigation measures, and to protect production land.

In the VSDF, an investment program, consisting of core activities and complementary programs and projects, is developed for the 30-year plan period from 2015 to 2045 under the three main strategies. Total PHP4.5 trillion programs, activities, and projects (PAPs) are identified for implementation. Among them, 81% or PHP P3.6 trillion is selected for the short-term PAPs from 2016 to 2025; 14% or PHP628 billion PAPs are for 2025-2034; and 5% or PHP238 billion PAPs are identified for 2035-2045.

The PAPs for connectivity account for 87 % of the investment or PHP 3.9 trillion, followed by 9.4 % or PHP 426.5 billion PAPs for vulnerability reduction and 3.6 % or PHP 162 billion for concentration.

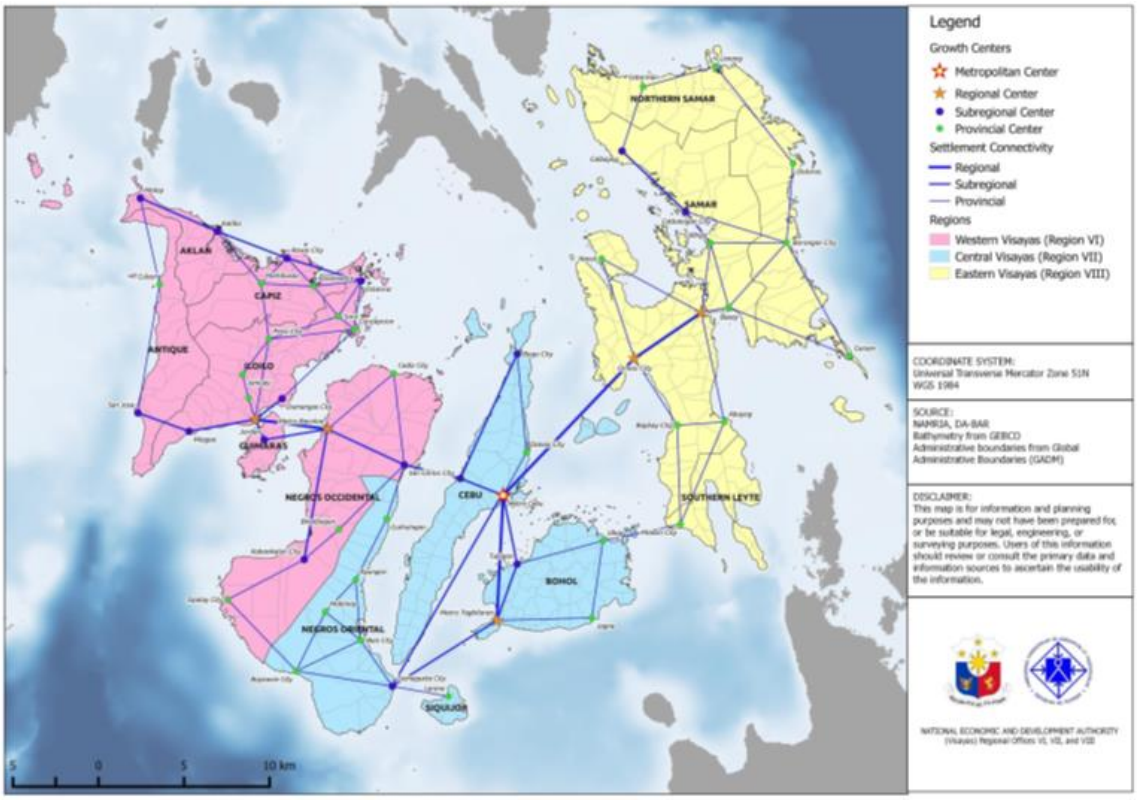
The major core PAPs are:

- Concentration: development of agribusiness areas, economic zones, IT parks and tourism estates.
- Connectivity: upgrading/widening of major roads/ bridges and ports along the western and central spines of the nautical highway including RP-Japan Maharlika highway, railways, container ports, including construction of mega bridges of Panay (Iloilo) - Guimaras - Negros Occidental, Negros Oriental (Sibulan and Amlan) - Cebu, Cebu-Bohol-Leyte, Babatngon-Sta. Rita (Samar -Leyte), and the 3rd Mactan Bridge.
- Vulnerability reduction: Construction of evacuation centers and disaster logistics networks, environmental management and pollution control programs



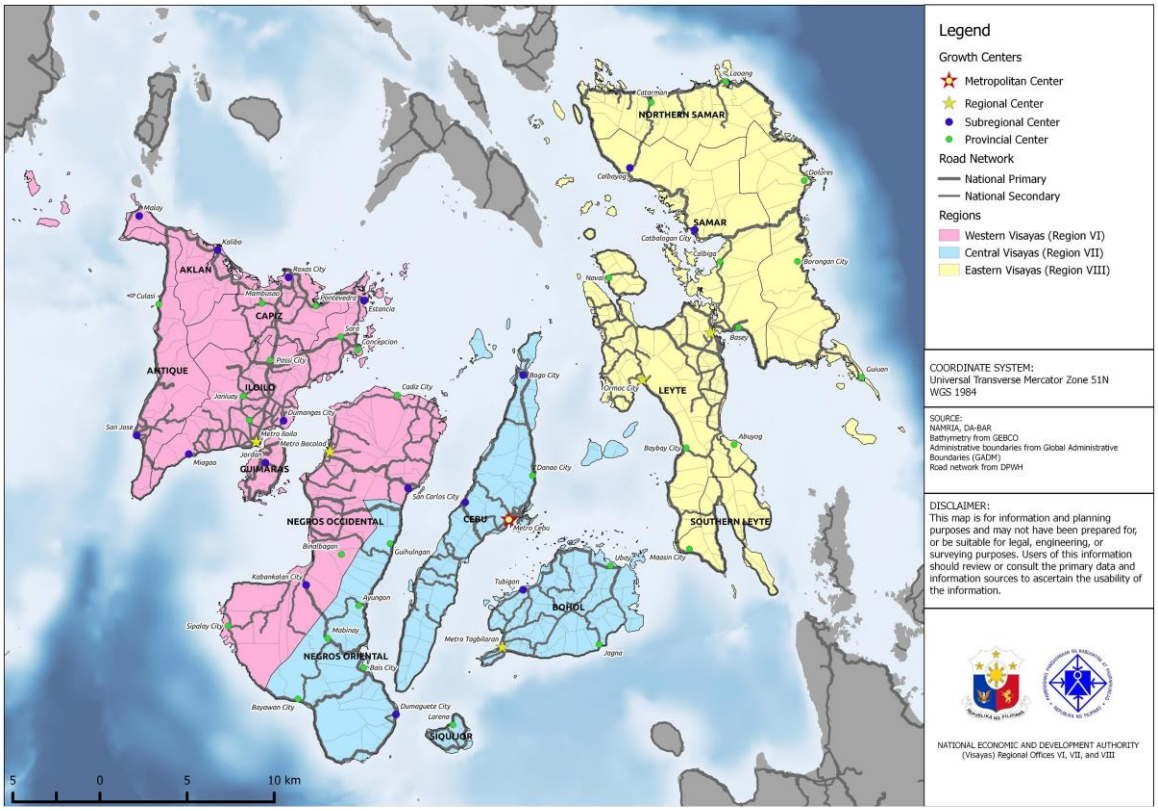
Source: NEDA. VSDF 2015-2045. Page 28.

Figure 3.2-10 Development Framework for the Visayas



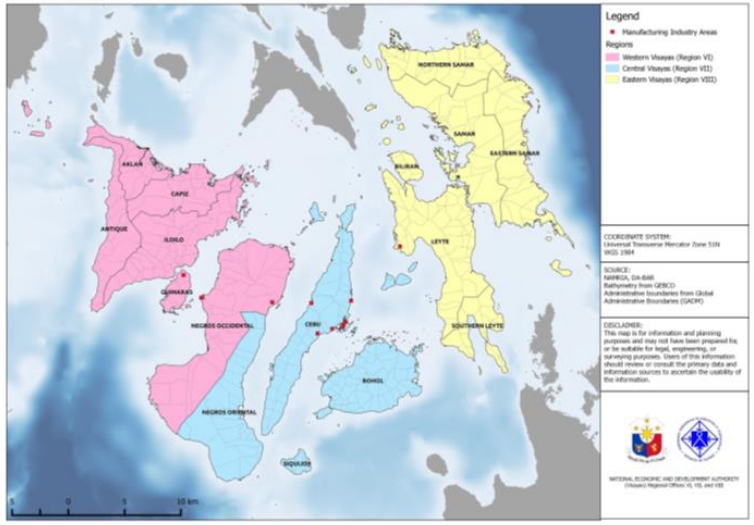
Source: NEDA. VSDF 2015-2045. Page 30.

Figure 3.2-11 Network of Settlements in the Visayas



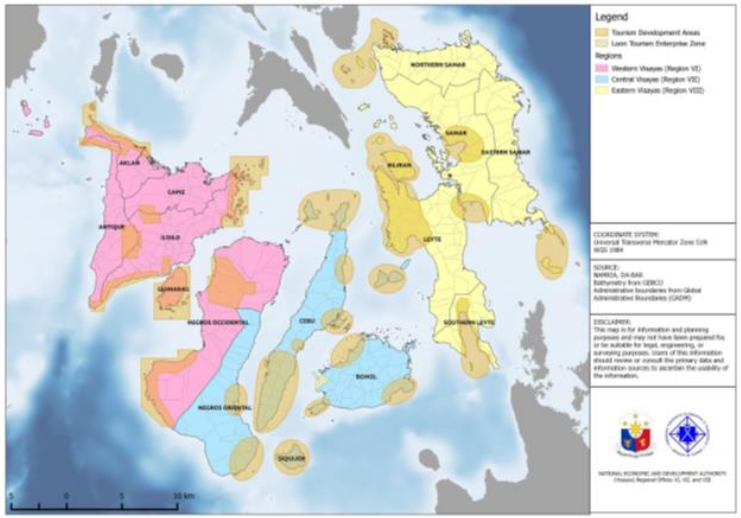
Source: NEDA. VSDF 2015-2045. Page 47.

Figure 3.2-12 Existing Road Network in the Visayas



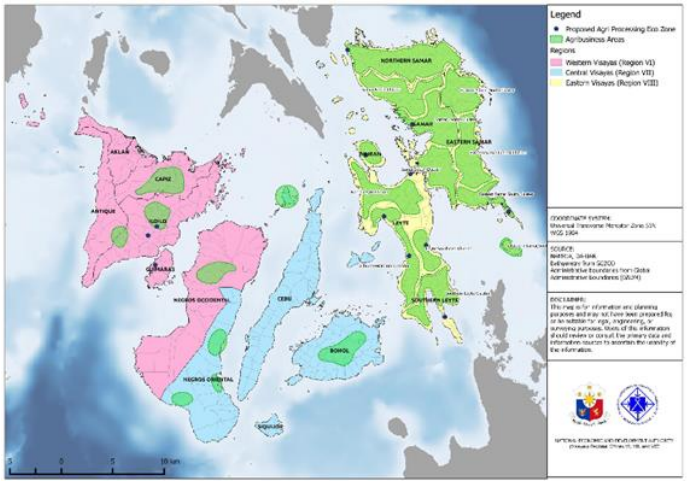
Source: NEDA. VSDF 2015-2045. Page 32.

Figure 3.2-13 Industrial Ecozone Development in the Visayas



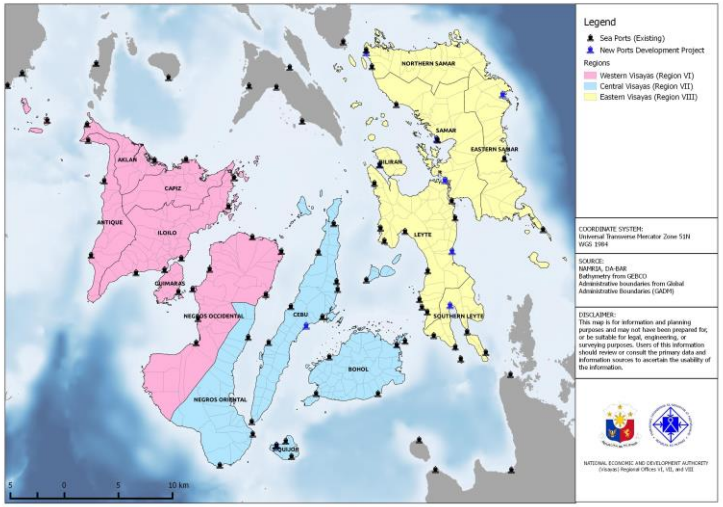
Source: NEDA. VSDF 2015-2045. Page 44.

Figure 3.2-14 Tourism Development Areas in the Visayas



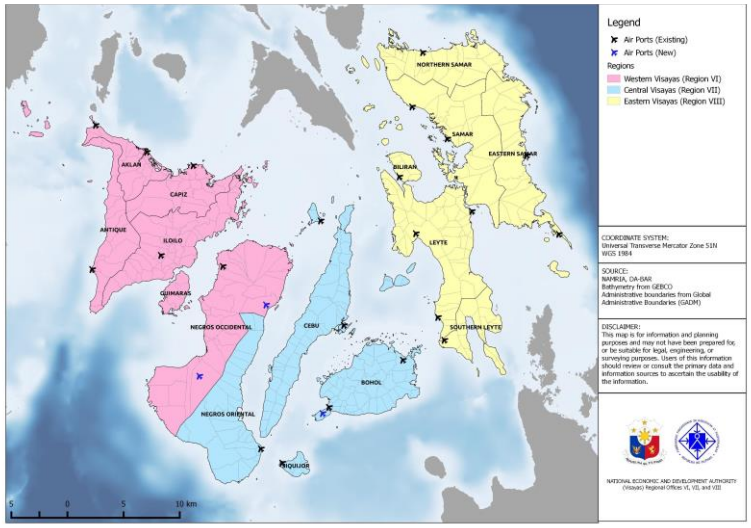
Source: NEDA. VSDF 2015-2045. Page 37.

Figure 3.2-15 Proposed Agri-business Development Areas in the Visayas



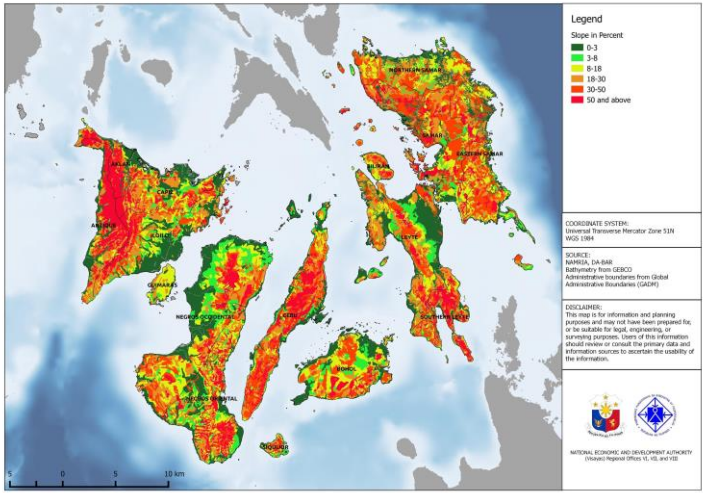
Source: NEDA. VSDF 2015-2045. Page 48.

Figure 3.2-16 Existing and New Port Projects in the Visayas



Source: NEDA. VSDF 2015-2045. Page 49.

Figure 3.2-17 Existing and New Airport Projects in the Visayas



Source: NEDA. VSDF 2015-2045. Page 3.

Figure 3.2-18 Slope Map of the Visayas

(3) Mindanao Spatial Strategy/ Development Framework (MSS/DF) 2015-2045

The Mindanao Spatial Strategy/Development Framework (MSS/DF) 2015-2045 is formulated to guide development in Mindanao focusing on spatial dimensions in the next 30 years, under the framework of the National Physical Framework Plan (NPFP) and the National Spatial Strategy (NSS). Among the three primary strategies of concentration, connectivity and vulnerability reduction, concentration strategy or settlement hierarchy and distribution is considered as the main concern for Mindanao.

1) Development Challenges

Development challenges under the three concerns are summarized as follows: concentration: uncontrolled conversion of agricultural land to urban and other uses, low productivity, needs for better basic public services to meet increasing demand caused by population growth, insufficient mass-transport systems in urban areas and traffic congestion, inadequate waste management, and health and environment risks; connectivity: insufficient infrastructure especially intra- and inter- Mindanao transport networks and lack of redundancy in transport networks; vulnerability reduction: expansion of settlements and encroachment in protected and hazard-prone areas and the existence of settlements and production areas with high disaster risk; and cross-cutting issues: widespread high poverty incidence, lack of power supply, and remaining risk of conflict.[22]

2) Vision, Goals and Objectives

Mindanao envisions "a peaceful, safe, resilient, and socially-inclusive Mindanao of diverse cultures harmoniously enjoying a sustainable and competitive agri-industrial and resource-based economy" by 2045. For the sake of realization of the vision leading to the goals of poverty reduction and job creation, the development outcomes are determined as:

- Productivity and growth of the agriculture, industry and services sectors improved and sustained;
- Access to adequate and quality basic social and infrastructure facilities and services ensured;
- Connectivity among production areas, markets and settlements enhanced;
- Disaster and climate change resiliency of communities increased;
- Integrity of the environment ensured; and
- Gains of the various peace efforts sustained

Spatial Strategy:

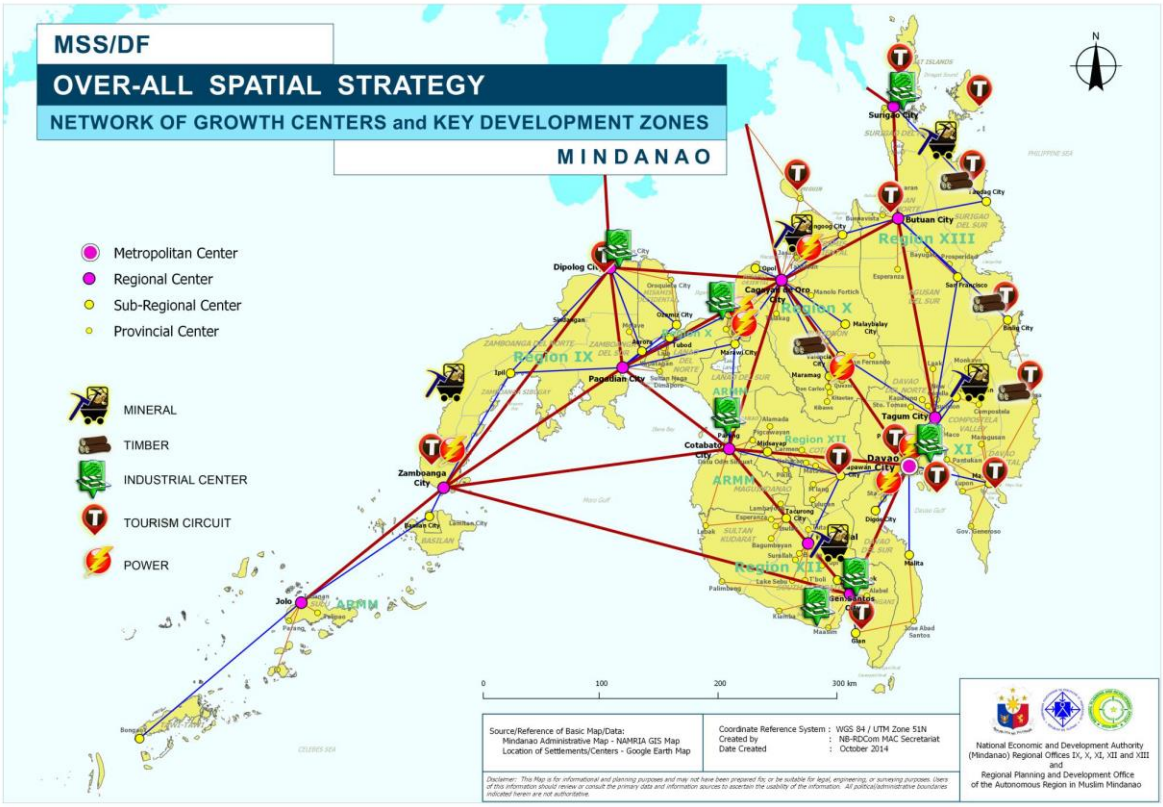
The spatial strategy for Mindanao suggests a multi-polar spatial structure, with a settlement hierarchy forming around the four major centers of Metro Davao, Cagayan de Oro, General Santos, and Zamboanga. The MSS/DF 2015-2045 projects that all of the three current regional centers gain the metropolitan status by 2045, though only Cagayan de Oro is expected to be upgraded to metropolitan center status in the NPFP. The urban hierarchy in Mindanao shall be led by Metro Davao which shall keep playing a role as the primary center in Mindanao in terms of administration, finance and commerce, followed by the other three centers that will function as leading growth centers for commerce and trade, industrial development, connectivity, and urbanization. In addition to the aforementioned four centers, there are 8 regional centers, 27 sub-regional centers, and 67 provincial centers. Besides, there are agri-industrial corridors or Key Development Zones (KDZs) where development potentials in mineral, timber, agri-fishery and marine resources, tourism circuits, and special economic zones are found, in addition to services, watersheds and power. (See **Figure 3.2-19** and **Figure 3.2-20**).

[22] MSS/DF 2015-2045. Page 43-47.

3) Strategic Policy Options and Priority Projects for Strategies of Concentration, Connectivity and Vulnerability Reduction

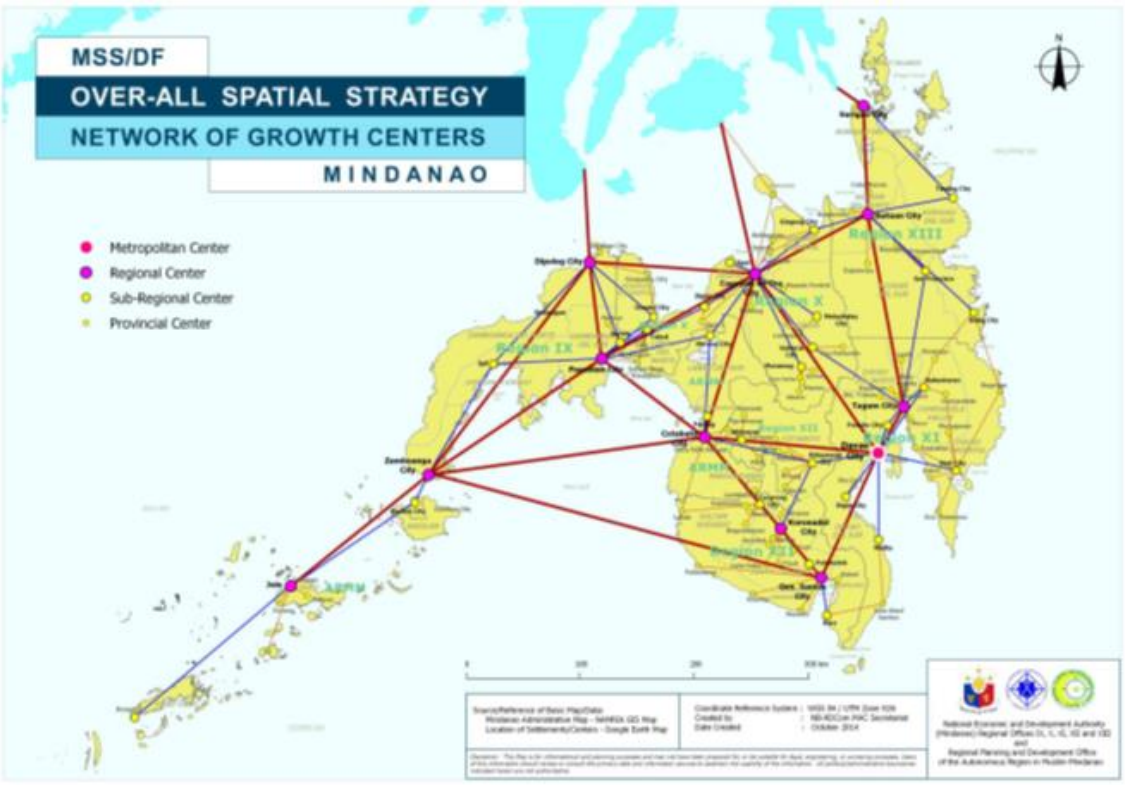
Under the strategy of concentration in Mindanao, **Figure 3.2-20** shows the settlement network; **Figure 3.2-21** presents intermodal connectivity; and **Figure 3.2-22** and **Figure 3.2-23** indicate the areas with high risk of flood and landslide, respectively. The policy options for three strategies identified are summarized in

Table 3.2-2 and PAPs for the first decade from 2015 to 2025 are summarized in **Table 3.2-3**.



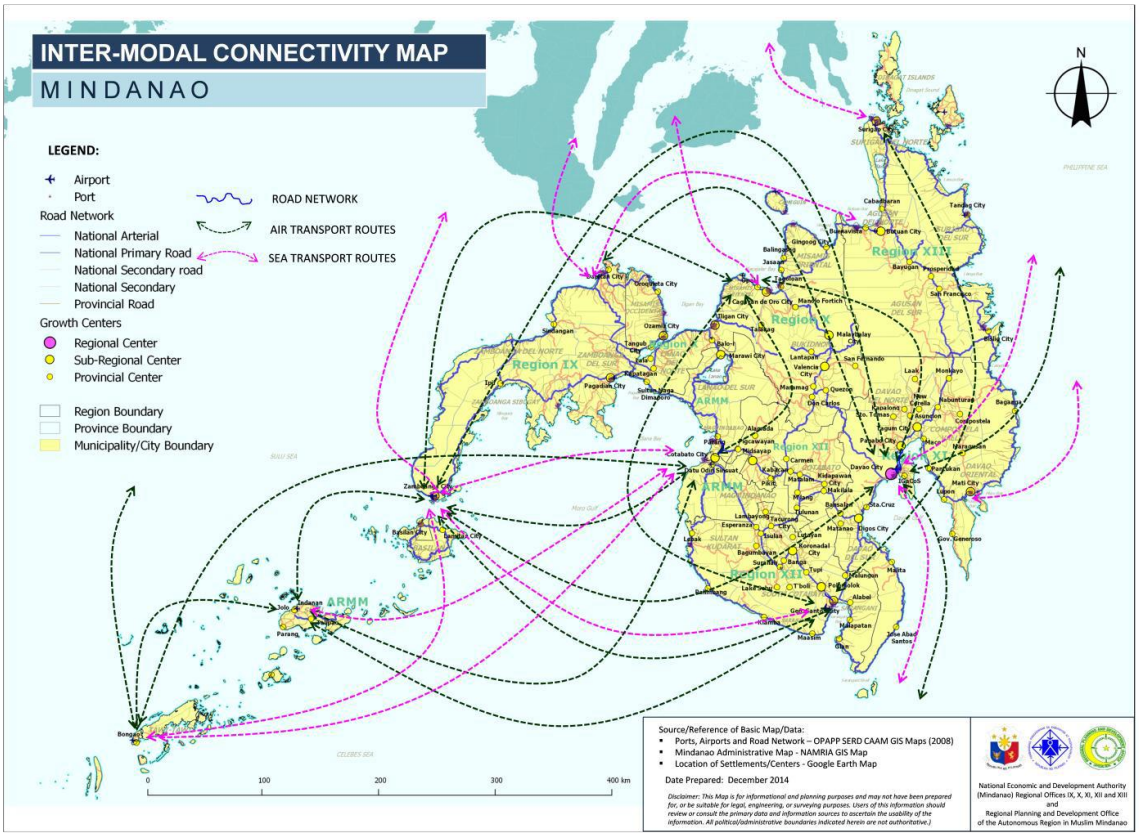
Source: NEDA. MSS/DF 2015-2045. Page 51.

Figure 3.2-19 Over-all Spatial Strategy in Mindanao: Network of Growth Centers and Key Development Zones



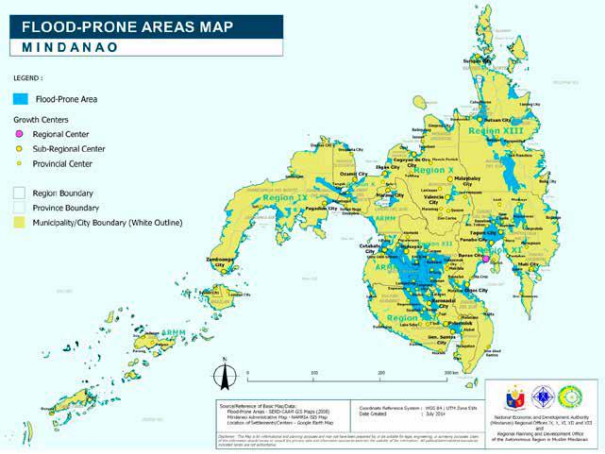
Source: NEDA. MSS/DF 2015-2045. Page 50.

Figure 3.2-20 Over-all Spatial Strategy in Mindanao: Network of Growth Centers



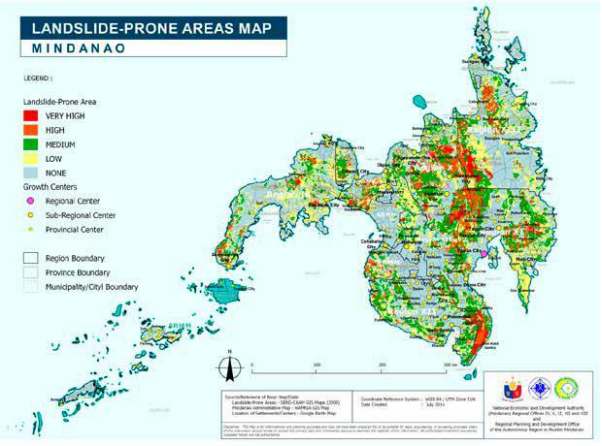
Source: NEDA. MSS/DF 2015-2045. Page 65.

Figure 3.2-21 Inter-modal Connectivity Map for Mindanao



Source: NEDA. MSS/DF 2015-2045. Page 32.

Figure 3.2-22 Flood-Prone Area Map for Mindanao



Source: NEDA. MSS/DF 2015-2045. Page 34.

Figure 3.2-23 Landslide-Prone Area Map for Mindanao

Table 3.2-2 Strategic Policy Options for Three Strategies in Mindanao

Concentration	Vulnerability Reduction
1. Promote redevelopment of built-up areas to improve efficiency of basic services: 2. Undertake strategic densification of priority areas; adoption of baseline and minimum density guidelines 3. Manage urban growth and delineate urban development boundaries: 4. Develop economic drivers as Key Development Zones supported by: 5. Establish MRT in the long term for metropolitan centers; 6. Promote efficient and effective urban management (common landfill, traffic, pollution, etc.) 7. Adopt a selective policy for extractive industries in the KDZs (e.g., timber, minerals) in deference to local sentiment: 8. Include ecology, health and retirement havens among areas for tourism development; 9. As KDZs for services, promote the development of Mindanao centers for education, health, retirement and financial services; 10. Determine priority areas for short-to-medium term regional and interregional infrastructure investment; 11. Redirect regional capital investment programs to addressing short-term and regional strategic priority areas; 12. Update CLUPs and enforce zoning ordinances; 13. Conserve productive agriculture lands and encourage utilization of unproductive marginal lands for settlements; 14. Review areas identified as SAFDZs towards more efficient and effective use of scant resources; 15. Encourage/promote land banking for socialized housing; facilitate sustainable housing environments 16. Promote value adding technologies and practices to improve productivity; 17. Accelerate irrigation development;	1. Manage economic centers to lead population to safer and peaceful areas; 2. Adopt sustainable environmental management practices that reduce disasters risks including the espousal of appropriate disaster management interventions such as: 3. Sustain environmental protection and conservation through strict enforcement of environmental laws; 4. Adopt uniform/complementing guidelines in mainstreaming DRR-CCA in local plans 5. Relocate hazard-exposed settlements to safe areas. For settlements that cannot be relocated ensure that mitigation measures are instituted; 6. Institutionalize ecosystem and ridge to reef approaches in natural resources management; 7. Adopt redundancy of access to prevent isolation of the areas during disasters; 8. Establish strategic and safe evacuation centers in the region; 9. Establish intra/inter-regional and Mindanao-wide support mechanism during and after calamities

18. Promote private sector participation in the provision of basic services; 19. Establish intra/inter-regional complementation and support mechanism on key production activities and services.	
Connectivity	**Cross-Cutting**
1. Develop the Mindanao Railway in the long term; 2. Support an efficient movement system: 3. Ensure strong and viable transport nodes (transport nodal hierarchy; transport nodal profiles and boundaries; and transport development and management guidelines): 4. Adopt disaster resilient and green technologies in infrastructure development; 5. Provide major infrastructure support facilities to and from settlement zones, production areas and marketing centers especially in hazard exposed areas to ensure redundancy of access.	1. Engender popular and multi-sectoral support for the Bangsamoro Framework Agreement; and 2. Expand the scope and intensify the delivery of peace and development outreach programs

Source: NEDA. MSS/DF 2015-2045. Page 65-68.

Table 3.2-3 Programs, Activities and Projects in Mindanao for 2015-2025

Concentration	Connectivity
1. Development of Key Development Zones a. Agri-Fishery and Marine Resources b. Tourism Circuits c. Industrial Centers and Ecozones d. Services e. Power f. Minerals 2. Development of built-up areas to improve efficiency of basic services a. Upgrading of services in growth centers to international standards b. Provision of quality basic services in rural centers according to standards 3. Effective and efficient transportation system in growth centers a. Improvement of internal road systems in major growth centers b. Establishment of metro rail transits in Davao City and Cagayan do Oro City c. Establishment of Davao bus rapid transit system/urban transport system d. Samal-Sasa Gateway Project e. Davao Gulf Integrated Port Complex f. Rehabilitation of the Davao International Airport 4. Efficient and effective urban management (common landfill, traffic, pollution, etc.) a. Implementation of environmental management/urban renewal programs of air/water quality impact assessments 5. Updating of the maps of Mindanao Regions a. Cadastral survey for ARMM and Mindanao b. Topographic mapping using 1:20,000 scale for ARMM and Mindanao	1. Widening/Improvement/rehabilitation of arterial and secondary national roads and bridges 2. Establishment of railways and mass rapid transportation system a. Expressway b. Railway c. Mass Rapid Transport System (Digos-Davao City-Tagum City) 3. Modernization/upgrading of airports and seaports to meet international standards a. Airports b. Seaports 4. Construction/upgrading of provincial/local roads leading to growth centers 5. Establishment/enhancement of air and sea routes with other growth centers in the country, the ASEAN region and the rest of the world. **Vulnerability Reduction** 1. Management of forests, protected areas, wildlife and coastal zones 2. Construction/rehabilitation of flood control projects 3. Development/establishment of early warning and flood forecasting system 4. Enhancement of the capacities of LGUs to cope with climate change 5. Comprehensive and simultaneous formulation of DRR/CCA-enhanced land use planning and zoning in cities and municipalities in Mindanao 6. Watersheds Targets: 1-10 years Attainment of 40% forest cover 11-20 years Attainment of 50% forest cover 21-30 years Attainment of 60% forest cover 7. Integrated management of the river basins

Source: NEDA. MSS/DF 2015-2045. Page 68-75.

3.3 Urban Development Plan of Mega City Area

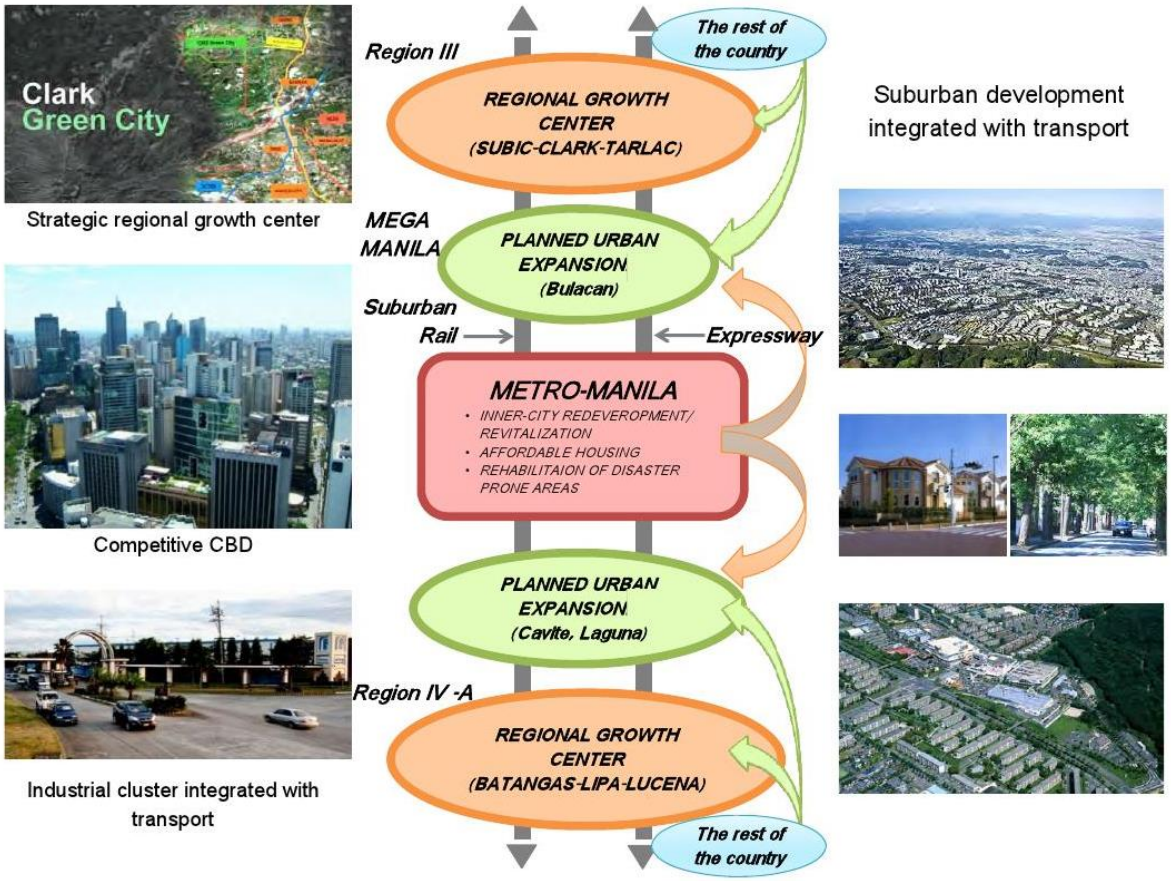
3.3.1 Metro Manila Urban Development Plan

Metro Manila, located in the southwestern part of the Luzon island, is the largest urban agglomeration, officially called the National Capital Region (NCR), with a population of 12.9 million in an area of 6.2 hundred km^2. It is composed of the City of Manila, sixteen (16) cities (Quezon, Caloocan, Las Piñas, Makati, Malabon, Mandaluyong, Marikina, Muntinlupa, Navotas, Parañaque, Pasay, Pasig, San Juan, Taguig, and Valenzuela City) and one (1) municipality of Pateros. It is the administrative, economic and cultural center of the Philippines. The GRDP of the Metro Manila accounts for about 36.0% of the total GDP in 2018 and the population of the NCR accounts for about 12.8% of the national population in 2015. Over the recent decades, though Metro Manila has continued to experience fast population and economic growth, its annual population growth rates have started slowing down from 1.78% for the period of 200012010 and 1.58% for the period of 2010-2015. During 2010 to 2030, the population is projected to increase by about 1.3 times, and the GRDP to increase by 2.8 times, according to the JICA Study titled "Roadmap for Transport Infrastructure Development for Metro Manila and Its Surrounding Areas (Region III and Region IV-A)" (currently referred to as the "Metro Manila Dream Plan") implemented during 2013 to 2014 in cooperation with the National Economic and Development Authority (NEDA). This Dream Plan targeted the NCR and the adjoining provinces of Bulacan, Rizal, Laguna, and Cavite (referred to as the Greater Capital Region in the Plan) with an area of 15.1 thousand km^2, which now forms one consolidated conurbation. It predicted that the population of the Greater Capital Region will increase from 23.0 million in 2010 to 29. 3 million in 2030 (with an increase from 11.9 million to 13.9 million for Metro Manila). It is thus assumed that the travel demand will be 1.13 times for Metro Manila and 1.33 times for the 4 adjoining provinces when compared to the 2012 level.

The Greater Capital Region is predicted to continue to grow as the economic powerhouse of the Philippines. It has a large share of economic zones in the nation. As of 2012, there are 125 IT centers/parks, 46 manufacturing special economic zones (MSEZs), two medical tourism centers/parks, and 6 tourism economic zones (TEZs). About 94% of IT centers/parks reside in the NCR, 65% of MSEZs are located in Region IV-A. Most economic zones, except IT centers/parks, concentrate in CALABARZON, particularly in the areas of Cavite and Laguna. The biggest SEZs are Subic Freeport and Clark Special Economic Zone, both of which are located in Region III.

The Dream Plan set the vision consisting of the following three pillars: 1) Gate to wellspring of hope, 2) Place for livable communities, and 3) Space for dynamic business centers. From the perspective of a regional development policy, the Plan suggested the necessity for balanced development among agriculture, manufacturing and services, prevention of urban sprawl, development of regional growth centers, strengthening of connectivity, and improvement of public transport services and logistics. It emphasizes the importance of forming a polycentric spatial structure within the Greater Capital Region that is currently monocentric with the predominance of Metro Manila. For this polycentric formation, the Plan suggested the necessity to promote the development of urban centers and the formation of urban clusters in a hierarchical and coordinated, manner. From the viewpoint of a spatial development strategy, the Plan suggested the formation of five urban clusters, two of which are anchored in the north (Clark-Subic-Tarlac) and in the south (Batangas-Lipa-Lucena), and the strengthening of connectivity among these clusters by the development of north-south transport corridors (see **Figure 3.3-1** and **Figure 3.3-2**). Here it was noted that the Clark Green City will serve as a core for the development of a regional cluster in the Central and Northern Luzon. The urban centers pointed out by the Dream Plan are as follows: Metro Tarlac (Tarlac), Metro Cabanatuan (Nueva Ecija), Metro Clark (Pampanga), Metro Olongapo (Pampanga), San Miguel-San Ildefonso-Bulacan, Malolos-Meycauayan (Bulacan), San Jose Del Monte (Rizal), Antipolo-Cainta (Rizal), Calamba-San Pedro (Laguna), Metro Batangas/Lipa (Batangas) and Metro Lucena (Quezon). Importantly, the Dream Plan pointed out that the Government of Philippines

has been underinvesting in infrastructure development (below 2% of the GDP) and needs to increase infrastructure investment to as much as 5% of the GDP.



Source: JICA Study Team. Roadmap for Transport Infrastructure Development for Metro Manila and Its Surrounding Areas (Region III and Region IV-A)

Figure 3.3-1 Integrated Spatial Development Concept for Greater Capital Region

The Dream Plan proposed five main components of transport intervention, as follows:

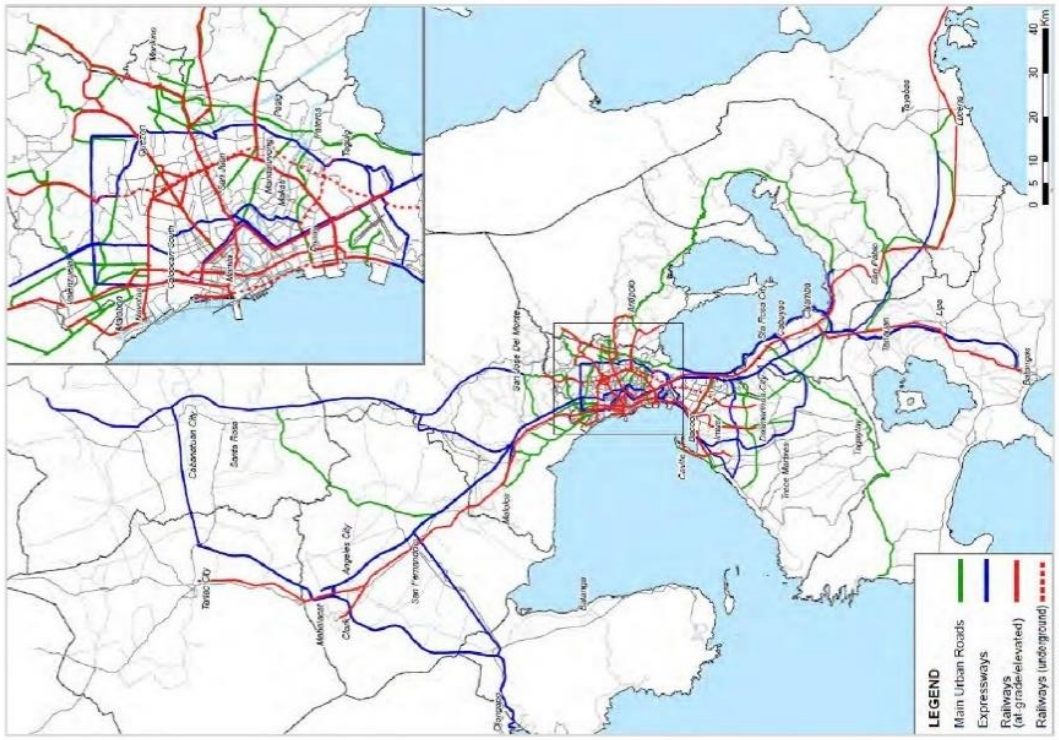
a) At-grade Roads: missing links on C3, C5, bridges and others; 137 km of new roads; flyovers; sidewalks and pedestrian facilities.

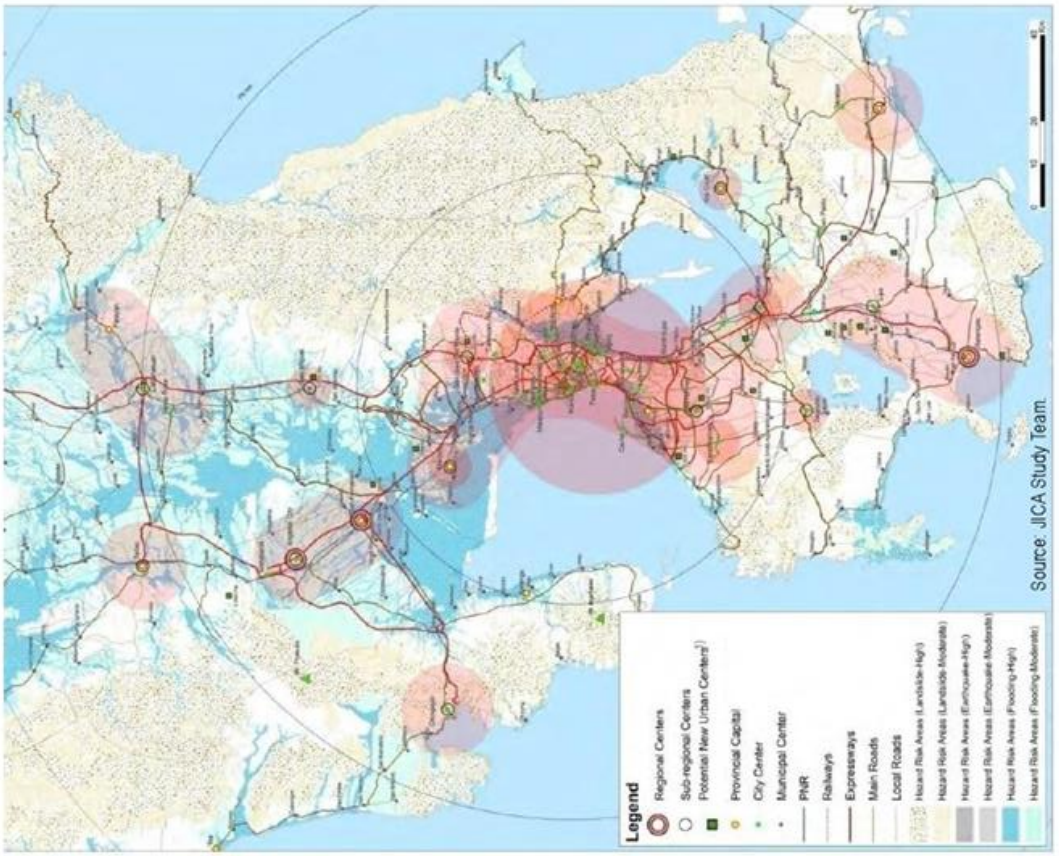
b) Expressways: intercity expressway of 426 km and urban expressway network of 78 km.

c) Urban/Suburban Rail: 6 main lines of 246 km; 5 secondary lines of 72 km; and mutual integration for accessibility improvement.

d) Bus/jeepneys: modernized fleet and operation; rationalized route structure; and improved terminals and interchange facilities.

e) Traffic Management: intelligent transportation systems for different modes of transport, traffic signals, traffic safety, and traffic environment and education.





Source: JICA Study Team. Roadmap for Transport Infrastructure Development for Metro Manila and Its Surrounding Areas (Region III and Region IV-A)

Figure 3.3-2 Proposed Spatial Structure and Transport Network for Greater Capital Region

In this vein, the Government of Japan and the Government of the Philippines (GOP) made the agreement of "Cooperation Roadmap for Quality Infrastructure Development In the Transport Sector in Metropolitan Manila Area" to develop sufficient and effective transportation networks by 2030. In this agreement, both governments decided to continue their cooperation for four (4) ongoing projects, and to further discuss about supporting eight (8) projects with use of Japanese Official Development Assistance, as shown in **Table 3.3-1**. Note that the 8 projects above are subject to change depending on the priorities of the GOP.

Table 3.3-1 Listed Cooperation Projects between Japan and Philippines

On-going Four (4) Projects	
1.	Arterial Road Bypass Project, Phase 2
2.	Capacity Enhancement of Mass Transit Systems in Metro Manila Project (LRT 1 Extension and LRT 2 East Extension)
3.	Metro Manila Interchanges Construction Project, Phase VI
4.	Central Luzon Link Expressway (CLLEX), Phase 1
Eight (8) Projects to be Discussed	
1.	North South Commuter Railway Project, Phase I
2.	Metro Manila CBD Transit System Project
3.	Expert on Railway Planning, Operation and Management
4.	Mega Manila Subway Study
5.	C3 Missing Link
6.	New Manila International Airport Study
7.	(Expert) Integrated Transport Implementation and Management
8.	The Project for Capacity Development on Transportation Planning and Database Management in the Republic of the Philippines

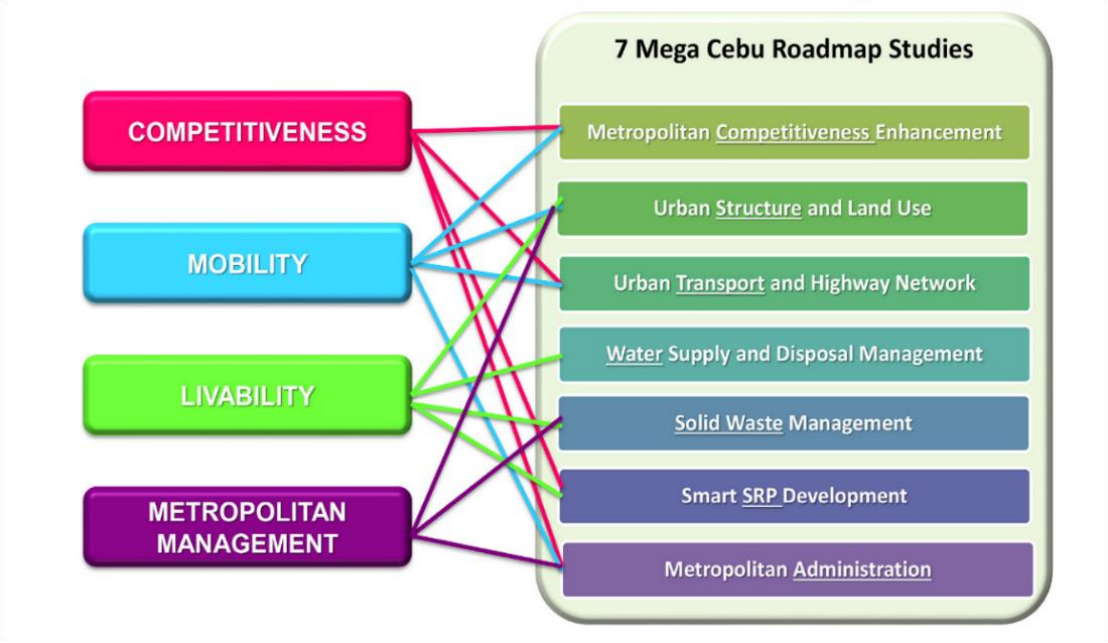
Source: Ministry of Foreign Affairs, Japan. Cooperation Roadmap for Quality Infrastructure Development In the Transport Sector in Metropolitan Manila Area. https://www.mofa.go.jp/files/000083660.pdf.

The Metropolitan Manila Development Authority (MMDA) is the agency established in 1975 to be responsible for the delivery of public services in Metro Manila. The governing board of the MMDA is the Metro Manila Council consisting of the constituent cities and municipality mentioned above. MMDA possesses legal and institutional powers related to the preparation of medium- and long-term development plans, the development, evaluation and packaging of projects, investment programming and coordination, and the monitoring of plans, program and project implementation. It prepared "The Metro Manila Greenprint 2030: Building a Vision" to set up a strategic framework for the future Metro Manila in cooperation with the Australian Aid, the Work Bank and the Cities Alliance. Its vision statement is "Metro Manila for all; Green, connected, resilient; offering talent and opportunity; Processing knowledge and delivering services at home and abroad". To achieve this vision, there are two pillars, namely: 1) Fostering a Metropolis of Opportunity, and 2) Building a Green Connected, and Resilient Metropolis for All. The first pillar consists of 1) Leveraging Opportunities in Information Technology and Business Processing Outsourcing, 2) Unleashing Metro Manila's Tourism Potential and Attracting Newly Rich Neighbors, 3) Reclaiming High-Value Services and Promoting High-Potential Economic Clusters; and the second pillar consists of 4) Connecting Metro Manila, 5) Making Metro Manila Inclusive, and 6) Developing a Resilient Metropolis. From the perspective of spatial development, this vision stresses the necessity of forming a polycentric urban structure and strengthening transport networks to connect urban centers, as similarly observed in the Dream Plan.

3.3.2 Metro Cebu Urban Development Plan

Metro Cebu is located in the central eastern part of Central Visayas in the Philippines. It is the second largest urban agglomeration in the nation, accommodating a population of about 2.9 million as of 2015 in an area of about 1.0 thousand km^2. Metro Cebu consists of Cebu City, six (6) surrounding cities (Carcar, Danao, Lapu-Lapu, Mandaue, Naga, and Talisay City) and six (6) municipalities (Compostela, Consolacion, Cordova, Liloan, Minglanilla, and San Fernando Municipality). Yet, within the Metro Cebu, about 70% of the population resides in large four (4) cities (namely Cebu, Lapu-Lapu, Mandaue and Talisay City) covering about 38% in area, as of 2015. In recent decades, Metro Cebu has continued to experience fast population and economic growth along with rapid urbanization. During 2010 to 2050, the population is projected to increase from about 2.5 million (through 2.9 million in 2015) to 5.0 million, and employment from about 1.0 million to 2.0 million, according to the JICA Study titled "Roadmap Study for Sustainable Urban Development in Metro Cebu" implemented during 2013 to 2015 in cooperation with the Metro Cebu Development and Coordination Board (MCDCB). This study noted that per capita GRDP will grow to be more than USD20,000, which is comparable to the current condition of the Republic of Korea.

Prior to the Roadmap Study above, the Mega Cebu Vision 2050 was formulated in 2013 as the first official document for metropolitan visions through cooperation among the Metro Cebu stakeholders, the JICA and Yokohama City. It set the following four (4) strategic pillars: 1) Competitiveness, 2) Mobility, 3) Livability and 4) Metropolitan Management, which were further linked with 15 development directions.



Source: Mega Cebu. http://www.megacebu.org/about.

Figure 3.3-3 Metro Cebu Spatial Plan and Major Roadmap Projects

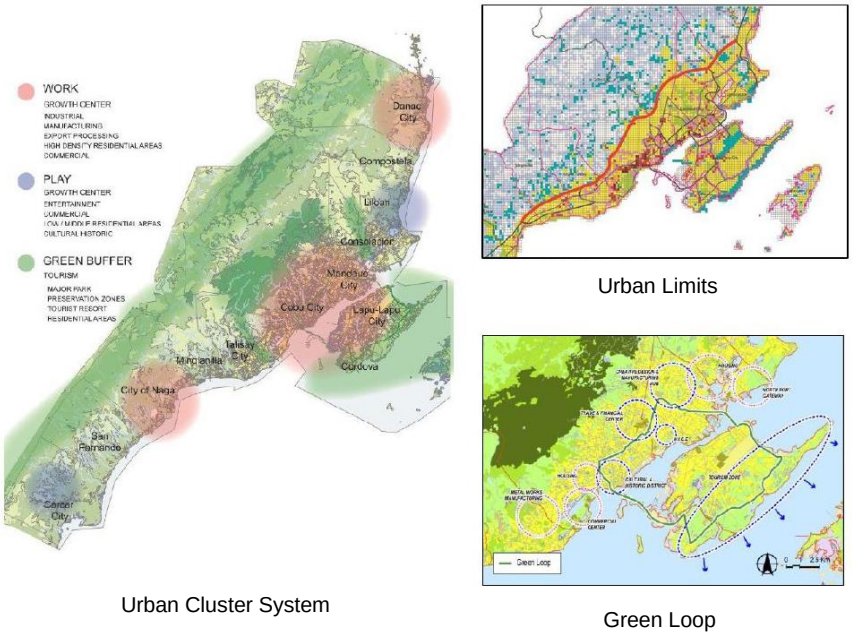
In this vein, the Roadmap Study proposed an overall roadmap consisting of seven (7) sub-road maps that are interlinked with the aforementioned 4 strategic pillars of the Mega Cebu Vision, as shown in **Figure 3.3-3**. The sub-roadmaps are as follows: 1) Metropolitan Competitiveness Enhancement, 2) Urban Structure and Land Use, 3) Highway Network and Public Transport, 4) Water Supply, Storm Water and Wastewater Management, 5) Solid Waste Management, 6) Smart South Road Property (SRP) Development, and 7) Metropolitan Governance. This study further identified ten (10) flagship projects to be implemented by 2020 (see **Table 3.3-2**) and fourteen (14) anchor programs to be done until 2050.

Table 3.3-2 Ten (10) Flagship Projects

Project Titles	
1.	Master Plan Study and Feasibility Study (FS) on Mass Transit Network Development (MRT/LRT/BRT) in Metro Cebu
2.	Update of the Cebu Province Development Master Plan
3.	Construction of the Mactan North Dual mode Bridge
4.	Construction of Mananga II Dam
5.	Construction and Networking of Septage Plants
6.	FS on Area Traffic Control in Metro Cebu
7.	A Comprehensive Solid Waste Management Master Plan for Metro Cebu
8.	FS on Sea Gateway Port Construction (Committed by DOTC)
9.	A Comprehensive Study for a Metro Cebu Integrated Flood and Drainage System Master Plan (Committed by DPWH)
10.	Establishment of Technical Research Unit to MCDCB and Its Capacity Development

Source: JICA Study. The Roadmaps Study for Sustainable Urban Development in Metro Cebu.

For metropolitan competitiveness enhancement, the Roadmap Study suggested that economic diversification is crucial through strategic developments of industry and urban service sectors with the attraction of foreign direct investments and the promotion of local investments, aiming to create new jobs of 317,000 in the secondary sector and 641,000 in the tertiary sector. The priority sectors of economic development are as follows: 1) high value-added manufacturing industries (export/domestic), 2) IT/business/knowledge processing outsourcing (BPO/KPO), 3) tourism industry, and 4) new technology-driven industries. Given this sector prioritization, the following three aspects, namely, human resource development/education, establishment of Investment Promoting Agency (IPA) and industrial park development (1,500 hectares in total), have been stressed. Given these metropolitan visions, the Roadmap Study prepared a spatial plan for the Metro Cebu with several spatial concepts including the establishment of an urban cluster system with the division of Metro Cebu into six (6) urban function clusters, designation of urban limits, and development of the Green Loop connecting several centers located in the central part of the Metro Cebu (see **Figure 3.3-3** and **Figure 3.3-4**). This spatial plan is backboned by railway and road networks to be developed, as witnessed in the first flagship project above of "Master Plan Study and Feasibility Study (FS) on Mass Transit Network Development (MRT/LRT/BRT) in Metro Cebu".



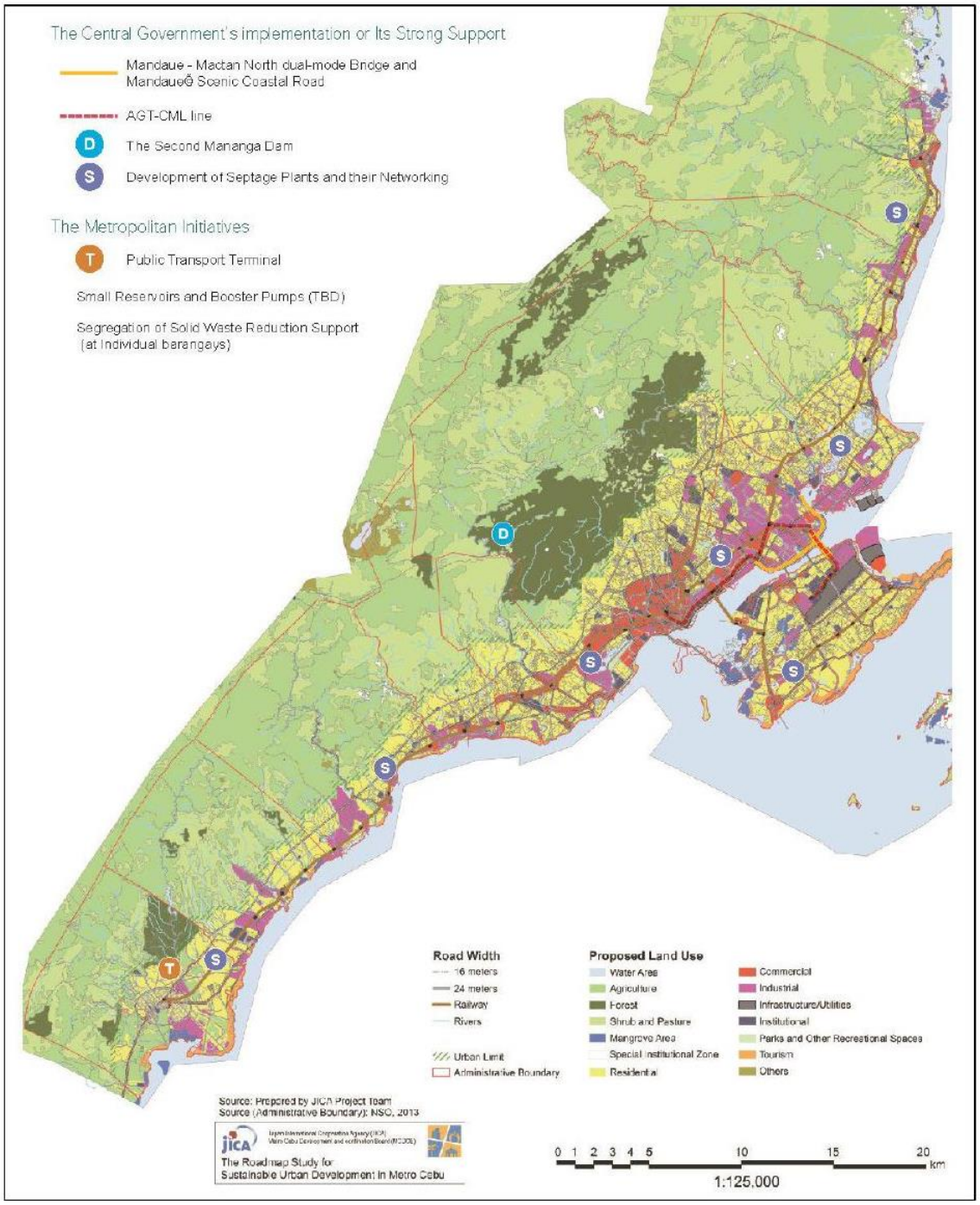
Urban Cluster System

Urban Limits

Green Loop

Source: JICA Study Team. The Roadmaps Study for Sustainable Urban Development in Metro Cebu.

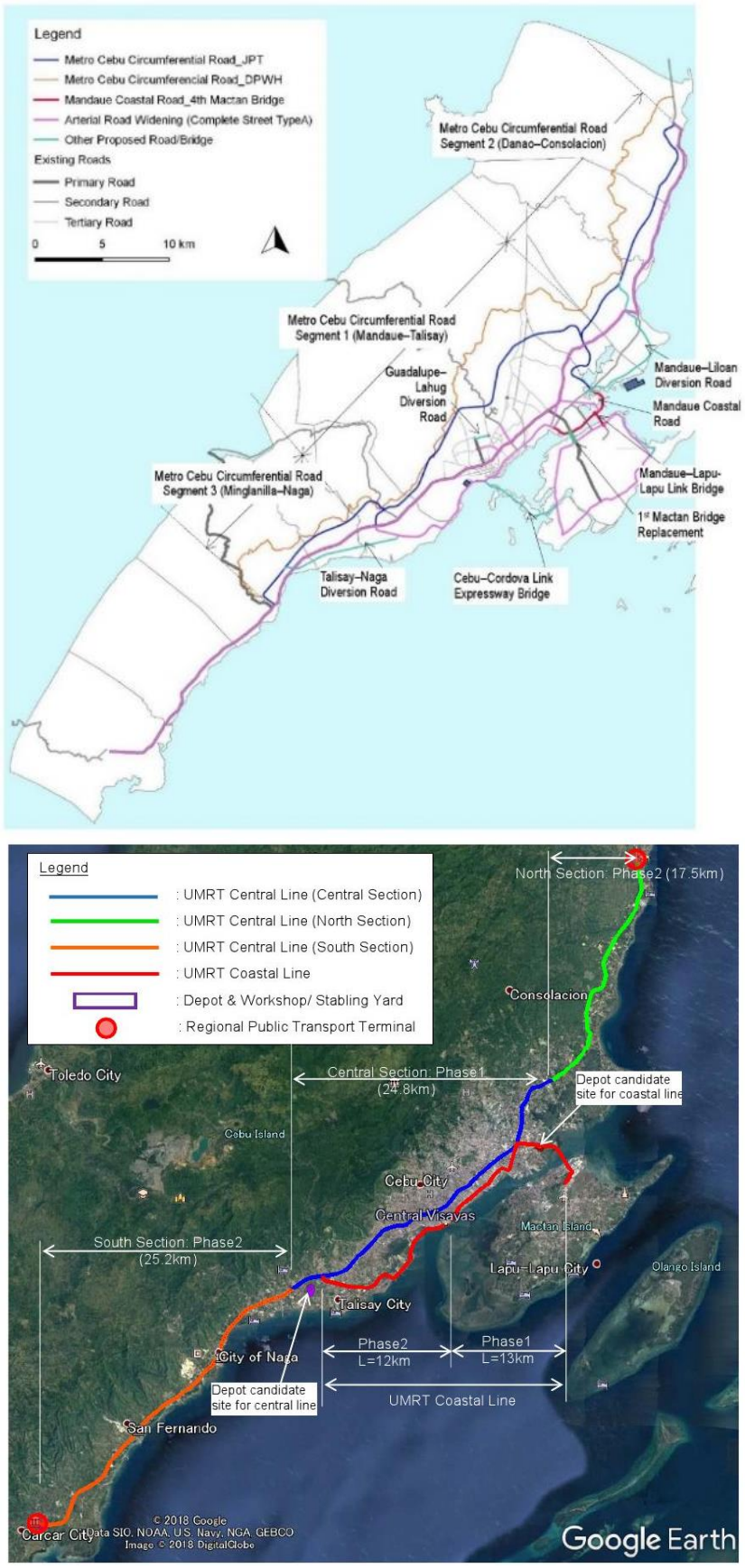
Figure 3.3-4 Proposed Concepts for Urban Structure, Metro Cebu



Source: JICA Study Team. The Roadmaps Study for Sustainable Urban Development in Metro Cebu.

Figure 3.3-5 Metro Cebu Spatial Plan and Major Roadmap Projects

Given the suggestion of the Roadmap Study, from 2017 to 2019 a subsequent JICA Study titled "The Project on Master Plan Study and Institutional Development on Urban Transport System in Metro Cebu" was implemented. This Transport Study stressed the importance of urban transport system to "ensure mobility and accessibility" across the whole Metro Cebu, which needs to be achieved with a view to the following aspects: roads and bridges, Urban Mass Rapid Transit (UMRT), road-based public transport, and traffic management. It further identified the following five priority projects: 1) Mandaue-Lapu Lapu Link Road Bridge and Mandaue Coastal Road, 2) Metro Cebu Circumferential Road (Phase1: Segment 1), 3) UMRT Central Line (Phase1: Central Section), 4) UMRT Coastal Line (Phase 1), and 5) Metro Cebu Area Traffic Control (ATC) System, as depicted in **Figure 3.3-6**. The future road network was proposed in line with the currently proposed HSH network.



Source: JICA Study Team. The Project on Master Plan Study and Institutional Development on Urban Transport System in Metro Cebu

Figure 3.3-6 Metro Cebu Future Urban Road Network (Left) and UMRT Network (Right)

From the perspective of metropolitan management, the MCDCB established in 2011 as the successor of the Metropolitan Cebu Development Council is the key entity to actualize the suggestions of both the Roadmap Study and the Transport Study. It is an integrated entity consisting of local governments units (LGUs), offices of the national government, NPOs/civil society and private enterprises. The MCDCB as a whole has been working to achieve its future vision of "a vibrant, equitable, sustainable and competitive environment that embraces Cebu's creativity and its cultural, historical and natural resources with strong citizen participation and responsive governance". The LGUs and other constituent entities are encouraged to collaborate and coordinate policies, plans, programs and projects in ten (10) areas of cooperation, including integrated development, urban and land use planning and zoning. However, unlike the Metropolitan Manila Development Authority (MMDA), the MCDCB's activities have still been limited mainly at the phase of policy- and plan-making due to the lack of legal and institutional powers. Hence, the Province of Cebu is now proposing the establishment of the Metropolitan Cebu Development Authority (MCDA), which is currently being discussed with the national government.

3.3.3 Metro Davao Urban Development Plan

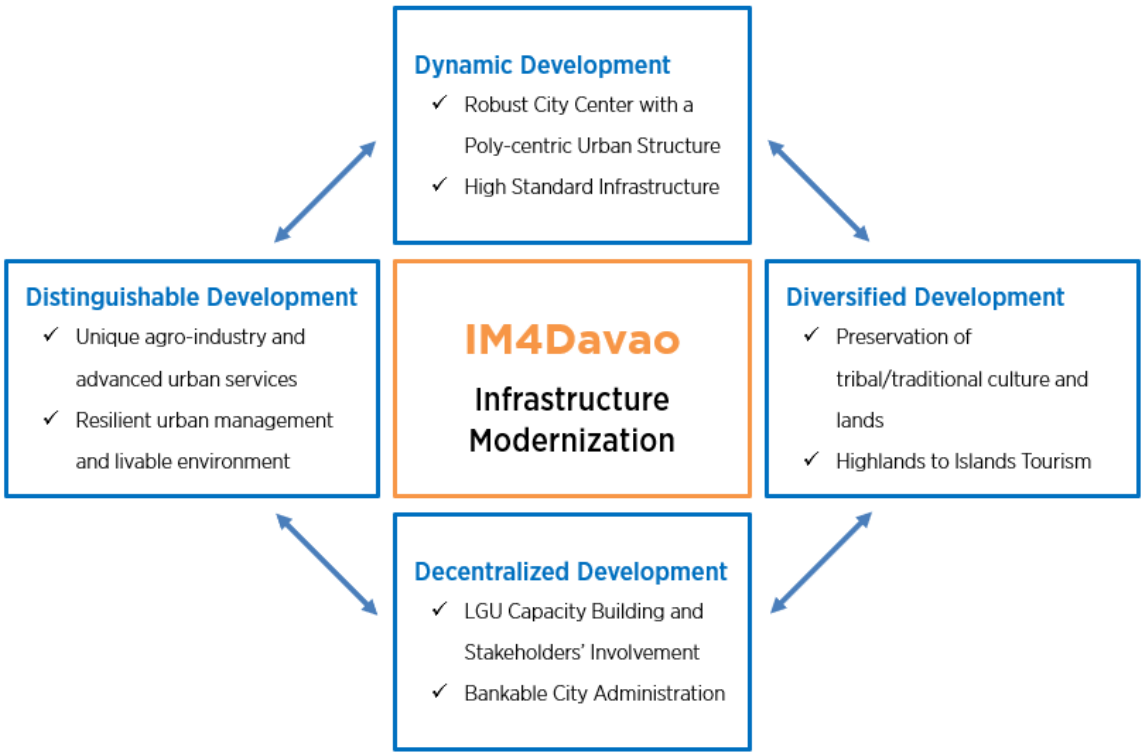
Metro Davao, located in the southeastern part of the Mindanao island, is an agglomeration of Local Government Units (LGUs), which consists of Davao City, four (4) cities of Digos (in Davao del Sur), Tagum, Panabo, and the Island Garden City of Samal (in Davao del Norte), and two (2) municipalities of Carmen (in Davao del Norte) and Santa Cruz (in Davao del Sur). It is the third largest urban agglomeration in the nation, accommodating a population of about 2.5 million as of 2015 in an area of about 4.0 thousand km^2. Metro Davao has enjoyed economic growth, especially led by the construction sector, recording the second fastest GRDP growth rate of 8.6% among the designated regions in 2018, following the highest GRDP growth rate of 8.9% for Region V (Bicol Region). Overall, Davao City covers a large part of urbanized areas within Metro Davao, accommodating a population of 1.6 million in an area of 2.4 thousand km^2.

Considering the necessity to realize the "Comprehensive Land Use Plan (CLUP) 2013-2022" formulated by the City Government of Davao, the JICA Study titled "Davao City Infrastructure Development Plan and Capacity Building Project" (nicknamed "IM4Davao (Infrastructure Modernization for Davao)") was implemented during 2017 to 2018 in cooperation with the National Economic and Development Authority (NEDA) and the City Government of Davao. The objectives of the IM4Davao Project were two-fold, namely: i) to develop an urban infrastructure development plan for Davao City with a priority project list, and ii) to support the planning and implementation of infrastructure development through capacity enhancement of the NEDA and the City Government of Davao. As for a socioeconomic framework, this IM4Davao Project followed the framework set in the "Regional Physical Framework Plan 2015–2045" formulated by the NEDA; it is predicted that the population will grow to reach over 3.2 million in 2045.

The IM4Davao Project proposed the following 4D strategies, namely: 1) Dynamic Development (robust city center with a polycentric urban structure, provision of high standard infrastructure), 2) Distinguishable Development (unique agro-industry and advanced urban services, resilient urban management and livable urban environment), 3) Diversified Development (preservation of tribal/traditional culture and lands, promotion of highlands to islands tourism, and 4) Decentralized Development (LGU capacity building and stakeholders' involvement, bankable city administration) (see **Figure 3.3-7**). For the acceleration of economic growth and job creation, priority industrial sectors were set as follows: 1) agriculture and agro-industry, 2) information and communication technology (ICT), 3) tourism, 4) industries to promote a low carbon society, and 5) industries to facilitate transport mobility and logistics. Under the 4D strategies above, The IM4Davao Project prepared an urban infrastructure development plan covering 7 sectors, namely: 1) roads and road traffic management, 2) public transport, 3) gateways, 4) water supply, 5) wastewater management, 6) solid waste, and 7) industrial development support. Given the spatial development plan

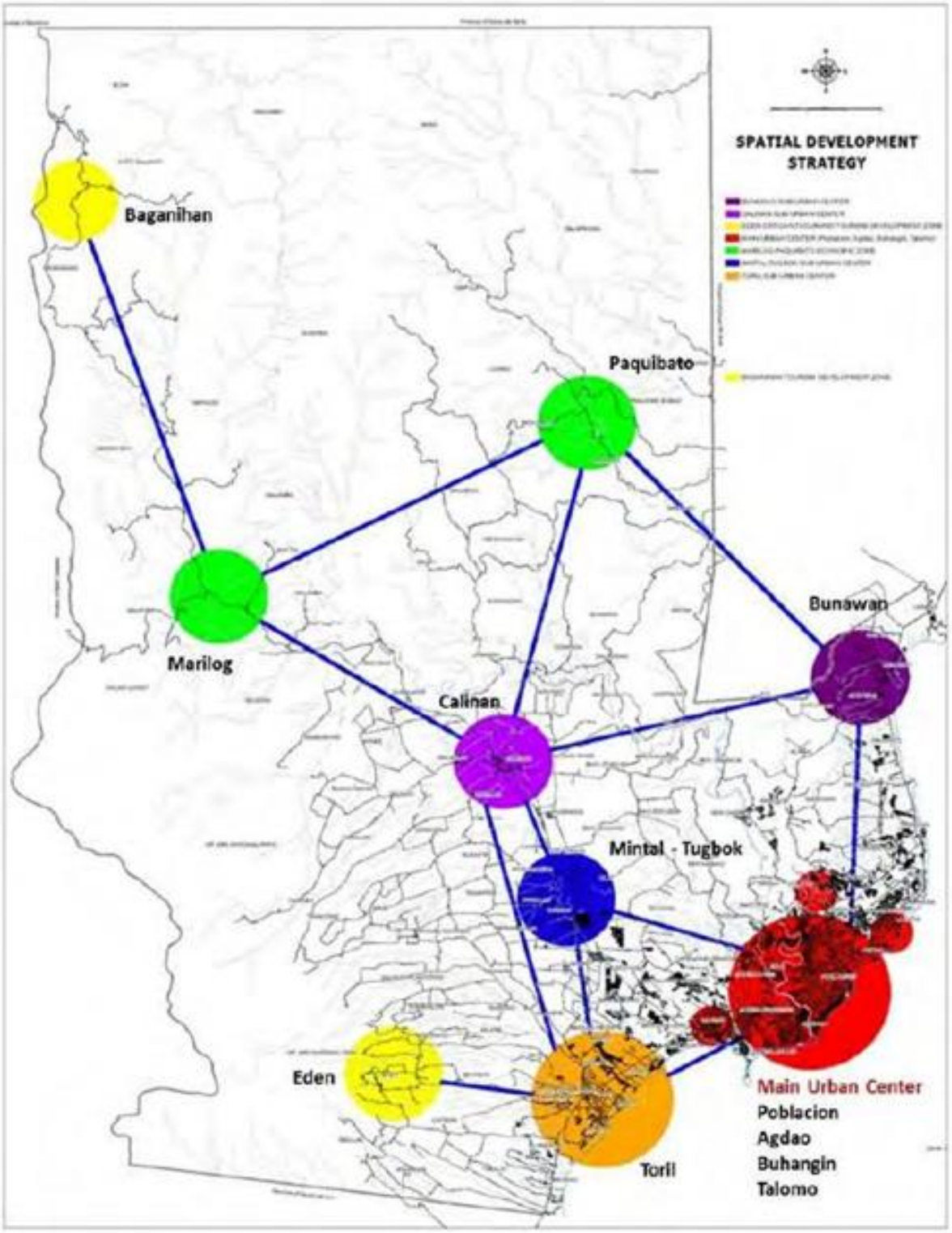
formulated by the City Government of Davao as shown in **Figure 3.3-8**, the land use plan cum the infrastructure development plan for Davao City 2045 was prepared as drawn in **Figure 3.3-9**. The future transport and road networks were thus proposed as illustrated in **Figure 3.3-10**.

The IM4Davao Project prepared a long list of projects consisting of 75 projects with a total cost of PHP 295 billion, which are recommended to be implemented under the short-term (2018-2022), medium-term (2023-2030) and long-term (2031-2045). Among these projects, it set priority projects, which included the following: 1) Extension of Davao City Diversion Road, 2) Davao Riverside Boulevard, 3) Davao City Mass Transit Main Line, 4) Sewerage System (Phase 1), 5) Davao City Waste Eco Park, 6) Traffic Management Improvement and Control Center, 7) SCADA (Supervisory Control and Data Acquisition System) and NRW (Non-revenue Water) Reduction Program, and 8) Tourism Corridor Development Featuring Davao History and Agriculture.



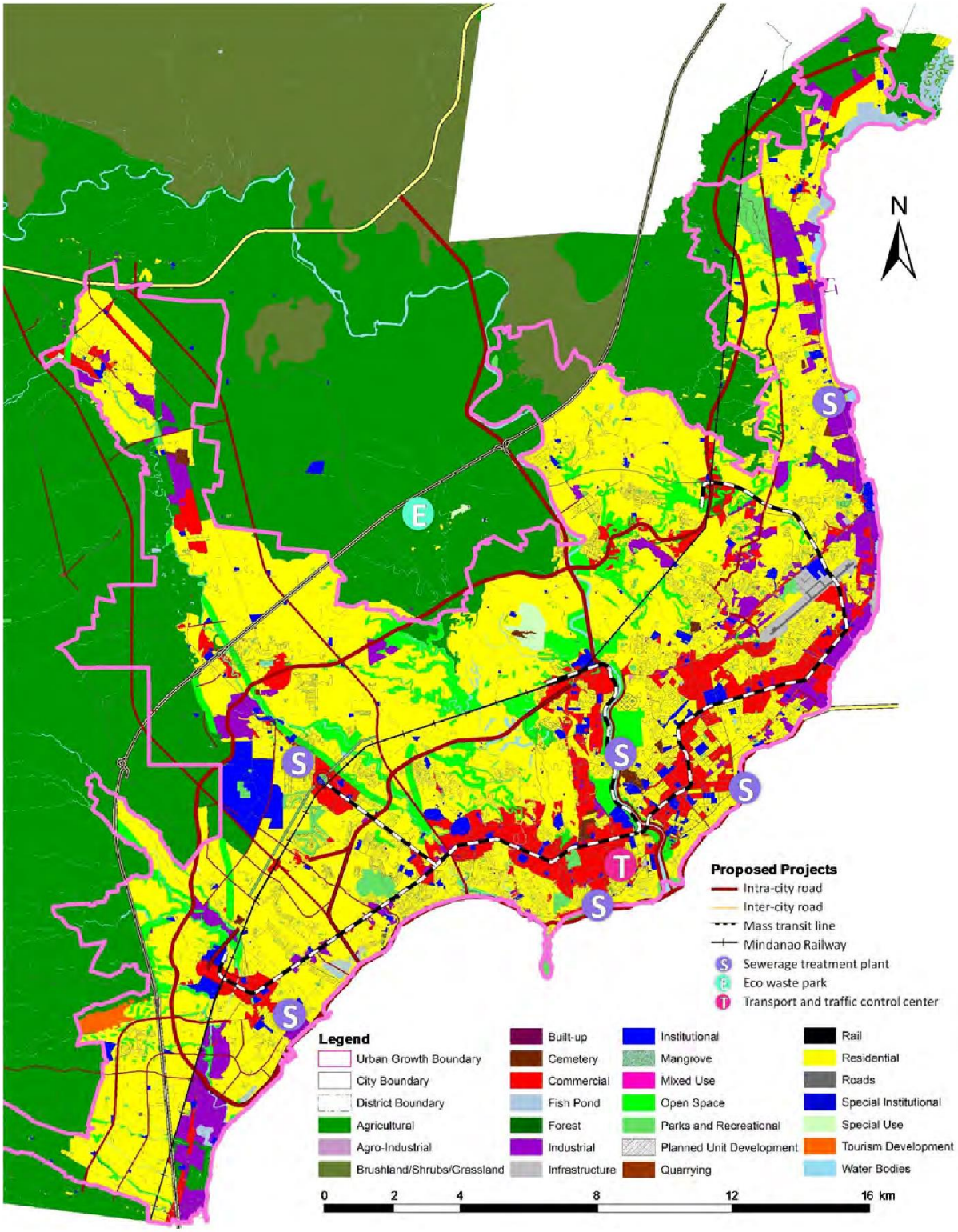
Source: IM4Davao Team. Davao City Infrastructure Development Plan and Capacity Building Project (IM4Davao Project)

Figure 3.3-7 4D Development Strategies for Davao City 2045



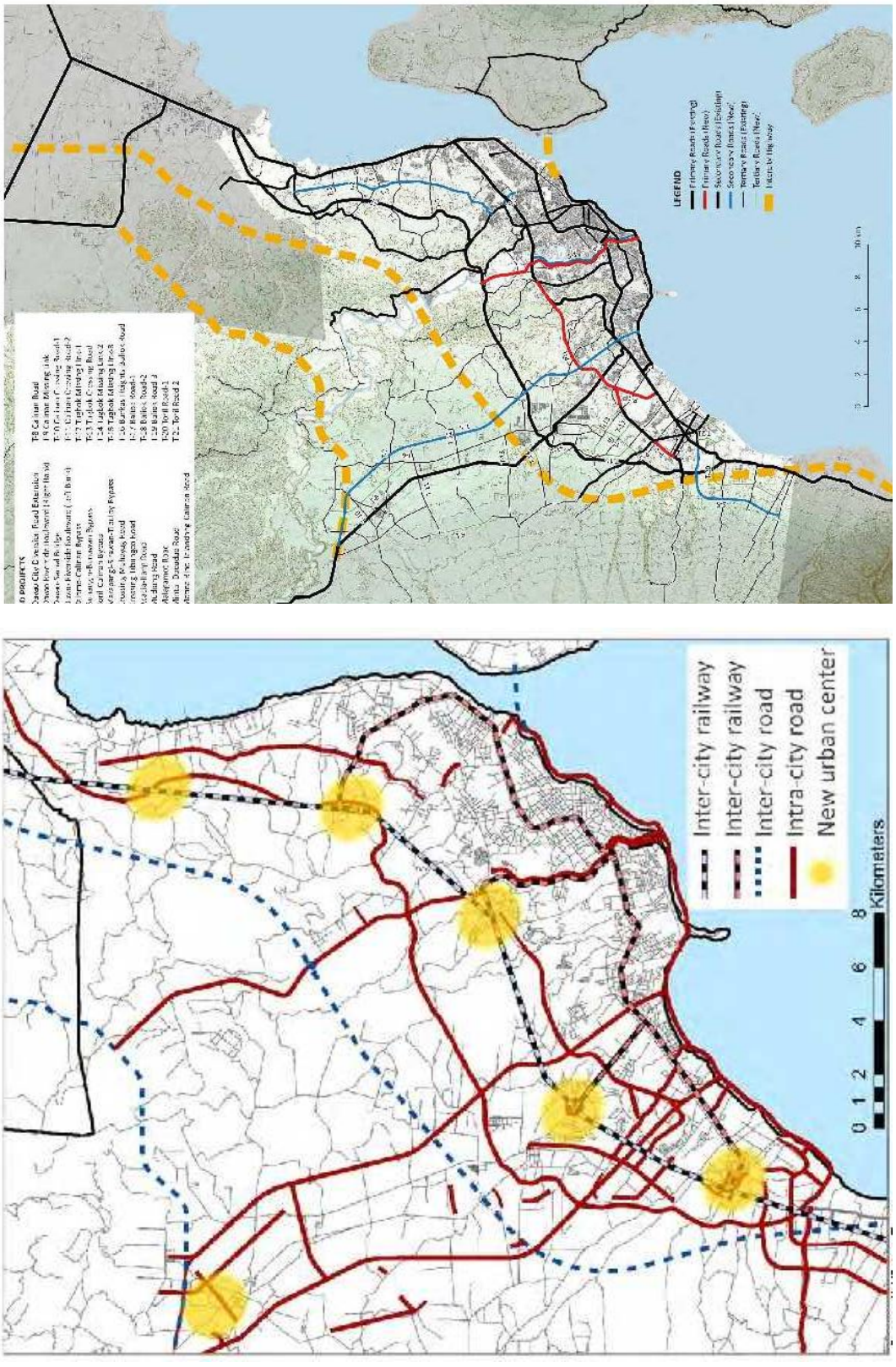
Source: City Government of Davao

Figure 3.3-8 Davao City Spatial Development Strategy



Source: IM4Davao Team. Davao City Infrastructure Development Plan and Capacity Building Project.

Figure 3.3-9 Land Use Plan cum Infrastructure Development Plan for Davao City 2045



Source: IM4Davao Team. Davao City Infrastructure Development Plan and Capacity Building Project.

Figure 3.3-10 Transport Network Plan (Left) and Road Network Plan (Right) for Davao City 2045

Given the predominance of Davao City in Metro Davao, its metropolitan development will be led by the proposed plans and projects by the IM4Davao Project. From an administrative perspective, there exists the Davao Integrated Development Program Board (DIDP) that serves as a council coordinating development strategies among the LGUs. It was in 1994 initiated by the Local Chief Executives of the following: the provinces of Davao Oriental, Davao Del Norte, Compostela Valley and Davao del Sur and the cities of Davao, Tagum, Panabo, Digos, Island Garden City of Samal and Mati. Based on the DIDP Master Plan, the DIDP has launched collaborative programs and projects such as the Integrated Food Security Program, the Local Governance and Rural Empowerment Project for Davao Region, and projects related to geographic information system and geo-resistivity survey.

3.3.4 Metro Cagayan de Oro Urban Development Plan

Metro Cagayan de Oro is composed of fifteen (15) local government units (LGUs), including two cities of Cagagayan de Oro and El Salvador, and thirteen (13) municipalities of Alubijid, Baungon, Claveria, Gitagum, Jasaan, Laguindingan, Libona, Malitbog, Manolo Fortich, Opol, Sumilao, Tagoloan, and Talakag. It has the fourth largest metropolitan area of 488.9 km^2 with a population of 1.38 million in 2015. Currently, a "Master Plan for the Sustainable Infrastructure Development of Metropolitan Cagayan de Oro" is under preparation by the National Economic and Development Authority Region 10.

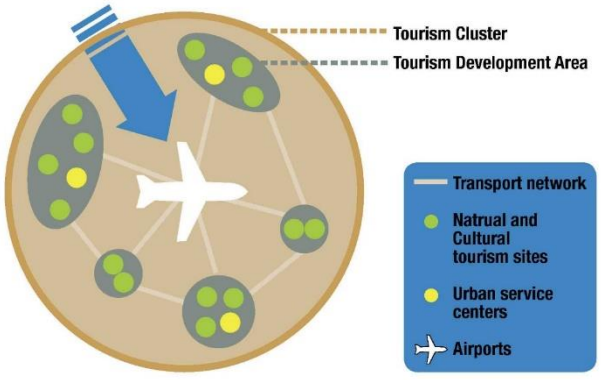
3.4 National Tourism Development Plan

The National Tourism Development Plan (NTDP) 2016-2022 sets the guiding vision as follows, based on the progress made by the NTDP 2011-2016:

> *"Develop a globally competitive, environmentally sustainable and socially responsible tourism industry that promotes inclusive growth through employment generation and equitable distribution of income thereby contributing to building a foundation for a high-trust society."*

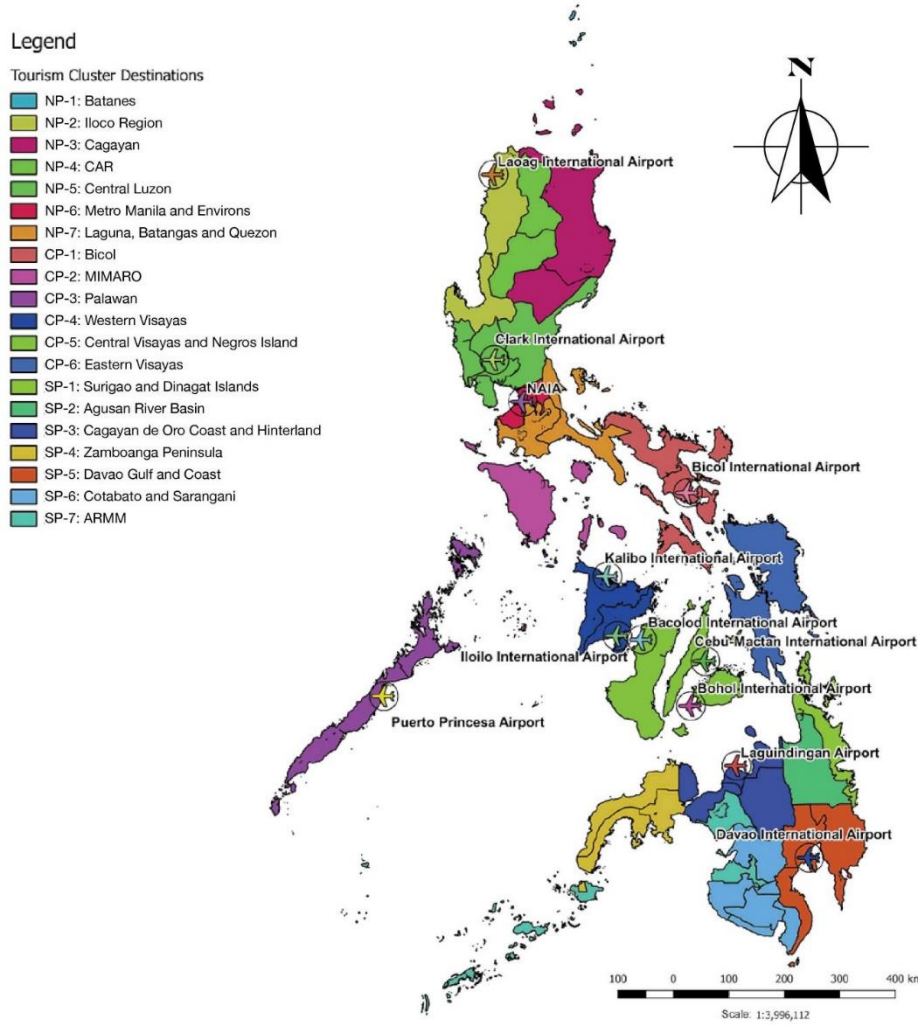
This vision is in line with the Tourism Act of 2009 (RA 9593) which positions the tourism as an integral part of the national economy as well as the ASEAN Community's initiatives on tourism promotion aiming for improvement of the competitiveness and sustainability and inclusiveness of ASEAN tourism.

The NTDP 2011-2016 adopted the tourism cluster approach which connects Tourism Development Areas (TDAs), natural and cultural tourism sites, and urban service centers by transport networks with a primary gateway (see **Figure 3.4-1**). In total, 78 TDAs and 20 thematic clusters were identified for synchronization of tourism development programs across the nation as shown in **Figure 3.4-2**. The NTDP 2016-2022 proposed further action programs for the cluster development, based on the evaluation of the development progress.



Source: NTDP 2016-2022, p. 54

Figure 3.4-1 Tourism Cluster Concept



Source: NTDP 2016-2022, p. 17

Figure 3.4-2 Tourism Cluster Destinations and Primary Airport Gateways

Under the stated vision of NTDP 2016-2022, two objectives of "Improving competitiveness and enhancing growth" and "Pursuing sustainability and inclusive growth" are adopted with 12 strategic action programs as presented in **Figure 3.4-3.**

Source: NTDP 2016-2022, p. 55

Figure 3.4-3 NTDP 2016-2022 General Framework