

The Second STATE OF THE COASTS of Guimaras Province



The Provincial Government of
Guimaras, Philippines



Empowered lives.
Resilient nations.



The Second State of the Coasts of Guimaras Province



The Provincial Government of
Guimaras, Philippines



*Empowered lives.
Resilient nations.*



The Second State of the Coasts of Guimaras Province

November 2018

This publication may be reproduced in whole or in part and in any form for educational or non-profit purposes or to provide wider dissemination for public response, provided prior written permission is obtained from the PEMSEA Resource Facility Executive Director, acknowledgment of the source is made and no commercial usage or sale of the material occurs. PEMSEA would appreciate receiving a copy of any publication that uses this publication as a source.

No use of this publication may be made for resale or any purpose other than those given above without a written agreement between PEMSEA and the requesting party.

Published by the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) and Provincial Government of Guimaras, Philippines with support from the Global Environment Facility (GEF) and United Nations Development Programme (UNDP).

Printed in Quezon City, Philippines

Citation: PEMSEA and Provincial Government of Guimaras, Philippines. 2018. The Second State of the Coasts of Guimaras Province. Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), Quezon City, Philippines.

ISBN 978-971-812-048-4

PEMSEA is an international organization mandated to implement the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA).

The contents of this publication do not necessarily reflect the views or policies of PEMSEA and other participating organizations. The designation employed and the presentation do not imply expression of opinion, whatsoever on the part of PEMSEA concerning the legal status of any country or territory, or its authority or concerning the delimitation of its boundaries.

PEMSEA Resource Facility
P.O. Box 2502, Quezon City 1165, Philippines
Tel: (+632) 929-2992 Fax: (+632) 926-9712
Email: info@pemsea.org
www.pemsea.org



Republic of the Philippines
Province of Guimaras

Office of the Governor
San Miguel, Jordan, Guimaras



Message

It has been markedly evident that for the past years of implementing the Integrated Coastal Management (ICM) Program, the island-province of Guimaras has taken remarkable strides and higher ladders in development.

This intervention, pursued in the light of existing and emerging environmental issues, has built a stronger bedrock for our island-province towards addressing the governance of human activities, particularly the Guimarasnons, that affect the sustainable use of goods and services from our coastal and marine ecosystems.

Now being employed as the key island development strategy, ICM has become one of the most effective approaches towards achieving sustainable development as we map and align our international and local direction en route to the attainment of Sustainable Development Goal 14 on Life Below Water.

The Second State of the Coasts of Guimaras Province provides a comprehensive assessment of the socio-economic and ecological conditions and governance mechanisms of the island. It was developed to assess the trends and changes that occurred in the coastal areas of the province resulting from the implementation of the various policies adopted by the province and the municipal local government units.

The SOC report shall be used to polish and upgrade the ICM program and achieve the goals on pollution reduction and waste management; food security and livelihood management; water use and supply management; habitat protection, restoration and management; and natural and man-made hazard prevention and management.

As we move forward, *Para sa Masanag nga Palaabuton*, we also aim to institutionalize this strategy. The formulation of the ICM Ordinance will eventually make Guimaras the pioneer local government unit to have institutionalized the said program.

The State of the Coasts was made for and with the people of Guimaras and for all of our local chief executives from the five municipalities and ninety-eight barangays, ICM managers, practitioners and our coastal communities and other local stakeholders.

May this be an operative guiding blueprint to increase the efficiency and effectiveness of coastal governance and leadership. We will not just astro-navigate with the celestial bodies but we will be steered with concrete plans, effective strategies, integrated efforts; and led by the right leaders.

Thus, with pride and honor, we confer credits to all the hardworking men and women behind this publication – the Partnerships in Environmental Management for the Seas of East Asia, the Guimaras Environment and Natural Resources Office and all the other stakeholders that have become part of this developmental endeavor.

As we move towards becoming the agri-eco tourism capital of the region, we, at the Provincial Government of Guimaras, eyes a stronger network of environmental warriors and leaders.

Let us altogether protect what is ours because “We are the island. The island is us”.

As one island, one paradise, one Guimaras, let us sum our energies up to the top of the best world we can have today and in the near future.

A handwritten signature in black ink, appearing to read 'Samuel T. Gumarin', with a small dot at the end of the line.

Samuel T. Gumarin, MD, MPH
Governor



**Partnerships in Environmental Management
for the Seas of East Asia**



Message

On behalf of PEMSEA, I wish to congratulate the Provincial Government of Guimaras and its partners for being the *first* province and local government partner of PEMSEA in the East Asian Seas Region that is able to develop and publish the Second State of the Coasts (SOC) Report.

Guimaras Province started ICM implementation in 2008 and developed the first SOC report in 2012. SOC reporting is designed to determine discernible trends and changes that are occurring in the coastal areas resulting from the implementation of the policies adopted by the province and the five municipal governments. It also intends to assess the implementation of programs addressing aspects of sustainable development, in partnerships with various agencies and stakeholders for the past 10 years.

Indeed, the Second SOC Report was able to capture evidences that showed significant improvements in environmental governance and management practices in the province for the past 10 years. Twenty-four out of 35 indicators showed positive progress, notably in developing and strengthening enabling policy frameworks and institutional arrangements, awareness raising, capacity building and financing, disaster management, waste water management and fisheries management; 6 indicators showed discernible positive changes but are not quite eligible to be shifted to improving status and only 5 indicators need further improvement. None of the 35 indicators showed deteriorating status. These results clearly indicated that Guimaras Province is heading towards the right direction in laying the necessary ground work for achieving sustainable development of its coastal and marine areas.

More importantly, the principles of learning by doing and coordination amongst relevant actors and the adoption of an integrated approach as opposed to ad hoc sectoral approach have been very well illustrated in the process of developing the report. Various partners ranging from national government agencies, non-government organizations, the academe, civil society organizations, international organizations, in addition to the provincial and municipal governments, have contributed and learned from each other and appreciated the value of the reporting mechanism.

PEMSEA will continue supporting the ICM program in Guimaras Province as it helps secure its vision of becoming the agri-eco-tourism capital of Western Visayas in the Philippines and in achieving its commitments to the UN Sustainable Development Goals.

Aimee Gonzales
Executive Director

Table of Contents

List of Tables	vii
List of Figures	x
List of Abbreviations and Acronyms	xi
Acknowledgements	xv
Introduction	1
What is Integrated Coastal Management?	1
What is a State of the Coasts Report?	1
Who is the SOC target audience?	2
What are the main elements of the SOC report?	2
Guide to SOC Development	3
Core Indicators for the Second SOC Report of Guimaras Province	4
Executive Summary	7
Guimaras Province	13
Indicators	17
What are indicators?	17
What are the indicators for the State of the Coasts?	17
What are the core indicators for SOC included in this report?	18
How are the indicators presented in this report?	19
Governance	
Policy, Strategies and Plans	20
Institutional Arrangements	30
Legislation	42
Information and Public Awareness	56
Capacity Development	72
Financing Mechanisms	86
Sustainable Development Aspects	
Natural and Man-made Hazard Prevention and Management	94
Habitat Protection, Restoration and Management	112
Water Use and Supply Management	136
Food Security and Livelihood Management	148
Pollution Reduction and Waste Management	172
Annex	206
Annex 1. Framework for the Sustainable Development of Coastal Areas thru ICM	208

List of Tables

Table 1	Population, annual growth rate and density in Guimaras Province and by municipality in 2000, 2010 and 2015	14
Table 2	Land area, number of coastal barangay, coastal population and coastal population density by municipality in 2000, 2010 and 2015	15
Table 3	Plans of the province and municipalities	27
Table 4	Profile of the PCC Sub-Committees	32
Table 5	Budget allocation for the operation of the PCC	32
Table 6	Representation of stakeholders in the sub-committees of the coordinating mechanism	39
Table 7	Relevant legislations enacted by the province and municipalities of Guimaras	43
Table 8	Number of quarry permit holders	49
Table 9	Number of approved commercial sand and gravel permit holders	49
Table 10	Environmental compliance monitoring conducted by the municipalities	49
Table 11	Environmental compliance certificates issued by DENR-EMB (2011-2015)	49
Table 12	Inventory of coastal structures in Guimaras Province (2015-2016)	50
Table 13	Foreshore Lease Agreement (FLA) applications in Guimaras Province and status as of 2017	50
Table 14	Summary of environmental violations in Guimaras Province	53
Table 15	Summary of total volume of apprehended forest products in 2017	54
Table 16	Facilities for public access to information	57
Table 17	Awareness programs and activities conducted in Guimaras Province	58
Table 18	Active civil society, nongovernmental and people's organizations in Guimaras Province	61
Table 19	Budget allocation for capacity development	73
Table 20	Staff allocation for coordination of ICM program implementation CY 2017	74
Table 21	List of studies/researches conducted in Guimaras Province by Guimaras State College	74
Table 22	Trainings related to coastal management attended by local government staff	79
Table 23	Trainings provided to stakeholders	83
Table 24	Financial allocation of the local governments in Guimaras Province for coastal management	87
Table 25	Financial allocation of DENR for coastal management in Guimaras Province	88
Table 26	Grants received from external sources	89
Table 27	Programs on corporate social responsibility and public-private partnerships in Guimaras Province	91
Table 28	Natural and human-induced disaster/environmental emergency response plan	96
Table 29	Budget allocation for natural and human-induced disaster management	98
Table 30	Number of trained and non-trained personnel /responder per municipality, available equipment and early warning system	99

Table 31	Hazard-prone barangays in Guimaras Province	104
Table 32	Hazard-prone areas in the Municipality of Nueva Valencia	105
Table 33	Economic losses due to disaster	109
Table 34	Staff and budget allocation for habitat management	113
Table 35	Vegetative cover of Guimaras Province in hectares (2017)	117
Table 36	Inventory of foreshore areas with application (DENR-PENRO) (2016)	121
Table 37	Foreshore areas with permits (DENR-PENRO) (2016)	121
Table 38	Status of mangrove resources in the Municipality of Buenavista (2014)	122
Table 39	Marine protected areas in Guimaras Province	126
Table 40	Results of MPA management effectiveness assessments for selected MPA in Guimaras Province	126
Table 41	Terrestrial protected areas in Guimaras Province	127
Table 42	Upland reforestation, watershed and riverbank rehabilitation projects in Guimaras Province	128
Table 43	National Greening Program seedling survival rate	130
Table 44	Reclamation activities in the coastal areas of Guimaras Province	133
Table 45	Budget allocation for water management in Guimaras Province (in PhP)	137
Table 46	Access to improved water source for the year 2014	141
Table 47	Access to improved water source for the year 2015	141
Table 48	Access to improved water source for the year 2016	141
Table 49	Access to improved water source for the year 2017	141
Table 50	Level III consumption rates for the Municipality of Jordan (2015)	142
Table 51	Water supply facilities in Guimaras Province	143
Table 52	Number of incidence and death in the five municipalities due to waterborne diseases (2012-2017)	145
Table 53	Staff and budget allocation for fisheries management	149
Table 54	Total catch per unit effort in the Municipalities of Buenavista, Sibunag and Nueva Valencia (2014-2017)	153
Table 55	List of common fishing gears used in Guimaras Province	153
Table 56	List of fish species commonly caught in Guimaras Province municipal waters	154
Table 57	Guimaras municipal fisheries: Volume of production by species in metric tons (2010-2017)	156
Table 58	Guimaras aquaculture: Volume of production by species in metric tons (2010-2017)	157
Table 59	Annual per capita consumption of fishery products in Guimaras Province	158
Table 60	Number of malnourished children 0-5 years old	161

Table 61	Guimaras real per capita income (in Php)	163
Table 62	Poverty incidence among families in Guimaras Province	163
Table 63	Municipal level poverty estimates (2012)	163
Table 64	Unemployment rate (15 years old and above)	163
Table 65	Tourists arrivals and receipts in Guimaras Province (2010-2017)	164
Table 66	Agroforestry sites in Guimaras Province	164
Table 67	Staff and budget allocation for livelihood programs in Guimaras Province (in PhP)	167
Table 68	List of biodiversity-friendly enterprises (BDFE) provided by DENR-PENRO to Guimaras Province	168
Table 69	Pollution and waste management plans of the province and the five municipalities	173
Table 70	Monitoring programs for pollution and waste management in Guimaras Province.	174
Table 71	Staff and budget allocation for pollution and waste management in Guimaras Province	175
Table 72	List of facilities for pollution and waste management in Guimaras Province	177
Table 73	Inventory of equipment for pollution and waste management in Guimaras Province	178
Table 74	Guimaras coastal water sampling stations and water classification	182
Table 75	DENR water quality standards of 1990 and 2016	182
Table 76	Sampling stations monitored after the MT Solar 1 oil spill incident	186
Table 77	Emissions inventory for stationary sources of air pollutants, CY 2015	191
Table 78	Number of public transportation vehicles in Guimaras Province	192
Table 79	Proportion of households with access to sanitary toilets (2014-2016)	195
Table 80	Proportion of households with complete basic sanitation facilities	196
Table 81	Waste characteristics in Guimaras Province (2014-2016)	199
Table 82	Sources of wastes in Guimaras Province (2014-2016)	199
Table 83	DCGNPH's health care waste from January 2017-November 2017	203

List of Figures

Figure 1	Location map of Guimaras Province, Philippines	13
Figure 2	Watershed and drainage map of Guimaras Province	13
Figure 3	Population trend in Guimaras Province and by municipality in 2000, 2010 and 2015	14
Figure 4	Environmental sensitivity index map of Guimaras Province	21
Figure 5	Guimaras ICM Program Coordinating Committee	31
Figure 6	Organizational structure of the Guimaras Environment and Natural Resources Office	33
Figure 7	ICM Program Coordinating Committee of the Municipality of Buenavista	34
Figure 8	ICM Program Coordinating Committee of the Municipality of San Lorenzo	34
Figure 9	ICM Program Local Project Office of the Municipality of San Lorenzo	35
Figure 10	ICM Program Coordinating Committee of the Municipality of Sibunag	35
Figure 11	ICM Program Coordinating Committee of the Municipality of Jordan	36
Figure 12	ICM Program Coordinating Committee of the Municipality of Nueva Valencia	36
Figure 13	Organizational structure of the Provincial Disaster Risk Reduction and Management Council	95
Figure 14	Hazard-prone barangays in Guimaras Province	103
Figure 15	Multi-hazard and building footprints in Guimaras Province	106
Figure 16	Inundation map of Guimaras Province	107
Figure 17	Coastal resource map of Guimaras Province	118
Figure 18	Coastal resource map of the Municipality of Nueva Valencia	118
Figure 19	Fish density in selected marine protected areas in Guimaras Province	119
Figure 20	Coral cover in selected marine protected areas in Guimaras Province	119
Figure 21	Seagrass cover in selected marine protected areas in Guimaras Province	120
Figure 22	Mangrove cover in selected marine protected areas in Guimaras Province	120
Figure 23	Marine protected areas in Guimaras Province	125
Figure 24	Taklong Island National Marine Reserve METT rating	127
Figure 25	Erosion along the coastal areas of Barangay M. Chavez, Municipality of San Lorenzo	133
Figure 26	Erosion along the coastal areas of Sebaste, Municipality of Sibunag	134
Figure 27	Hydrogeologic map of Guimaras Province	139
Figure 28	Proportion of households with access to safe water supply (2012-2017)	142
Figure 29	Prevalence of stunted & severely stunted pre-school children (2013-2016)	161
Figure 30	Guimaras Province coastal water quality monitoring stations	181
Figure 31	2010-2017 Iloilo and Guimaras Strait annual comparative results for total coliform	183
Figure 32	2010-2017 Iloilo and Guimaras Strait annual comparative results for fecal coliform	183
Figure 33	2010-2017 Iloilo and Guimaras Strait annual comparative results for oil and grease	184
Figure 34	2010-2017 Iloilo and Guimaras Strait annual comparative results for dissolved oxygen	184
Figure 35	2010-2017 Iloilo and Guimaras Strait Annual Comparative Results for pH	185
Figure 36	2010-2017 Iloilo and Guimaras Strait annual comparative results for temperature	185
Figure 37	Proportion of households with sanitary toilet facility (2012-2017)	195
Figure 38	Proportion of households with sanitary toilet facility (2017)	196

List of Abbreviations and Acronyms

A & D	–	Alienable and Disposable	DepEd	–	Department of Education
AEW	–	Agricultural Extension Worker	DILG	–	Department of the Interior and Local Government
AIP	–	Annual Investment Plan	DOC	–	Disaster Operations Center
AT	–	Agricultural Technologist/Technician	DOH	–	Department of Health
ATOP	–	Association of Tourism Officers of the Philippines	DOJ	–	Department of Justice
BAC	–	Bids and Awards Committee	DOST	–	Department of Science and Technology
BDFE	–	Biodiversity Friendly Enterprise	DOT	–	Department of Tourism
BFAR	–	Bureau of Fisheries and Aquatic Resources	DPWH	–	Department of Public Works and High Ways
BFARMC	–	Barangay Fisheries and Aquatic Resources Management Council	ECC	–	Environmental Compliance Certificate
Boat R	–	Boat Registration	ELA	–	Executive Legislative Agenda
BPI-GNCRDPSC	–	Bureau of Plant Industry-Guimaras National Crop Research Development and Production Support Center	EMB	–	Environmental Management Bureau
BUB	–	Bottom-Up-Budgeting	ENGP	–	Enhanced National Greening Program
CARP	–	Comprehensive Agrarian Reform Program	EO	–	Executive Order
CBFM	–	Community Based Forest Management	ESWMP	–	Ecological Solid Waste Management Plan
CBMS	–	Community Based Monitoring System	FAD	–	Fish Aggregating Device
CDRA	–	Climate and Disaster Risk Assessment	FFS	–	Farmers Field School
CDP	–	Comprehensive Development Plan	Fish R	–	Fisherfolks Registration
CFRM	–	Coastal and Fisheries Resource Management	FITS	–	Farmers Information Technology Services
CLUP	–	Comprehensive Land Use Plan	FLA	–	Foreshore Lease Agreement
CMCI	–	Cities and Municipalities Competitive Index	FLEET	–	Fishery Law Enforcement and Enhancement Training
CMEMP	–	Coastal and Marine Ecosystem Management Program	FLUP	–	Forest Land Use Plan
CPUE	–	Catch per Unit Effort	GAC	–	Guest Assistance Center
CRM	–	Coastal Resource Management	GADP	–	Gender and Development Plan
CRMP	–	Coastal Resource Management Plan	GAPAS	–	Guimaras Alliance of Protected Areas and Sanctuaries
CS	–	Coastal Strategy	GEF	–	Global Environment Facility
CSIP	–	Coastal Strategy Implementation Plan	GENRO	–	Guimaras Environment and Natural Resources Office
CSO	–	Civil Society Organization	GIZ	–	German International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit)
CSR	–	Corporate Social Responsibility	GSC	–	Guimaras State College
DA	–	Department of Agriculture	IBMS	–	Igang Bay Marine Sanctuary
DENR	–	Department of Environment and Natural Resources	ICFRM	–	Integrated Coastal and Fisheries Resource Management Plan

ICM	– Integrated Coastal Management	METT	– Management Effectiveness Tracking Tool
ICM-PCC	– Integrated Coastal Management-Program Coordinating Committee	MFARMC	– Municipal Fisheries and Aquatic Resource Management Council
ICRM	– Integrated Coastal Resource Management	MGB	– Mines and Geosciences Bureau
ICRMP	– Integrated Coastal Resource Management Plan	MIGEDC	– Metro Iloilo-Guimaras Economic Development Council
IEC	– Information Education and Communication	MLGU	– Municipal Local Government Unit
IIMS	– Integrated Information Management System	MMPAMB	– Municipal Marine Protected Area Management Board
IP	– Indigenous People	MOA	– Memorandum of Agreement
IPM	– Integrated Pest Management	MPA	– Marine Protected Area
IPT	– Individual Plus Tree	NAMRIA	– National Mapping and Resource Information Authority
IRA	– Internal Revenue Allotment	NEDA	– National Economic Development Authority
JBLFMU	– John B. Lacson Foundation Maritime University	NGA	– National Government Agencies
KAMAMADO	– Katilingan sang Magagmay nga Mangingisda sa Dolores	NGO	– Non-Government Organization
KAP	– Knowledge Attitude and Practices	NGP	– National Greening Program
KMI	– Korea Maritime Institute	NSAP	– National Stock Assessment Program
KOEM	– Korea Environment and Management Corporation	OGA	– Other Government Agencies
KOICA	– Korea International Cooperation Agency	OMAS	– Office of the Municipal Agricultural Services
KIOST	– Korea Institute of Science and Technology	PA	– Protected Area
LAFARMA	– La Paz Fisherfolks Aquatic Resource and Management Association	PAG-ASA	– Philippine Atmospheric Geophysical and Astronomical Services Administration
LBP	– Land Bank of the Philippines	PCAARD	– Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development
LCCAP	– Local Climate Change Action Plan	PCG	– Philippine Coast Guard
LCE	– Local Chief Executive	PD	– Presidential Decree
LDRRM	– Local Disaster Risk Reduction Management	PDCC	– Provincial Disaster Coordinating Council
LGU	– Local Government Unit	PDRRMO	– Provincial Disaster Risk Reduction and Management Office
LTO	– Land Transportation Office	PDRRMS	– Provincial Disaster Risk Reduction and Management Section
MAFC	– Municipal Agriculture and Fisheries Council	PEMSEA	– Partnerships in Environmental Management for the Seas of East Asia
MAO	– Municipal Agricultural Office	PENRO	– Provincial Environment and Natural Resources Office
MARINA	– Maritime Industry Authority	PGG	– Provincial Government of Guimaras
MDC	– Municipal Development Council	PHINMA	– Philippine Investment Management (PHINMA)
MDDRMO	– Municipal Disaster Risk Reduction and Management Office	PLGU	– Provincial Local Government Unit
MEAT	– Management Effectiveness Assessment Tool	PMO	– Project Management Office
MERF	– Marine Environment Resources Foundation		

PO	- People's Organization
POAS	- Provincial Office for Agricultural Services
PPA	- Philippine Ports Authority
PDPFP	- Provincial Development and Physical Framework Plan
PRDP	- Philippine Rural Development Program
PSA	- Philippine Statistics Authority
RCA	- Residual Containment Area
RFO	- Regional Field Office
RORO	- Roll On, Roll Off
RPA	- Revocable Permit Application
RSOBER	- Regional State of the Brown Environment Report
SALINTUBIG	- Sagana at Ligtas Na Tubig sa Lahat
SCREMP	- Sustainable Coral Reef Ecosystem Management Program
SDG	- Sustainable Development Goal
SDS-SEA	- Sustainable Development Strategy for Seas of East Asia
SEAFDEC	- Southeast Asian Fisheries Development Center
SFR	- Small Farm Reservoir
SLF	- Sanitary Landfill
SOC	- State of the Coast
SWM	- Solid Waste Management
Tan-Luc	- Tando and Lucmayan
TAREC	- Trans-Asia Renewable Energy Corporation
TIMBA	- Taklong Island Marine Biodiversity Assessment
TINMR	- Taklong Island National Marine Reserve
TNA	- Training Needs Assessment
UP-MSI	- University of the Philippines-Marine Science Institute
UPV	- University of the Philippines Visayas
US	- United States
US-PCV	- United States-Peace Corps Volunteer
WATSAN	- Water Sanitation
WEO	- Wildlife Enforcement Officer
YES-O	- Youth for Environment in Schools Organization

Acknowledgments

The development of the *Second State of the Coasts of Guimaras Province* was facilitated by the Partnerships in Environmental Management for the Seas of East Asia Resource Facility (PRF) in partnership with the ICM-Project Management Office and in collaboration with the following government agencies, non-government organizations, the private sector, academe and other stakeholders:

- Governor's Office
- Guimaras Environment and Natural Resources Office
- Provincial Office for Agricultural Services
- Provincial Social Welfare and Development Office
- Local Disaster Risk Reduction and Management Section
- Provincial Health Office
- Provincial Planning and Development Office
- Philippine National Police
- Department of Environment and Natural Resources-Provincial Environment and Natural Resources Office
- Bureau of Fisheries and Aquatic Resources
- Guimaras State College
- John B. Lacson Foundation Maritime University
- University of the Philippines Visayas
- Local Government of the following coastal municipalities:
 - Buonavista
 - Jordan
 - Nueva Valencia
 - San Lorenzo
 - Sibunag

These municipal offices include:

- Municipal Agriculture Office/Office of the Municipal Agriculturist/Office of the Municipal Agricultural Services
- Sangguniang Bayan Office
- Municipal Disaster Risk Reduction and Management Council
- Municipal Engineering Office
- Municipal Health Office
- Municipal Planning and Development Office

People's Organization and other Stakeholders:

- KAMAMADO
- BFARMC
- MFARMC

The final output benefited from the technical refinements of the staff from the PEMSEA Resource Facility: Ms. Nancy Bermas-Atrigenio, Senior Country Programme Manager; with guidance from Mr. S. Adrian Ross, Senior Project Manager and Ms. Aimee Gonzales, Executive Director. Editorial and layout support by Mr. John Christian Castillo, Graphic Artist and Mr. Jonel Dulay, Senior Artist are likewise appreciated.

The staff of the ICM Project Management Office under the Guimaras Environment and Natural Resources Office is comprised of the following:

- Mr. Leonard S. Pasiderio
- Ms. Arlette T. Depamaylo
- Ms. Rose Jane N. Sablon
- Ms. Ma. Leah Joy T. Gabayeron
- Ms. Juneline S. de la Cruz
- Mr. Neil P. Catalan
- Ms. Jogie V. Diana
- Ms. Ma. Rhea S. Manzan
- Mr. Kolin John N. Casquero
- Mr. John F. Basco
- Mr. Nathan B. Legita
- Ms. Nory G. Zamora

Introduction

What is Integrated Coastal Management?

Integrated coastal management (ICM) is a natural resource and environmental management framework which employs an integrative, holistic approach and an interactive planning process in addressing the complex management issues in the coastal area. The ultimate purpose of ICM is to increase the efficiency and effectiveness of coastal governance in terms of its ability to achieve the sustainable use of coastal resources and of the services generated by the ecosystems in the coastal areas. It aims to do this by protecting the functional integrity of these natural resource systems while allowing economic development to proceed. Through integrated planning, ICM aims to address conflicts arising from multiple use of limited space and resources (Chua, 2006).

What is a State of the Coasts Report?

The State of the Coasts (SOC) is a reporting system developed primarily to assess the progress and impacts of ICM implementation by local governments. Specifically, it aims to:

- a. Define the scope of issues being addressed in ICM;
- b. Delineate the governance mechanisms and implementing arrangements that have been put in place;
- c. Assess the extent and effectiveness of ICM program implementation;
- d. Identify trends or changes in the social, economic and environmental status of the area;
- e. Determine the driving forces for change;
- f. Assess the implications of the trends; and
- g. Promote adaptive management in ICM program implementation, in response to changing conditions.

Who is the SOC target audience?

The State of the Coasts report is intended for:

- a. Chief Executives of local governments;
- b. ICM managers;
- c. ICM practitioners; and
- d. Coastal communities and other stakeholders.

What are the main elements of the SOC Report?

The SOC report contains the following:

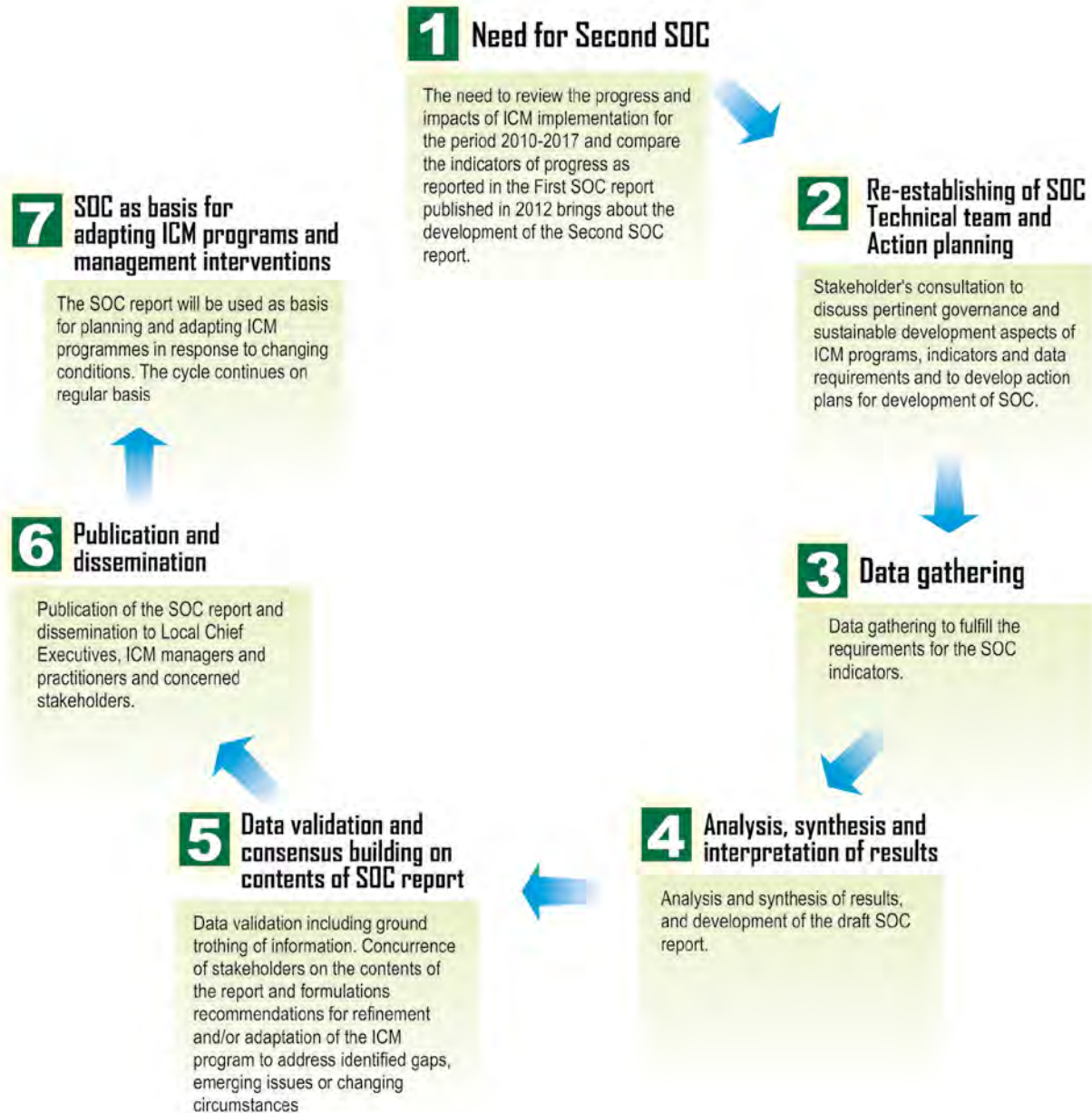
- a. An Executive Summary featuring a fact sheet of the area, and a summary of key findings, implications and recommendations;
- b. A description of the relevance of various indicators of governance and sustainable development aspects of ICM programs based on a common framework for sustainable coastal development;
- c. The results and analysis of each indicator, including the implications of changing conditions and recommendations for mitigating measures, as agreed to by concerned stakeholders; and
- d. A description of the SOC methodology and process, the framework for sustainable coastal development, and the accomplished SOC reporting templates.

Reference

Chua, T.E. 2006. *The Dynamics of Integrated Coastal Management: Practical Applications in the Sustainable Coastal Development in East Asia*. 468 p. Global Environment Facility/United Nations Development Programme/ International Maritime Organization Regional Programme on Building Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), Quezon City, Philippines.

Guide to SOC Development

Development of the Second State of the Coasts of Guimaras Province

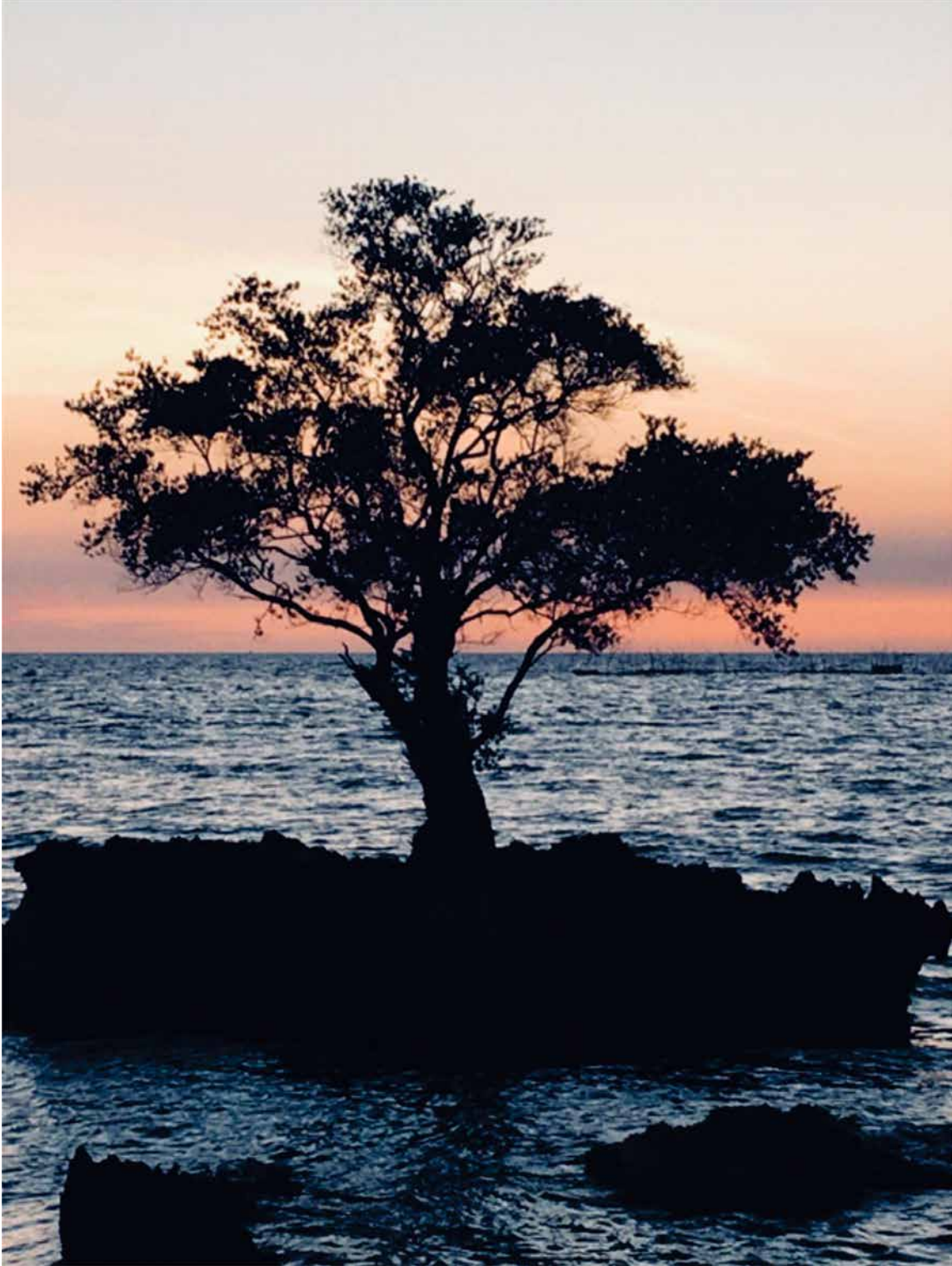


Core Indicators for the Second State of the Coasts Report of Guimaras Province

Category	SOC Code	Indicator	Trend* (2010–2017)
Governance			
Policy, strategies and plans	001	Coastal profile and environmental risk assessment	😊
	002	Coastal strategy and action plans	😊
	003	Local government development plan, including coastal and marine areas	😊
Institutional arrangements	004	Coordinating mechanism	😊
	005	Participation of stakeholders in the coordinating mechanism	😊
Legislation	006	ICM enabling legislation	😊
	007	Administration and monitoring of compliance to legislation	😬 ↑
	008	Environmental cases filed/resolved	😬 ↑
Information and public awareness	009	Public education and awareness	😊
	010	Stakeholder participation and mobilization	😊
Capacity development	011	Availability/accessibility	😊
	012	Human resource capacity	😊
Financing mechanisms	013	Budget for ICM	😊
	014	Sustainable financing mechanisms	😊
Sustainable Development Aspects			
Natural and man-made hazard prevention and management	015	Level of preparedness for disasters	😊
	016	Degree of vulnerability to disasters	😊
	017	Social and economic losses due to disasters	😊

Category	SOC Code	Indicator	Trend* (2010–2017)
Sustainable Development Aspects			
Habitat protection, restoration and management	018	Habitat management plan and implementation	😊
	019	Areal extent of habitats	😬 ↑
	020	Protected areas for coastal habitats and heritage	😊
	021	Reclamation and conversion	😬 ↑
Water use and supply management	022	Water conservation and management	😬 ↑
	023	Access to improved water source	😊
	024	Incidences/deaths due to waterborne diseases	😊
Food security and livelihood management	025	Fishery management plan and implementation	😊
	026	Fisheries production	😊
	027	Malnutrition rate	😊
	028	Poverty, education and employment	😊
	029	Livelihood programs	😬 ↑
Pollution reduction and waste management	030	Pollution management plan and implementation	😬 ↓
	031	Water quality	😬 ↓
	032	Air quality	😊
	033	Sanitation and domestic sewerage	😬 ↓
	034	Municipal solid waste	😬 ↓
	035	Industrial, agricultural and hazardous wastes	😬 ↓

* Legend: 😊 Improving 😬 ↑ Improvements discernible 😬 ↓ Needs further improvement 😞 Deteriorating



Avicennia sp. at Yato Island, Cabalagnan, Nueva Valencia, Guimaras. (Photo Credit: Tyler Hassig, US-PCV)

Executive Summary

ICM implementation in Guimaras Province started in 2008. The baseline State of the Coasts, which was published in 2012 and covered the period 2000-2009, provided the benchmark for determining the impacts of management responses and interventions on the socioeconomic and environmental status of Guimaras. The Second State of the Coasts Report is designed to determine discernible trends and changes that are occurring in the coastal areas of the province resulting from the implementation of the policies adopted by the province and the five municipal governments, as well as the implementation of management programs addressing the aspects of sustainable development, in partnerships with various agencies and stakeholders.

The Second State of the Coasts of Guimaras Province covers the period of 2010-2017. This report is the output of the collaborative effort of the following stakeholders: national government agencies, provincial and municipal governments, non-government organizations, academe and civil society organizations. A scoping workshop was conducted in March 2017 to review the data requirements, the sources of data, the re-establishment of the Guimaras SOC Task Team and the timeline for the preparation of the report. The Task Team spearheaded the data collection process and facilitated the conduct of a series of validation workshops involving all relevant stakeholders in the province. A write shop was convened in May 2018 to facilitate the drafting of the Second SOC Report. The draft report was presented to the ICM Program Coordinating Committee for review, validation and approval.

Overall, the Second SOC Report was able to capture evidences that showed significant improvements in environmental governance and management practices of the province. Of the 14 indicators of governance, 12 showed positive progress, i.e., shift from baseline status to improving status and 2 indicators showed discernible changes but are not quite eligible to be shifted to improving status. For the 21 indicators on aspects of sustainable development, 12 indicators showed positive progress; improvements in 4 indicators are discernible but also are not quite eligible to be shifted to improving status while 5 indicators need further improvement. None of the 35 indicators showed deteriorating status.

The major findings and recommendations are summarized in this section.

Governance of Marine and Coastal Resources in Guimaras Province

Policies, Strategies and Plans

Guimaras Province has been a recipient of technical and scientific support from various partners in the conduct of research studies and assessments, which supported and informed planning and facilitated the crafting of appropriate management interventions to address the priority concerns of the province.

Integrated planning has been demonstrated through mainstreaming and alignment of ICM concerns into the mandatory plans of the province and five municipalities, (e.g., PDPFP, CLUPs, CDP). In particular, aligning the strategic actions and timeline of the Coastal Strategy and Implementation Plan with the long term and medium-term plans of the province and municipalities, as well as the sectoral plans (e.g., Forest Land Use Plan [FLUP], Integrated Coastal and Fisheries Resource Management Plan [ICFRMP], Ecological Solid Waste Management Plan [ESWMP], Local Disaster Risk Reduction Management Plan [LDRRMP], Local Climate Change Action Plan [LCCAP], Gender and Development Plan [GADP], etc.) will ensure that its implementation, including monitoring, is synchronized. Finalization and adoption of the Coastal Strategy, which serves as the integrating framework for the various action programs on coastal and marine governance and management is essential.

It is imperative that updating of the long-term and medium-term plans of the local government must consider the results and recommendations from the science-based evaluations and assessments that were conducted in the province. A stakeholder's forum that can serve as venue for informing the public and disseminating key information regarding the results of scientific assessments that may have bearing on their safety and well being as well as livelihood can be organized regularly.

Institutional Arrangements

Guimaras Province has successfully institutionalized the inter-agency, multi-sectoral coordinating mechanism by transforming it from a project-based mechanism into a permanent mechanism of the local government. The

Guimaras Environment and Natural Resources Office, the focal office for ICM implementation, has undergone reorganization and created in the process the Coastal and Marine Management Section. The creation of five sub-committees with designated chairs, secretariat support and budget allocation for their operationalization is one of the good practices in the institutionalization of the coordinating mechanism. Every stakeholder in Guimaras has a voice in the integrated management of the coastal and marine areas of the province. The representation of the various sectors and stakeholder groups in the coordinating mechanism ensured that their concerns are conveyed in a proper platform and their interests are given importance in the decision-making process.

An ICM Ordinance has been drafted, which aims to institutionalize the implementation of the ICM Program in the province, including the coordinating mechanism. Its adoption is anticipated to further strengthen the role of the interagency, multisectoral coordinating mechanism that embodies the essence of coordination and integration.

A mechanism to gather stakeholders' satisfaction and feedback on the performance of the ICM program need to be established so that the voice of the general public can also be heard. To build political support, a year-end policy forum can be convened that can serve as platform for raising awareness and continuing commitment of the local leaders as well as various stakeholders and partners in ICM implementation.

Legislation and Enforcement of Laws

Guimaras Province is the first province in the Philippines with an ICM Ordinance, the provisions and articles of which are aligned with the ICM Bill that is being reviewed by the 17th Congress, as well as Executive Order 533. In addition to the ICM Ordinance, the Guimaras Environment Code, which is also anchored on the principles of sustainable development, people's participation and integration, is on the process of updating. In terms of municipal fishery laws, the five municipalities did not find the need to issue a unified municipal fishery ordinance due to variations in fishing methods and gears that are utilized in some municipalities. Active public participation in the consultation process in the development and adoption of various ordinances have been consistently noted over the years.

The effectiveness of enforcement measures and monitoring of compliance with coastal policies and legislations were hindered by administrative and operational factors. There were also issues regarding overlapping roles with national agencies in permit issuance and licensing. Although law enforcement trainings were made available to law enforcers and volunteers, majority of the enforcers were hired on a job order basis and thus the sustainability of enforcement and monitoring activities is at stake.

The massive advocacy and awareness campaigns combined with livelihood support provided to the communities and fisher folks have contributed to eliciting better response from the people in terms of compliance to legislations. However, the number of fishery violations remained significant, which mainly involved the encroachment of commercial fishers from nearby provinces.

Reviewing the gaps in the current mechanism is necessary in order to improve the administration and compliance monitoring of the province, including identifying more efficient and systematic means of documenting violations and imposition of penalties.

Information and Public Awareness

Better involvement and active participation of stakeholders in environmental protection and coastal management related activities have been notable. There was also an increasing number of NGOs, CSOs and POs with environmental-related programs.

Determining the effectiveness of public awareness activities, particularly in changing the behavior and perception of the stakeholders toward environmental protection is necessary. A mechanism where the accomplishments and good practices generated from the various efforts of the NGOs, CSOs and POs are reported and consolidated is also necessary. A regular forum can be convened where the NGOs, CSOs and POs can share, learn and appreciate the scope and extent of their contribution to sustainable development of Guimaras Province.

A communication plan must also be formulated to ensure that the different target audiences and stakeholders are receiving the right information at the right time in the most effective manner. Other forms of communication channels like the social media (e.g., Facebook, Twitter, Instagram) to convey important information that can reach a wider group of stakeholders, particularly the youth, can be explored. Making available the Guimaras "*Butlak*" publication, which showcases important events and accomplishments by Guimaras Province, in the local government's website can make Guimaras more visible in the Internet.

Capacity Development

Capacity building activities in Guimaras Province have cut across the various stages of ICM program development and implementation. It also cut across the various sectors and stakeholder groups. As a result, more local staff and local government personnel were trained and introduced to supporting tools and methodologies of ICM, and thus reliance on external support was reduced.

The availability of technical personnel, funding, and training institutions have facilitated access of the local governments to facilities and training programs that support ICM implementation. Continuous strengthening of the technical and management skills of the ICM PMO and local personnel at the provincial and municipal levels, including regular funding allocation from the local governments are vital to build confidence and ensuring the effective implementation of the ICM program.

A mechanism to recognize the outstanding performance and dedication of the various stakeholders in promoting and actively participating in the implementation of the environmental programs of the local government must be put in place to build lasting support to the ICM Program. As new and emerging environmental concerns may be encountered by the province in light of changing climate, in addition to global and national developments and commitments, capacity building must be designed in response to these concerns and commitments while taking into consideration the specific needs of the local government. A training needs assessment (TNA) can be conducted regularly to determine the capacity needs of the local government and the stakeholders and identify appropriate means of filling the gaps.

Financing Mechanisms

The province and the five municipalities have consistently allocated budget for coastal management and the allocations have been increasing over the years. This good practice has sent positive signals to potential partners of the province, particularly the national agencies and international partners, which allowed Guimaras Province to access additional sources of funding. For instance, the Department of Environment and Natural Resources has implemented 4 major projects in Guimaras Province from 2010-2017 with an estimated budget allocation of PhP 48 Million. The province also received grants from other partners including Korea International Cooperation Agency (KOICA), Yeosu Foundation, Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) and Philippine Rural Development Program (PRDP). The funding support indicated the level of confidence of the partners in Guimaras' capacity to manage and implement projects. Proper monitoring and reporting of fund utilization can promote transparency and more importantly, to determine the level of investments made in environmental protection that can be linked to the benefits that will accrue later.

The province has identified priority investment areas for public and private sector financing focusing on tourism, manufacturing, agri-business, services and real estate development. As economic growth continues to rise, it is recommended that Guimaras explore additional options to raise funds, including the implementation of environmental user fee system to complement existing and future regulatory systems in the province and

municipalities for environmental protection and management. As the population of the province continue to increase, it is also necessary that investments in environmental infrastructure be taken into consideration. It is also recommended that recognition be afforded to the various corporation and partners for their contribution to the attainment of sustainable development in the province. This will further encourage their cooperation and continue to contribute in achieving the development goals of the province.

Sustainable Development Aspects of Marine and Coastal Management in Guimaras Province

Natural and Man-made Hazard Prevention and Management

The institutional mechanisms for disaster preparedness and management and coordination at the provincial and municipal levels are in place. Multi-hazard maps indicating the locations of hazard-prone barangays have been prepared and the formulation of the provincial and municipal disaster risk reduction and management plans and emergency response plans took into consideration these information, including the Provincial Disaster Risk Reduction and Management Framework of Guimaras Province, which was developed with KOICA's support.

The 5 per cent allocation of the Internal Revenue Allotment for disaster risk reduction has made it possible for the province and municipalities to strengthen the provincial and municipal DRRM Councils and provincial and municipal DRRM Offices, including training of personnel engaged in implementing the DRRM plans. Prevention/mitigation, preparedness, response and recovery/rehabilitation are now mainstreamed and integrated in the system. Linkages and collaboration are also strengthened among government agencies.

Records showed that the number of people affected and the economic losses due to disasters was lesser compared to previous data. Disaster planning and preparedness in this case can be discerned as operationally and functionally active in Guimaras.

Recommended measures to further strengthen DRRM include 1) updating of the P/MDRRM Plans using a science-based approach such as the Climate and Disaster Risk Assessment (CDRA); 2) completion and adoption of the Guimaras Oil Spill Contingency Plan; 3) updating of the master list of households located in vulnerable areas; 4) continuing IEC to enhance the awareness of the residents of the different hazards that they are exposed to; 4) conducting training and orientations and regular drills at the barangay level; 5) improving the recording system and harmonizing the reporting format to facilitate consolidation.

Habitat Protection, Restoration and Management

Significant improvements were noted in terms of availability of plans, people and budget with support from various partners to step up efforts in habitat management. The five municipalities have crafted their Coastal and Fisheries Resources Management Plans that include protection and rehabilitation of coastal ecosystems such as mangroves, seagrass and coral reefs. DENR, in collaboration with the local governments, have developed the Forest Land Use Plan, the Guimaras Province Foreshore Development and Management Plan and has provided technical and financial support to Guimaras through the Coastal and Marine Ecosystem Management Program with a total budget of PhP 22 Million in 2017.

Significant amount of data and information on the areal extent of coastal habitats and forest resources have also been generated, including the establishment of protected areas and increasing their number to cover additional critical ecosystems that require protection through the partnerships that have been created by the province and municipalities with academic institutions, national government agencies, international organizations, NGOs and the private sector. Based on the National Mapping and Resource Information Authority (NAMRIA) coastal resources map, the municipal waters of Guimaras has a total area of 160,202.48 hectares of which a total of 2, 633.726 hectares are under protection in the form of fish sanctuaries, marine reserves or marine protected area. Therefore, about 1.64 per cent of the municipal water of the province is protected.

Several models of MPA management in Guimaras is discernible, i.e., the 1,143-hectare Taklong Island National Marine Reserve (TINMR), the largest MPA managed by the national government; the Tando-Lucmayan MPA, which is managed by 2 Barangays (Tando and Lucmayan); the Igang Bay Marine Sanctuary, which is co-managed by the Municipality of Nueva Valencia and John B. Lacson Maritime Foundation University. Regardless of the management arrangements, the management effectiveness of these MPAs have yielded very good results as indicated in the MEAT and METT results. Establishment of additional MPAs must be considered to increase the area of the municipal water under protected status to 10 per cent in line with the Philippines' international commitment to biodiversity conservation, particularly Aichi Biodiversity Target 11. It is also recommended that Guimaras consider linking the MPAs and engaging its university partners in conducting connectivity studies to support the MPA network establishment. Operationalizing the Guimaras Alliance of Protected Areas and Sanctuaries to support the networking process is also recommended.

While reclamation activities in the province were focused on building ports and wharves to support economic development, the occurrence of erosion in selected portions of the coast must be considered in future planning for coastal development. Maintaining the integrity of critical ecosystems like mangroves, seagrasses and coral reefs can help mitigate coastal erosion.

Water Use and Supply Management

Being an island province, water security is a critical issue in Guimaras Province. Although a comprehensive water conservation and management plan has not yet been developed, various plans, such as the Forest Land Use Plan have identified management interventions for the effective management of the upland forest and mangrove areas, as well as for the rehabilitation and protection of watershed, riverbanks and riparian areas. Given that a significant area of the province may experience difficulty in accessing freshwater supply and thus there is impending threat of water scarcity, it is recommended that a comprehensive water conservation plan be developed for the long-term management of the water resources of the province.

Guimaras showed significant improvements in increasing the total number of households with access to safe water sources for the period 2012-2017. It is also notable that the previously reported 10 per cent of the households that were using unsafe sources has been eliminated. The province and the five municipalities need to review the investments required to convert the number of households with access to Level III water system. This is also in consideration of the results of the groundwater assessment conducted by DENR Mines and Geosciences Bureau (MGB) where dissolved solids, salt intrusion and traces of pesticides and insecticides in wells near the rice fields were observed. Continuous monitoring and testing for potability and safeness of the drinking water sources should be undertaken, including the conduct of awareness raising activities to instill to every Guimarasnon the need to conserve and use water wisely.

Data also showed that there was a decline in the incidence of water borne diseases in the province as compared to previous data. The province, however, must aim to completely eliminate the incidence of water borne diseases by targeting 100 per cent of households having access to safe water supply.

Food Security and Livelihood Management

Increasing production was recorded in both municipal fishery and aquaculture. In order to maintain the productivity of Guimaras waters, fisheries management programs that were implemented focused on reducing fishing pressures through efficient enforcement of fishery ordinances, rehabilitation and protection of habitats through the establishment and management of marine protected areas, fish sanctuaries and reserves, and livelihood development combined with capacity development for fisher families and POs. Close coordination with BFAR is necessary to identify concrete programs that would further strengthen livelihood support for fisherfolks as part of the FishR program, including access to basic government services such as health care and insurance.

Guimaras Province has implemented programs to improve the nutritional status of its constituents. While malnutrition has been reduced, the province and the five municipalities should strive to further reduce the malnutrition rate by implementing programs that would allow better access to food and proper nutrition and educating parents and communities on the proper care for the children.

Guimaras Province has also made significant strides in alleviating poverty and increasing employment potential over the past 8 years. As the province continues its bid towards transforming into the agri-eco-tourism capital of Western Visayas, improving the tourism infrastructure and facilities and support services is necessary. This requires increased investments in accommodation facilities, product packaging and promotion, guest assistance and information centers, ports and access roads, transportation and communication services. A possible shift in employment from agriculture and fisheries to services is anticipated in view of the changing development direction of the province as a result of the current administration's Build, Build, Build Program and the increasing popularity of Guimaras as the emerging destination for coastal tourism. Continuing promotion of its cultural and historical heritage and environmental attraction, including the annual Manggahan Festival Celebration to showcase what Guimaras is known for will draw more tourists which will translate into increased employment opportunities for the Guimarasnon.

Pollution Reduction and Waste Management

Guimaras Province has enacted several policies and legislations to regulate solid waste management. Although only the Municipality of Jordan has an approved Ten-Year Solid Waste Management (SWM) Plan, the province and other four municipalities are implementing various programs on solid waste management in line with their conditionally approved Ten-Year SWM Plans. Staff and budget allocation of the province and the five municipalities covered various programs and projects for pollution and waste management such as clean-ups in upland and coastal areas, establishment and operationalization of Materials Recovery Facility and composting facilities, procurement of equipment for solid waste management (i.e., bio/plastic shredder, garbage trucks, etc.). Currently, there are Eco Solid Waste Management Centers and Residual Containment Areas that served as disposal facilities for municipal solid wastes. Waste recovery through recycling and composting have huge potential since biodegradable wastes and recyclables comprise more than half (i.e., 60 per cent) and one third (28 per cent) of the wastes generated in the province, respectively. Segregation at Source or "No Segregation, No

Collection" policy must be strictly implemented, particularly for households since they are the highest generator of wastes in the province. In 2017, GENRO conducted an initial assessment of possible sites in preparation for the acquisition of lot for the establishment of the common sanitary landfill. The conduct of feasibility study is necessary to determine available technical options and financing and investments for solid waste management.

Increasing trend in total and fecal coliform levels remain a cause of concern, as also reported in the baseline SOC report. The increase in population and in the number of coastal establishments and tourist arrivals in the province have contributed to the increase in the coliform level of the province's coastal waters. Most of the coastal establishments, especially beach resorts, do not comply with the easement requirements as prescribed in PD 1076 (Water Code) and provisions of RA 9275 (Clean Water Act). For the short term, it is recommended that the local governments target 100 per cent coverage of households with complete sanitation facilities. For the long term, it is recommended that the province and the five municipalities consider accessing funds, for instance, from the National Sewerage and Septage Management Program of the Department of Public Works and Highways to establish the necessary septage and sewerage treatment facilities in line with the Provincial Water Supply, Sewerage and Sanitation Sector Plan that the National Economic Development Authority assisted in formulating in 2017.

For air quality, there are no designated airsheds in the province in view of the very few numbers of air polluting establishments. To efficiently monitor and manage the air quality of the province, it is recommended that acquisition of an air quality monitoring equipment with capacity to process multiple parameters and provide accurate real-time data be made.

Hospital wastes comprised the bulk of hazardous wastes in the province. The conduct of Waste Analysis and Characterization Survey to determine the total amount and composition of waste generated by the provincial hospital on a daily basis would be useful in updating the Hospital's Healthcare and Waste Management Plan. Promotion and documentation of Good Agricultural Practices and targeting to increase the number of GAP-compliant farms that adopt sustainable agricultural methods would help reduce the impacts of agriculture to the environment. Finally, the initiation of a total pollutant loading study for important watersheds in the province to determine the loadings from major point (i.e., domestic, industrial, commercial) and non-point (e.g., agriculture; aquaculture; runoff) sources would facilitate the development of comprehensive pollutant reduction management plan.



Tan-Luc MPA, Tando, Nueva Valencia, Guimaras.

Guimaras Province

A fourth class province and the smallest and youngest province in the administrative region of Western Visayas in Central Philippines, the island of Guimaras is consistently well-known for its sweet mangoes as well as its immaculate sandy beaches, coves and agri-eco-tourism sites with idyllic rural environment, which is attractive to local and foreign visitors (Figure 1). The native language of the people is Hiligaynon.

The province is composed of five coastal municipalities with the Municipality of Jordan as capital. The five municipalities have maintained their unique features: Buenavista serves as the center for higher education and a better travel link between the Islands of Panay and Negros; Jordan is located in the center of the island and is considered the primary agro-industrial and commercial growth center and main gateway of Guimaras; Nueva Valencia is the tourism capital, major fishing ground and source of export quality mangoes of Guimaras; San Lorenzo is the leading agri-fishery, agri-tourism destination and commuter gateway to Negros; and Sibunag is the major agri-fishery producer with RORO cargo port linking Guimaras to Negros.

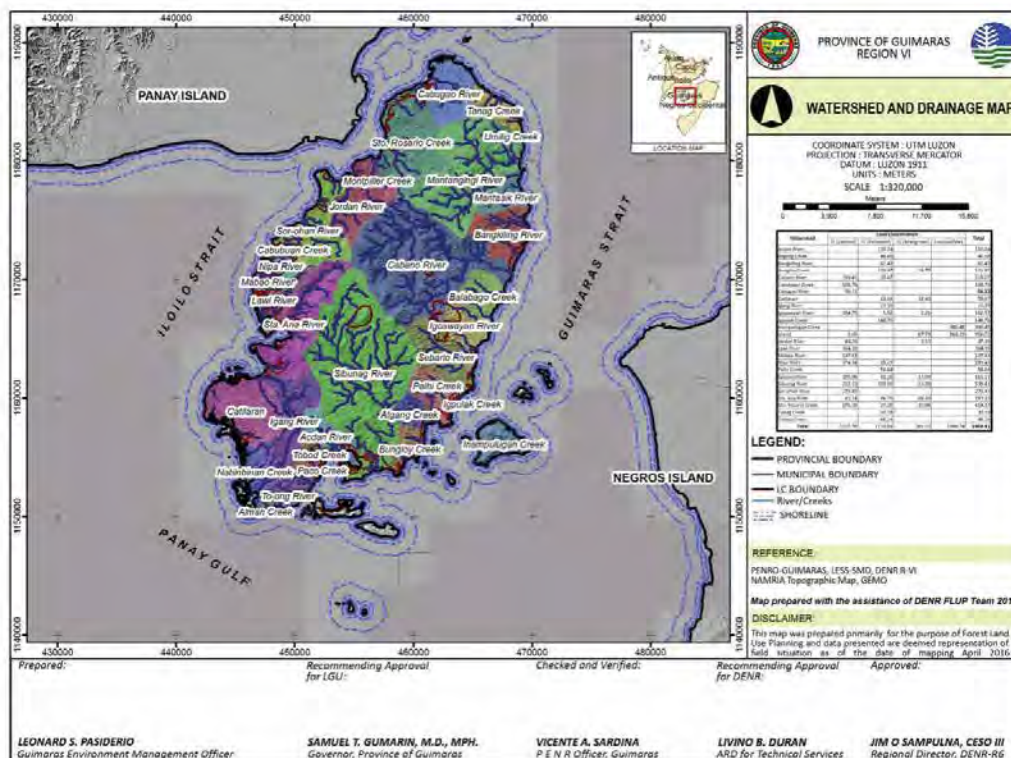
Guimaras Province has an estimated total coastline of 470 km and covers a land area of approximately 605 square kilometers. There are two principal watersheds in the island, the Eastern watershed covering 387 square kilometers or 65 percent of the total area, and the Western watershed covering 209 sq. km.

Figure 1. Location map of Guimaras Province, Philippines.



or 35 percent of the total area including the inhabited islands (e.g., Inampologan, Guiwanon, Panobolon) with surface water sources (Figure 2). The remaining 9 square kilometers are small-inhabited islands. In the Eastern watershed, there are 29 river basins, of which Cabano (85.4 square kilometers), Sibunag (109.5 square kilometers) and Mantangingi River (59 square kilometers) are considered perennial, indicating that the base flow is supported by aquifer drainage. In the Western watershed, on the other hand, there are 10 individual river basins where Igang River is considered perennial.

Figure 2. Watershed and drainage map of Guimaras Province.

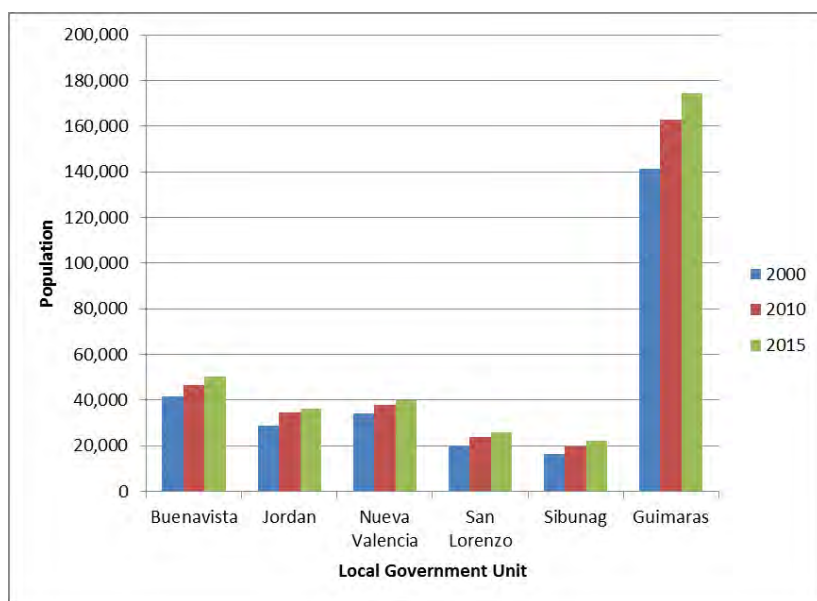


The topography of Guimaras Island varies from level to steeply sloping with land elevation ranging from 0 to nearly 300 meters above sea level. Mt. Dinalman, located in Millan, Sibunag, has the highest elevation of 267 meters above mean sea level.

The climate is characterized by two pronounced seasons, the dry season which usually occurs between the months of November and April, and the rainy or wet season, which occurs the rest of the year.

Guimaras has 98 barangays and 55 are coastal barangays. The population of the province has grown steadily for the past 45 years: from a total of 73,014 persons in 1970, the population has almost doubled to 141,450 in 2000 and increased to 162,943 in 2010 and finally reached 174,613 in 2015. The Municipality of Buenavista recorded the highest population growth for the past 15 years (Figure 3).

Figure 3. Population trend in Guimaras Province and by municipality in 2000, 2010 and 2015.



The annual population growth rate of 2.4 percent from 1995 to 2000 decreased to 1.42 percent in 2000-2010 and still declined to 1.33 percent in 2010-2015. Of the five municipalities in 2000-2010, Jordan had the highest population annual growth at 1.93 percent, and the lowest is Nueva Valencia with 1.00 percent. In the 2010-2015 survey, three municipalities of Guimaras posted high population growth rate, even higher than the population growth rate of the province. Sibunag had the fastest growing population with a rate of 2.40 percent; San Lorenzo - 1.59 percent, and Buenavista - 1.47 percent, with Jordan and Nueva Valencia having the least population growth rate of less than 1 percent each (Table 1).

The population density of Guimaras has grown from 195 persons per square kilometer in 1990 to 234 persons per square kilometer in 2000 and increased to 288 persons per square kilometer in 2015. The Municipality of Buenavista consistently recorded the highest population density at 364 and 393 persons per square kilometer in 2010 and in 2015, respectively.

Table 1. Population, annual growth rate, and density in Guimaras Province and by municipality in 2000, 2010 and 2015.

Municipality	Population			Annual population growth rate (%)		Density		
	2000	2010	2015	2000-2010	2010-2015	2000	2010	2015
Buenavista	41,717	46,703	50,437	1.13	1.47	325	364	393
Jordan	28,745	34,791	36,096	1.93	0.70	228	276	286
Nueva Valencia	34,255	37,852	39,810	0.62	0.97	250	276	290
San Lorenzo	20,168	24,032	26,112	1.77	1.59	217	258	280
Sibunag	16,565	19,565	22,158	1.68	2.40	138	163	184
Guimaras	141,450	162,943	174,613	1.42	1.33	234	270	288

Source: PSA, 2015

In 2015, the coastal population density in Guimaras was recorded at 1,533 persons per square kilometer of which Buenavista remained the most densely populated at 435 persons per square kilometer. Sibunag, on the other hand, was the least densely populated with only 193 persons per square kilometer (Table 2).

The economy of Guimaras from 2000 to 2017 was dominated by the Services Sector, which included (from highest to lowest share) other services, wholesale and retail, transportation, storage and communication services. This happened as a consequence of the booming tourism industry and tourism support services. The increase in the number of visitors, commuters and the population has fueled the corresponding increase in demand for goods and services. Agriculture, fishery and forestry sector ranked second which was boosted by palay, mango, cashew, livestock and poultry, and fishery production. The industry sector, comprising of manufacturing, construction, mining and quarrying, particularly of limestone which abound in the island was the least contributor to the economy.

The Provincial Product Account/Gross Domestic Product (PPA/GDP) for 2002-2004 has reflected this likelihood as can be seen in the growth rates in the construction, and services sector particularly in transport, communication and storage, trade, finance and private services.

Varied tourism attractions and potentials like beaches/resorts/islets, festivals, religious sites and activities, nature, historical and agri/farm sites support the growing tourism industry in the province. Visitor arrivals exhibited an increasing trend from 2000-2005 with an average annual growth rate of 25 per cent. Tourism has generated significant economic activities and employment in the province, which contributed to an annual average of PhP 170 million pesos in tourism receipts to the Guimaras economy.

Major development changes in the province included the improvement of the 500 km local road network that facilitated efficient transfer of people and goods to many parts of the island. The 129 km long national road network is completely paved and there is an on-going road widening and drainage system construction. Meanwhile, the 121 km provincial roads with 24 road sections leading to tourism sites were also improved.

In 2014, Philippine Investment Management, Inc. (PHINMA) Energy Corporation started the operation of the 27 wind turbines of the 54 MW San Lorenzo Wind Farm. The Wind Farm was established for the primary purpose of utilizing renewable energy and pursuing clean and energy efficient projects. The province benefitted from its share of the revenues from the taxes generated through the Municipality of San Lorenzo.

Table 2. Land area, number of coastal barangays, coastal population and coastal population density by municipality in 2000, 2010 and 2015.

Municipality	Total area (Sq. Km.)	Number of barangays	Number of coastal barangays	Coastal area (Sq. Km.)	Total coastal population (2015)	Coastal population density (Persons/Sq. Km)
Buenavista	128.26	36	17	49.33	21,482	435
Jordan	126.11	14	8	47.99	14,916	311
Nueva Valencia	137.12	22	17	96.89	28,431	293
San Lorenzo	93.04	14	7	48.42	14,554	301
Sibunag	120.04	12	6	59.00	11,373	193
Guimaras	604.57	98	55	301.63	90,756	1533

Source: PSA, 2015



Manggahan Festival. (Photo credit: GO, Manggahan Photo Contest)

What are indicators?

Indicators are quantitative/qualitative statements or measured/observed parameters that can be used to describe existing situations and to measure changes or trends over time (Duda, 2002). Indicators are developed as tools to make monitoring and evaluation processes operational. To become powerful ICM management tools, indicators must demonstrate the measure of effectiveness of a project, program or policy. They become effective tools when they are used to reflect changes in the state of coastal and marine environments, trends in socioeconomic pressures and conditions in coastal areas, and corresponding links among anthropogenic activities and ecological health. Finally, when used to evaluate ICM program performance, indicators offer feedback on action plans and provide parameters for subsequent actions that may prove useful in justifying further investments in ICM (Chua, 2006).

What are the indicators for the State of the Coasts?

Indicators for the *State of the Coasts* were determined based on PEMSEA's Framework for Sustainable Development of Coastal Areas thru ICM (**Annex 1**) to indicate current status, management responses, targets and impacts of management actions in each of the *governance* elements (policy, strategies and plans; institutional arrangements; legislation; information and public awareness; capacity development; and financing mechanisms) and the five *sustainable development aspects* (natural and man-made hazard prevention and management; habitat protection, restoration and management; water use and supply management; food security and livelihood management; and pollution reduction and waste management). The indicators were chosen based on the following criteria: (a) simple and meaningful; (b) easy applicability in the region; and (c) complementary to the indicators identified in relevant international instruments, including the Sustainable Development Goals (SDGs), the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA), and relevant international conventions such as Convention on Biological Diversity and UN Framework Convention on Climate Change.

What are the core indicators for SOC included in this report?

From a total of 160 indicators based on the Framework for Sustainable Development of Coastal Areas through ICM, a set of 35 core indicators were identified for the development of the initial SOC report. These 35 core indicators are considered to be a basic set of indicators for evaluating changes that have occurred in the Province over time as a consequence of ICM implementation. As the SOC becomes operational, more indicators will be considered in the succeeding SOC reports (PEMSEA, 2011).



Taklong Island National Marine Reserve (TINMR), Lapaz, Nueva Valencia, Guimaras

How are the indicators presented in this report?

Each of the indicators is presented in the following format:

- a. Category, which identifies the particular governance element or sustainable development aspect in the Framework for Sustainable Development of Coastal Areas
- b. Name of the indicator
- c. Description of the indicator
- d. Rationale for using the indicator in the SOC
- e. Data requirements
- f. Results which describe the current status, management actions and impacts of management interventions in the area relating to the particular indicator
- g. Implications of results and recommendations to respond to changing conditions

References

- Chua, T.E. 2006. *The Dynamics of Integrated Coastal Management: Practical Applications in the Sustainable Coastal Development in East Asia*. 468 p. Global Environment Facility/United Nations Development Programme/International Maritime Organization Regional Programme on Building Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), Quezon City, Philippines.
- Duda, A. 2002. *Monitoring and Evaluation Indicators for GEF International Waters Projects*. Monitoring and Evaluation Working Paper 10. Global Environment Facility. Washington, DC, USA.
- PEMSEA. 2011. *Guidebook on the State of the Coasts Reporting for Local Governments Implementing Integrated Coastal Management in the East Asian Seas Region*. Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), Quezon City, Philippines.

Policy, Strategies and Plans

001 Coastal profile and environmental risk assessment

Description

This indicator measures the percentage of coastline that has undergone environmental risk assessment, coastal profiling or similar science-based evaluation in order to identify priority

issues/threats to sustainable development of coastal and marine resources.

Rationale

Effective coastal management relies on planning that takes into account strategic and scientific assessment of the area, including social, cultural, political, economic, and environmental and policy issues, and the identification of

priority concerns for coastal managers and policymakers. This strategic assessment should be the basis for developing strategies and action plans for coastal management.

Data Requirements

- Total length of coastline
- Coastal environmental profile/environmental risk assessment/other similar assessments

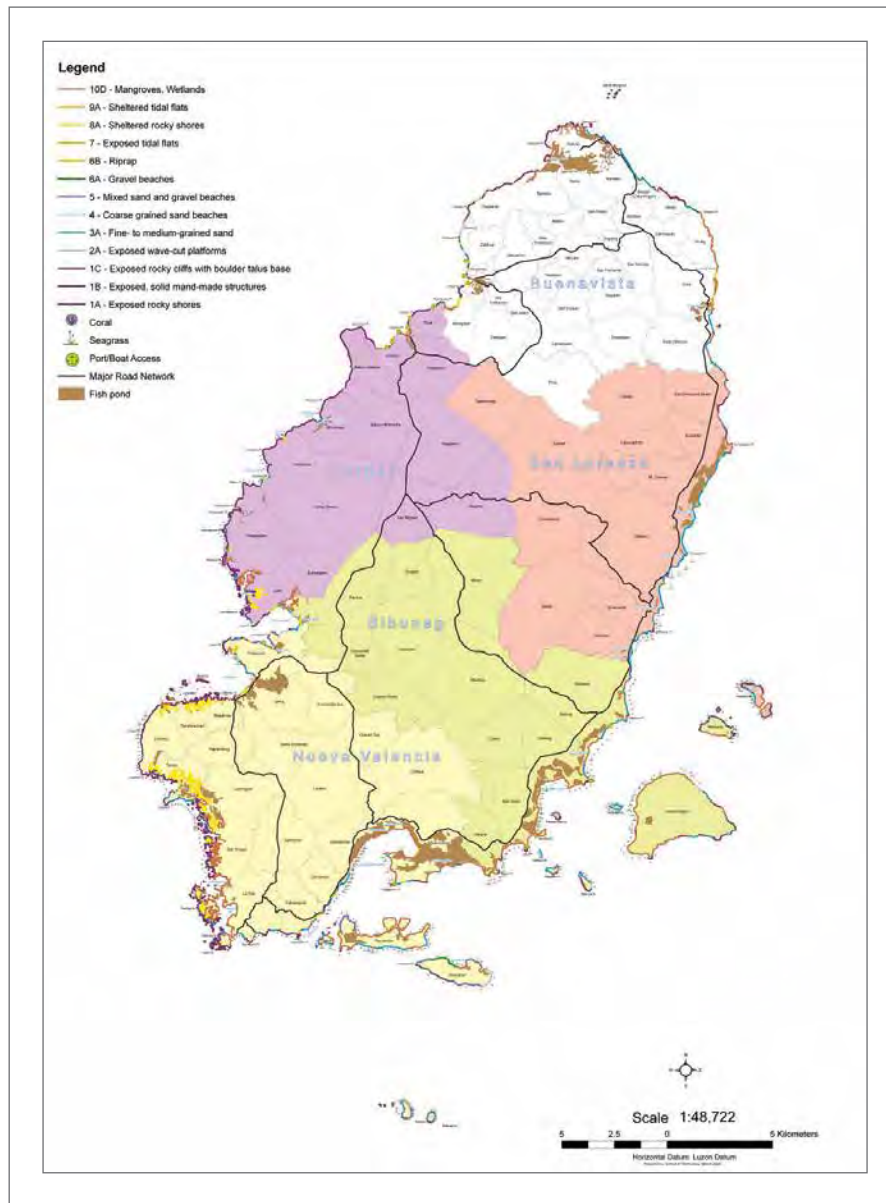
- Length of coastline covered by environmental assessment

Results

Guimaras has an estimated total coastline of 470 kms, 300 kms of which comprise the coastal perimeter of

mainland Guimaras while 170 kms cover the islands and islets (DENR-PENRO, Guimaras 2018).

Figure 4. Environmental sensitivity index map of Guimaras Province.



The Solar I Oil Spill, which occurred in August 2006 has resulted to the conduct of numerous studies and researches to determine the impacts of the oil spill on socioeconomic and environmental conditions in the affected areas (PG Guimaras and PEMSEA, 2012). The results of a study, which was published in 2009 indicated that about 36 per cent of the coastline of the province surveyed that were inhabited by mangroves and wetlands were found to be vulnerable to oil spill contamination (ESI Rank = 10). Thirty-two per cent of the coastline on the other hand that were exposed to high energy waves

have the lowest oil sensitivity where the oil tended to remain offshore by reflecting waves and the substrate of these coastlines are rocky (ESI Rank = 1). Fourteen per cent of the coastline was characterized by semi-permeable substrate (ESI Rank = 3) and another 10 per cent had an ESI Rank of 8 since these areas were sheltered from wave energy and strong tidal currents and thus oil that coated the rock surfaces can persist for a long time. Figure 4 shows the environmental sensitivity index map of the provincial coastline. Box 1 provides additional details on the study conducted by Moscoso, et al. 2009.



Box 1. Environmental sensitivity mapping in Guimaras Province.

An Environmental Sensitivity Index (ESI) was generated for Guimaras, which used shorelines, biological resources (e.g., mangroves, seaweeds, birds) and human use resources (e.g., beach resorts and fishponds) to identify oil sensitive areas. The ESI mapping aimed to facilitate mitigation and clean up of oils spills and for the development of plans for protection, response formulation and prioritization of resource allocation. The study involved ground verification of the 386.4 km of shoreline of the province; interviews with barangay officials and coordination with other related studies. Lengths of the coastline were prioritized based on their relative sensitivity to oiling using a ranking of 1-10, with 1 as the least sensitive and 10 as the most sensitive. The database and GIS maps are available for quick retrieval and reproduction.

The University of the Philippines Visayas (UPV) published a Special Issue of the Philippine Journal of Natural Sciences in 2010 featuring the results of the following research studies on the Guimaras Oil Spill:

- Post-August 2006 oil spill populations of penaeid shrimp in island and riverine mangroves in Guimaras, Central Philippines;
- Sediment and water contamination caused by the M/T Solar 1 oil spill in Southern Guimaras, Central Philippines;
- Initial assessment of the bacterial population of Guimaras waters and soil after the Solar 1 oil spill;
- As assessment of the impact of the Solar 1 oil spill on ichthyoplankton abundance, composition and distribution in Southern Guimaras, Central Philippines;
- Seagrass meadows in Southern Guimaras: Immediate post-oil spill status;
- Initial assessment of fungal populations at various sites in Guimaras after the Solar 1 oil spill;
- Assessment of the short term structural damage in the Guimaras mangroves by the M/T Solar 1 oil spill, and
- Community characteristics of mangrove species in Guimaras after an oil spill.

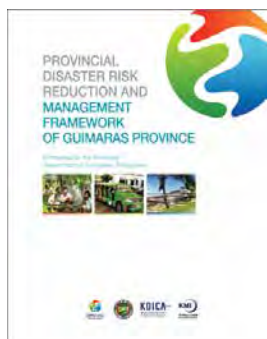
Furthermore, UP Visayas, in collaboration with several national government agencies have conducted the following research studies on biodiversity conservation and resource management that generated data and information to support planning and management:

- Assessment and monitoring of mangroves and seagrasses of Guimaras (2007-2013, UPV Oil Spill Program).
- Terrestrial inventory of flora and fauna in Basyaw Cove, Nueva Valencia, Guimaras (2012).
- Long-term population and community dynamics in oil spill affected Taklong Island National Marine Reserve (TINMR), Nueva Valencia, Guimaras: 3 research projects were conducted on the long-term changes in mangrove forests, seagrass meadows and seagrass associated macrobenthos community structures on oil spill affected areas (2013-2014, UPV Oil Spill Program).
- Reef status and population of branching reef coral in Taklong Island (2013-2014).

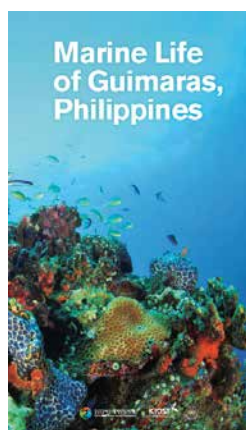
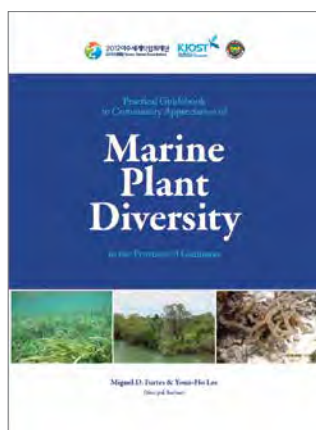
- Diversity and community structure of mangrove wood decomposing fungi in oiled and unoled sites in Taklong Island mangrove forest (2013-2014).
- Stock assessment, fishery and juvenile production of valuable sea cucumbers such as *Phyllophorus proteus* (ball sea cucumber), *Holothuria scabra* (sandfish) and *Bohadschia marmorata* (chalkfish) in Guimaras for stock enhancement (funded by DOST, BFAR and UPV Oil Spill Program Fund) (DOST: 2007-2011; UPV Oil Spill Program: 2012-2013; BFAR, Provincial Government of Guimaras; DOST-PCAARD: 2014- 2016).
- Ecology and reproduction of the nito fern, *Lygodium sp.*, an important resource for indigenous groups in Guimaras who harvest these as raw materials for various souvenir products (2013-2014).
- Mollusks and echinoderms in seagrass meadows and reef flats in TINMR (2014-2016).
- Marine flora (seagrass and seaweeds) diversity in TINMR (2015-2016).
- Beach Flora of Guimaras (2016, UPV/DENR).
- Habitat Assessment of identified locally managed MPAs in Guimaras (2016, DA-PRDP).
- Coral Reef Health Studies (prevalence & spatial distribution of coral diseases in TINMR (2016-2017, UPV In-house Grant).
- Investigations on the population dynamics and reproductive biology of the limpet, *Patelloida saccharina* on rocky shores in Taklong Island, Nueva Valencia, Guimaras (2016-2017, UPV In-house Grant).
- Mangrove resource habitat rehabilitation project (2016-2017, DA Region 6 Aquasilviculture Program Phase 3).
- Taklong Island Marine Biodiversity Assessments (TIMBA): Integrating biodiversity knowledge at the molecular, organismal and bioinformatics level (2017-2019; UPV *Balik* PhD Grant).

In 2012, the Provincial Disaster Risk Reduction and Management Framework of Guimaras Province was developed as a proposal to the province for developing a full version of the Guimaras Disaster Risk Reduction and Management Plan. The development of the DRRM framework entailed a comprehensive review and assessment of Guimaras' exposure and vulnerability to human-induced and natural hazards.

Two Guidebooks on marine life of Guimaras was published in 2016 as outputs of the Yeosu Project. These included the Marine Plant Diversity and Marine Life of Guimaras Philippines. The guidebooks contain information on 362 species of marine organisms, including 100 fishes and 83 marine plants.



Mangrove planting at Brgy. San Isidro, Sibunag conducted in July 2016 during the Earth Day celebration.



Some marine fauna species in Dolores Fish Haven: sea fan- *Gorgonia* sp. blue tunicates- *Rhopalaea* sp.

Implications and Recommendations

Guimaras has been a recipient of technical and scientific support from various partners in the conduct of research studies in response to the needs of the province and municipalities for data and information to support planning and in crafting appropriate management measures to address priority concerns.

While the province and municipalities have access to the results and recommendations from the scientific studies and assessments, communicating the results of such studies

to the communities in simple format and language is necessary. Support from the communities who understand the issues can be elicited in the course of management plan development, adoption and implementation.

Organizing an annual stakeholders' forum that can serve as venue for presenting the results of scientific studies and assessment and engaging the wider public in the discussion is recommended.

References

- Andraje, R.B., and Placito, R.R. (2012). Inventory of Plants and Terrestrial Faunal Species in Basyaw Cove CRM plans of 5 municipalities
- Fangonil, Ferelyn N., et al. (2012). A Technical Report on Fauna Inventory of Basyaw Cove
- Fortes, M.D. and Lee Yoon-Ho (2016). Practical Guidebook to Community Appreciation of Marine Plant Diversity in the Province of Guimaras
- Guimaras Foreshore Development and Management Plan
- Moscoso, A.E., Aguilar, G.D., and Bejemino, C., 2009. Environmental Sensitivity Index Mapping of the Province of Guimaras Terminal Report
- Myoung, Jung-Goo, et.al (2017). Marine Life of Guimaras, Philippines
- Provincial Disaster Risk Reduction and Management Framework of Guimaras Province (2011), KOICA, KMI and the Province of Guimaras
- Provincial Government of Guimaras and PEMSEA. 2012. State of the Coasts of Guimaras Province



Policy, Strategies and Plans

002 Coastal strategy and action plans

Description

This indicator measures the scope, coverage and objectives of coastal management, as delineated in coastal strategies and action plans. The indicator further looks into the specific roles and responsibilities for different stakeholders, proposed interventions to address existing or potential

threats to sustainable development, including economic, biophysical and social aspects with specified targets and time frames. Finally, the indicator determines the government's commitment to implement the coastal strategy or action plan through its adoption at the provincial/city/municipal level.

Rationale

A coastal strategy is a critical component of ICM, providing a framework for integrated planning and management. It does not only serve as a platform for policy reform that promotes good governance, but facilitates inter-agency consultation, multi-sector cooperation and stakeholder participation. A coastal strategy identifies conflicts arising from multiple use of limited marine and coastal resources, establish approaches and actions for protecting or enhancing environmental quality and biodiversity, while

facilitating environment-friendly economic development and environmental investment opportunities. The strategy will not be useful if it is not adopted and translated into on-the ground actions. Action plans define: (a) the steps that are required in order to execute the strategies; (b) the milestones or indicators that can be used to measure progress and changes; (c) the time frame for the actions; (d) the roles of the various stakeholders; and (e) the measures for monitoring the implementation of the strategy.

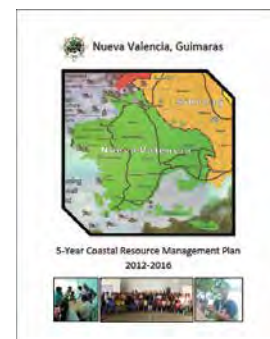
Data Requirements

- Coastal strategy and action plans
- Management boundary (geographic) of the Plan
- Operational management plans
- Multisectoral participation mechanisms
- Local government commitments to implementation
- Monitoring and evaluation program

Results

The Guimaras Coastal Strategy (GCS) and its Implementation Plan (GCSIP) was drafted in 2012. Updating of the CS/CSIP is being undertaken to ensure the mainstreaming and alignment of the strategic actions and timeline of both documents with the Comprehensive Land Use Plans, Comprehensive Development Plans, the Integrated Coastal and Fisheries Resources Management Plans of the municipal governments as well other sectoral

plans. For instance, the CLUPs of the Municipalities of Buenavista and Sibunag were approved in 2017 while the draft CLUPs of the 3 municipalities are being updated.



The 5 municipalities have drafted their respective CRM Plans in 2011. The CRM Plans of the Municipalities of Jordan and Nueva Valencia have been approved and adopted. The Philippine Rural Development Project (PRDP) is assisting the municipalities in updating their CRM plans into ICFRM plans covering the period 2018-2022. Finalization of the plans is ongoing.

Integration of the management plan of TINMAR into the CLUP of Nueva Valencia has been undertaken.

Various support mechanisms are in place to ensure the adoption and implementation of these plans. These include the following:

- (a) Signing of a tripartite agreement between the Provincial Government of Guimaras, DENR PENRO and PEMSEA in 2015 which aims to scale up ICM implementation in the province. The Agreement specifically stresses the finalization of the Guimaras Coastal Strategy (GCS) by 2018;
- (b) Signing of a MOA in August 2016 creating the AMLIG PANAY-GUIMARAS, a regional organization created through a multi-sectoral/agency involving the provinces of Aklan, Antique, Capiz, Guimaras and Iloilo and the regional offices of the following national agencies: DENR, BFAR, LTO, MARINA, NEDA, Philippine Information Agency, PCG6, Philippine National Police, PPA, DA, DOT, DILG, DOJ, DTI, DepED, DOH, DOST, DPWH, 301st Infantry (bayanihan) Brigade, 3rd Infantry Division, Philippine Army, Tactical Operations Group 6, 2nd Division, Philippine Air Force, Civil Society Organization, and Youth for Environment in Schools Organization. The agreement aims to harmonize all efforts in enforcement, management, conservation and protection of the environment and natural resources of Panay-Guimaras Islands;
- (c) Signing of MOAs between the Provincial Government of Guimaras and Guimaras State College, and between the 5 municipalities and PGG in July 2015 and August 2016, respectively that aims to fast track the implementation of all environmental management projects under the ICM Program of the province particularly on hazard management, habitat management, water use, food security and pollution and waste management through close collaboration and cooperation among and between partners;
- (d) Signing of agreement between the Provincial Government of Guimaras, the 5 municipalities, DENR-PENRO, JBLFMU, BFAR, PCG, and the Management Boards of marine protected areas and sanctuaries for the establishment of Guimaras Alliance of Protected Areas and Sanctuaries (GAPAS) which aims to consolidate efforts in the management and operationalization of MPAs in the Province of Guimaras; and
- (e) Signing of Executive Order No. 559 by the then President Gloria Macapagal Arroyo in August 2006 creating the Metro Iloilo-Guimaras Economic Development Council (MIGEDC) and filing of House Bill No. 3956 by the Honorable Jerry Treñas which supports the institutionalization of the said council purposely to formulate metro-wide plans and programs, coordinate and monitor delivery of services for public safety, tourism, economic promotion, infrastructure, land use planning and environmental management.

The establishment of the SOC ensures that progress in implementation of the various plans and programs are regularly monitored and reported.

Implications and Recommendations

Aligning the strategic actions and timeline of the CS and CSIP with the long term and medium terms plans of the province and municipalities, as well as the sectoral plans is important to ensure that their implementation, including monitoring, is synchronized. The CS and CSIP serve as an integrating framework for the various action programs on coastal and marine governance and management of the province and municipalities. As such, its implementation is anticipated to **strengthen and provides significant contribution to achieving the sustainable development goals and targets of the province and the municipalities.**

Entering into partnership agreements with national agencies and various partners from the academe and international organizations also ensures that technical and financial support are available for the implementation of the CS and CSIP and other plans of the province and municipalities.

As signatory to the Ansan Declaration, where reporting of its committed SDG target is required as part of Guimaras commitment to contribute in the implementation of the PNLG SAP 2016-2020, it is recommended that the Coastal Strategy should also take into consideration this commitment. It is also recommended that finalization and adoption of the Coastal Strategy be completed in 2018.

Reference

- 5 Year CRM Plan on Nueva Valencia (2012-2016)
- Draft Guimaras GCS-GCSIP
- ICRM Plan of the Municipality of Jordan (2012-2017)
- Integrated Coastal Resource Management Plan of the municipality of Sibunag



Policy, Strategies and Plans

003 Local government development plan, including coastal and marine areas

Description

This indicator reviews the local government units that have integrated coastal management issues and sustainable

development of coastal and marine resources into their multi-year development plans.

Rationale

To determine an understanding of their commitment to coastal management, the development plans of local government units can be evaluated to ascertain whether the sustainable use of coasts and near coastal areas and the associated resources have been recognized for their value and the role they play in the development process. The integration of ICM into the development plans of local

government units reflects a local commitment to ensure the protection and development of coastal and marine areas in the broader context of the coastal development strategy/ Strategic Environmental Management Plan, through a more integrated economic, social and environmental policy and planning approach.

Data Requirements

- Local development plans

Results

The Province of Guimaras can be classified as a coastal province with 60 per cent of its barangays located within 1 kilometer from the coast. Factors that affect the coast are therefore very critical to be considered in planning. Coastal issues are addressed in the long term and medium-term plans of the province and municipalities. The medium-term plan, the Provincial Development and Physical Framework Plan (PDPFP) which is in consonance with the Comprehensive Land Use Plan (CLUP) and Provincial Physical Framework Plan (PPFP) is currently being updated for approval in 2018. The CLUPs of municipalities on the

other hand, are either approved for implementation, (Buenavista and Sibunag) on the process of revision, specifically mainstreaming the mandatory plans in their CLUPs (Jordan and Nueva Valencia) or for approval (San Lorenzo).

The existing plans of the province and the five municipalities include strategies and actions for coastal and marine ecosystem management. Medium-term plans and sectoral plans [e.g. Comprehensive Development Plans (CDPs), Executive Legislative Agenda (ELA), Forest

Land Use Plan (FLUP), Integrated Coastal Resources and Fisheries Management Plan (ICFRMP), Coastal Resources Management Plan (CRMP) and Ecological Solid Waste Management Plan (ESWMP)] as well as short-term plans [e.g., Annual Investment Plan (AIP), Local Disaster Risk Reduction Management Plan (LDRRMP), Local Climate Change Action Plan (LCCAP), Gender and Development Plan (GADP) and Peace and Order Plan)] are likewise continually updated. The CRM/ICFRM plans which follow

the ridge-to-reef strategies in addressing environmental issues adopts a participatory approach in their development (Table 3).

Furthermore, the Province of Guimaras in partnership with DENR is undertaking the formulation of the Forest Land Use Plan that will serve as framework for the sustainable management of the forestland of the province. The plan is targeted for adoption in 2018.

Table 3. Plans of the province and municipalities.

Type of plan	Province	Buenavista	Jordan	Nueva Valencia	San Lorenzo	Sibunag	Remarks
Comprehensive Land Use Plan (CLUP)	PCLUP (2005-2035)	2005-2035	2018-2027	2014-2028	2000-2010; 2018-2025 (not yet approved)	2012-2022	
Comprehensive Development Plan (CDP)	PDPFP (2017-2022)	2014-2019	2014-2019	2014-2019	2014-2019	2014-2019	Priority Development Agenda approved; other content of PDPFP for updating
Executive Legislative Agenda (ELA)	Priority Development Agenda approved	2017-2019	2017-2019	2017-2019	2017-2019	2017-2019	
Annual Investment Plan (AIP)	2018	2018	2018	2018	2018	2018	Annually prepared
Gender and Development (GAD) Plan	2018	2018	2018	2018	2018	2018	Annually prepared
Local Disaster Risk Reduction Management Plan (LDRRMP)		2018	2017-2019	2014-2016	2016	2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018	Work and financial plan of LDRRMP is annually prepared; To be updated in 2018 based on recent guidelines of Office of Civil Defense and Climate Change Commission
Local Climate Change Action/Adaptation Plan (LCCAP)	2017	2016-2019	2016-2020	2014- 2017	2016 (draft)	2017-2019	
Peace & Order and Public Safety Plan	2017-2019	2017-2019	2017-2019	2017 -2019	2017-2019	2017-2019	
Evacuation Plan			2015 onward				



Table 3. Plans of the province and municipalities. (cont.)

Type of plan	Province	Buenavista	Jordan	Nueva Valencia	San Lorenzo	Sibunag	Remarks
Shelter Plan	2014 onward	2014-2024 (draft)	2014-2024 (draft)	Draft	2014-2024 (draft)	2014-2024 (draft)	All draft
Ten-Year Solid Waste Management Plan	2015-2024	2015-2024	2015-2024 (Approved)	2015-2024	2015-2024	2015-2024	All have conditional approval from NSWMC except Buenavista; All are currently updating
ICFRM/CRM Plan	Draft CSIP (2018-2022)	2018-2022	2018-2022	2012-2016 (Approved); updating	2018-2022 (draft)	2018-2022 (draft)	2018-2022 Plan drafted for SB's approval except Buenavista
Foreshore Development and Management Plan			2018				Included in the Draft PFDM Plan of the Province; subject for the approval of DENR Central Office and other stakeholders
Forest Land Use Plan (FLUP)	Island FLUP (2017-2022)	2017-2022	2017-2022	2017-2022	2017-2022	2017-2022	On-going Public Consultation
	Guimaras Post Harvest Development Plan (2009-2018)						
			Jordan Economic and Development Plan (2016-2019)				
Resource Generation Plan			2016-2019 Revenue Generation Plan (2017-2019)	2017			



Submission of first draft of the FLUP, Guimaras Province, November 11, 2016.

Implications and Recommendations

The Province and 5 Municipalities have integrated coastal management concerns into their mandatory plans (PDPFP, CLUP and CDPs) which ensures that the sustainability of marine and coastal areas is taken into consideration. It is imperative that the updating of the various plans must

be built on the accomplishments and progress made in implementation and more importantly, incorporating actions and management interventions that will address emerging concerns, including those projects/programs that were not fully implemented but deemed important.



Institutional arrangements

004 Coordinating mechanism

Description

This indicator considers the presence of a functional interagency and multi-sectoral coordinating mechanism that oversees the development and implementation of the ICM program. The indicator further looks into

the institutionalization of a local office with adequate administrative resources – staff, budget and equipment – to oversee, guide and coordinate the implementation of coastal strategies and action plans.

Rationale

A fully functional coordinating body consisting of the government agencies, non-government entities, the private sector, civil society and other stakeholders, as appropriate, is a key component of ICM programs. The purpose of the coordinating mechanism is to harmonize any overlapping responsibilities of line agencies and stakeholder interests, as well as to integrate policy and management interventions.

Moreover, the availability and allocation of adequate administrative resources for ICM is an expression of the capacity of the ICM management team to administer, coordinate and implement activities over time. In the implementation of ICM, there is a need for a local office to serve as a clearing house, central coordinating agency and focal point for multi-sectoral activities.

Data Requirements

- Coordinating mechanism established and legal basis
- Organizational structure of the coordinating mechanism
- Coordinating office established and legal basis
- Organizational structure of the coordinating office
- Staff and budget allocation of the coordinating office

Results

Executive Order No. 05, series of 2015, superseded EO No. 04 series of 2008, updating the membership and organizational structure of the ICM Program Coordinating Committee. The PCC, which is chaired by the Governor of Guimaras Province comprises of representatives from the national and provincial agencies, the five coastal municipalities, nongovernmental and people's organizations, financial and technical institutions and the Provincial Board (Figure 5).

Five sub-committees were created to oversee the reporting of progress made in the implementation of plans and management programs for the various aspects of sustainable development (Table 4). Each sub-committee has a designated chair and PMO staff from the Coastal and Marine Management Section (CMMS) of GENRO that serves as secretariat to the sub-committee. As a coastal province GENRO has undergone a re-organization and created in the process the CMMS (Figure 6).

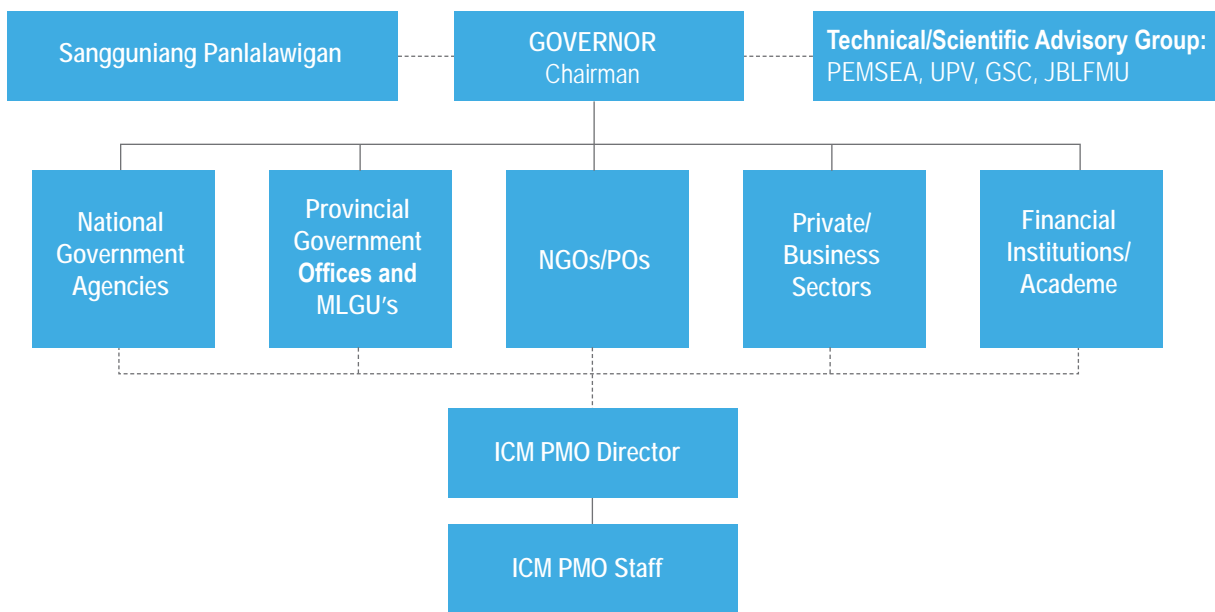


At the municipal level, a counterpart program coordinating committees were established with similar sub-committees for the five aspects of sustainable development in order to facilitate the reporting of progress made to the provincial level sub-committees (Figures 7 to 12).

The PCC and the 4 PCC sub-committees meet twice a year, while the Water Use and Supply Management Sub Committee meets on a quarterly basis. The PLGU has allocated budget for the PCC and PCC Sub-Committee operations since 2014 (Table 5).

The ICM Ordinance, which was drafted in 2017, aims to institutionalize the implementation of the ICM Program in the province, including the coordinating mechanism. It is anticipated that the ICM Ordinance will be adopted by the Provincial Council in 2018 (see Indicator 6).

Figure 5. Guimaras ICM Program Coordinating Committee.



National Government Agencies	Provincial Government Offices and MLGU's	NGOs/POs	Private/Business Sectors	Financial Institutions/Academe
DENR; DPWH	POAS; GENRO; PVSO	ZSL	Jordan Water District	LBP
PCG; PPA	PPDO; PDRMO	KAMAMADO	Buenavista Water District	DBP
BFAR	PGSO; PEO; PSWDO	Mabini Limers and Farmers MPC	Nueva Valencia Water District	TSKI (Taytay sa Kauswagan, Inc.)
PNP; SEAFDEC	PEDO; PHO P Tourism Office	MFARMC's	Guimaras Resorts and Hotels Association	UPV
DOST; DAR; DA	MLGU's: Buenavista; Jordan	Jordan Motorbanca Association	GCCI (Guimaras Chamber of Commerce and Industry)	JBLMU
Deped	Nueva Valencia	Association of Buenavista Ferry Service Providers	Trans-Asia Development Corporation	One Network Bank
NMRDC	San Lorenzo	Guimaras Small-Scale Miners Association	Seven C Integrated Corporation	
	Sibunag		ALH Lime Factory	

Institutional Arrangements
Coordinating mechanism



Table 4. Profile of the PCC Sub-Committees.

Sub-Committee	Number of members	Schedule of meeting	Chairperson	Secretariat
Natural and Man-Made Hazard Prevention and Management	35	Semestral	Ms. Teresita G. Siason	Arlette T. Depamaylo ICM-PMO Staff
Habitat Protection, Restoration and Management	20	Semestral	Hon. Constantino Cordero	Rose Jane N. Sablon ICM PMO Staff
Water Use and Supply Management	23	Quarterly	For. Tommy C. Doyola	Juneline S. de la Cruz ICM-PMO Staff
Food Security and Livelihood Management	25	Semestral	Ms. Elena V. Quezon, EnP	Neil P. Catalan ICM-PMO Staff
Pollution Reduction and Waste Management	28	Semestral	Hon. Dan Elby Habaña	Ma. Rhea Manzan ICM-PMO Staff
ICM-Program Coordinating Committee	60	Semestral	Hon. Samuel T. Gumarin, MD, MPH	Arlette T. Depamaylo ICM Staff

Table 5. Budget allocation for the operation of the PCC.

Committee Name	Amount Allocated			
	2014	2015	2016	2017
PCC	100,000.00	84,280.00	109,120.00	120,000.00

Box 2. 2017 Excellence in Local Governance Award.



Guimaras reaped awards during the 2017 Excellence in Local Governance (EXCELL) of the Department of Interior and Local Government Region VI. EXCELL is a continuing project of DILG VI for best managed local governments in the region showcasing their achievements in governance, administration, social services, economic development and environmental management initiatives.

Guimaras was hailed the champion for the environmental governance category where the indicators evaluated included climate change adaptation, solid waste management and ecosystem management. For social, administrative and economic governance categories, the province ranked 2nd runner-up.

Figure 6. Organizational structure of the Guimaras Environment and Natural Resources Office.

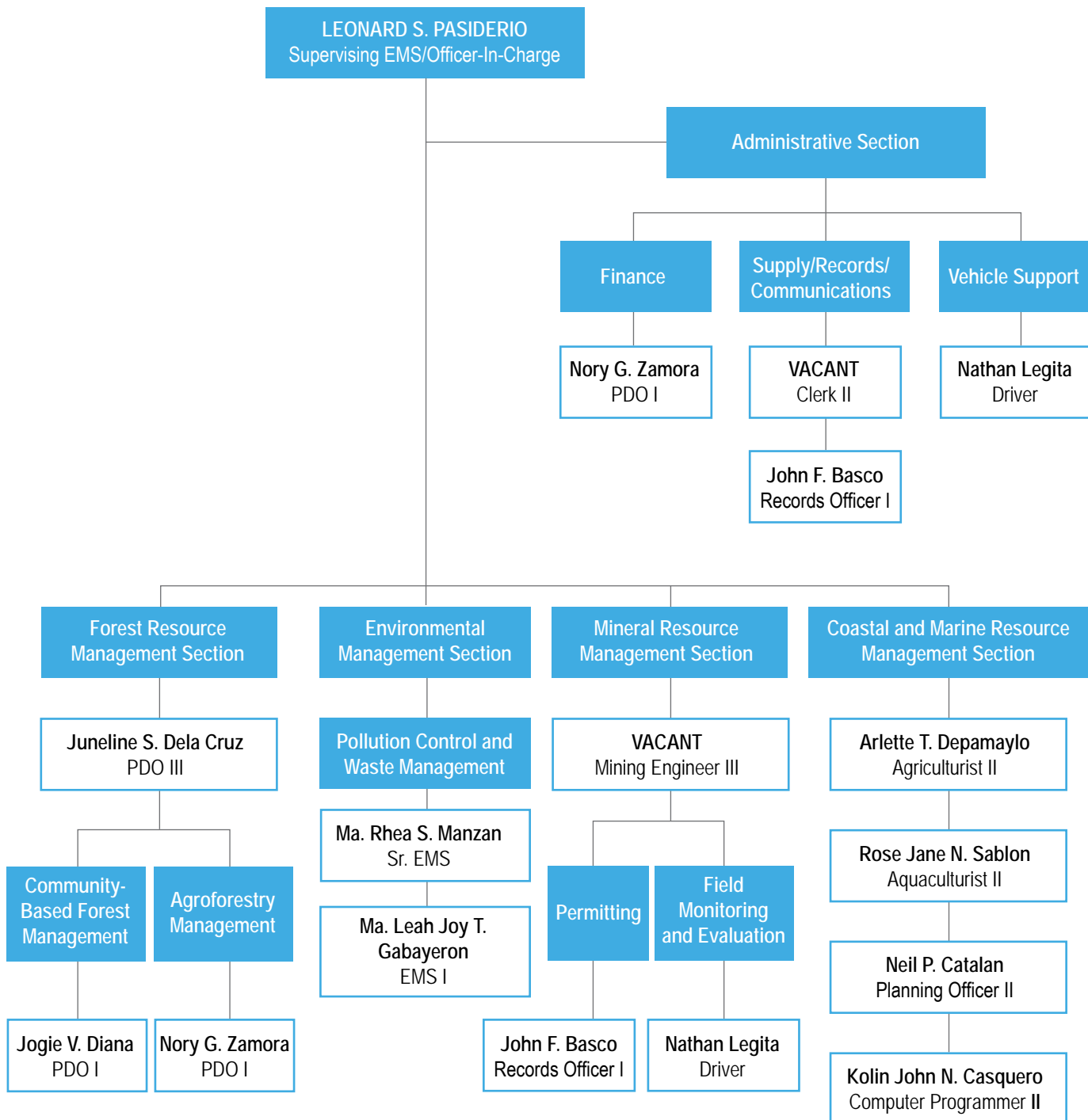


Figure 7. ICM Program Coordinating Committee of the Municipality of Buenavista.

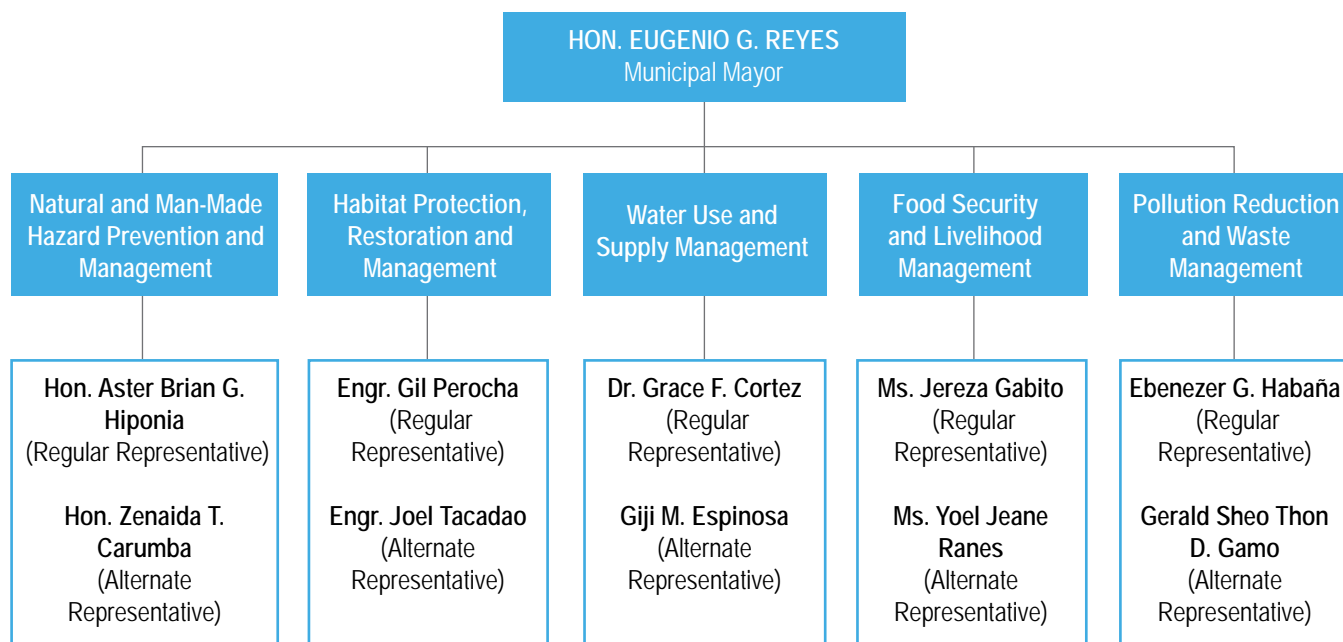


Figure 8. ICM Program Coordinating Committee of the Municipality of San Lorenzo.

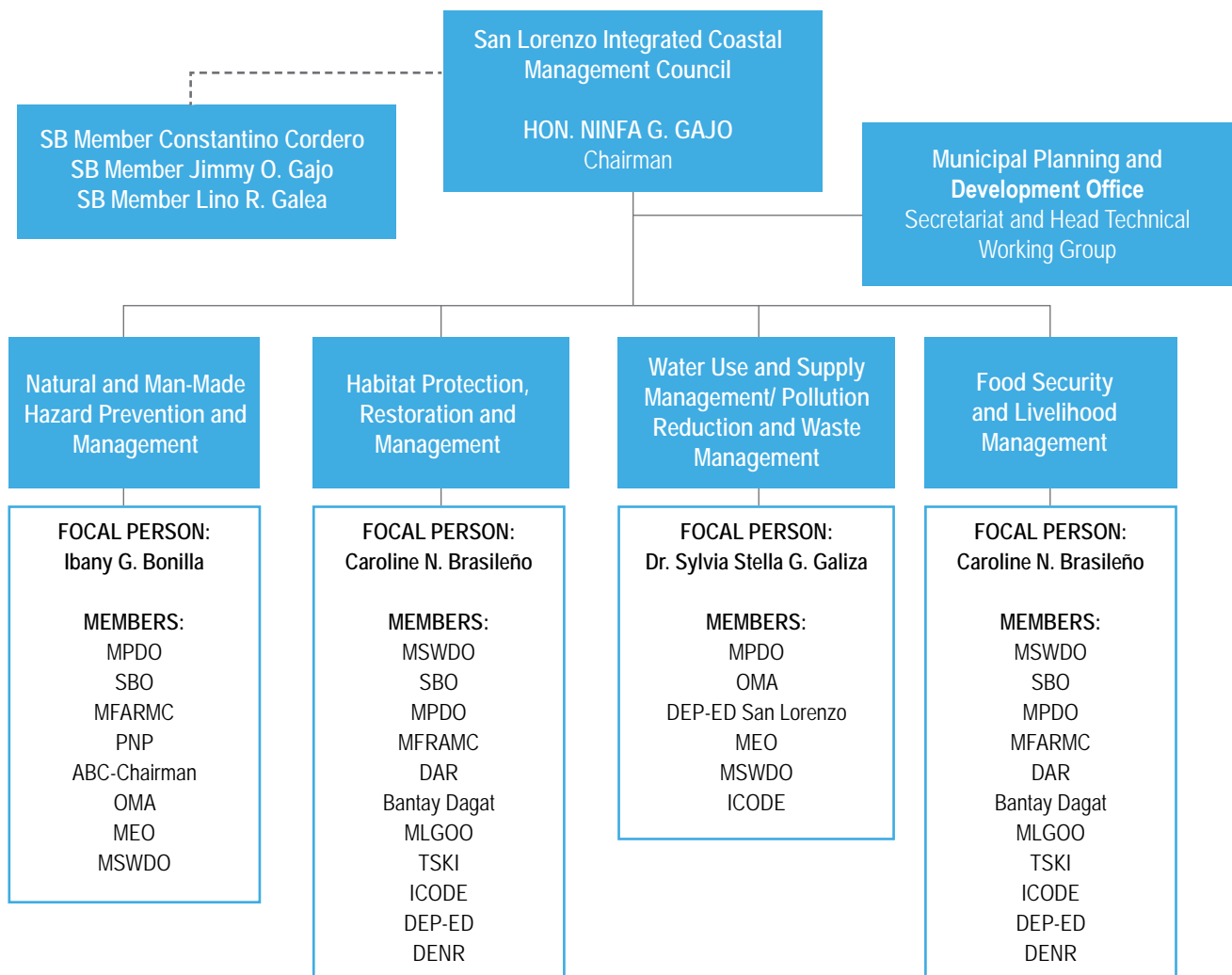


Figure 9. ICM program local project office of the Municipality of San Lorenzo.

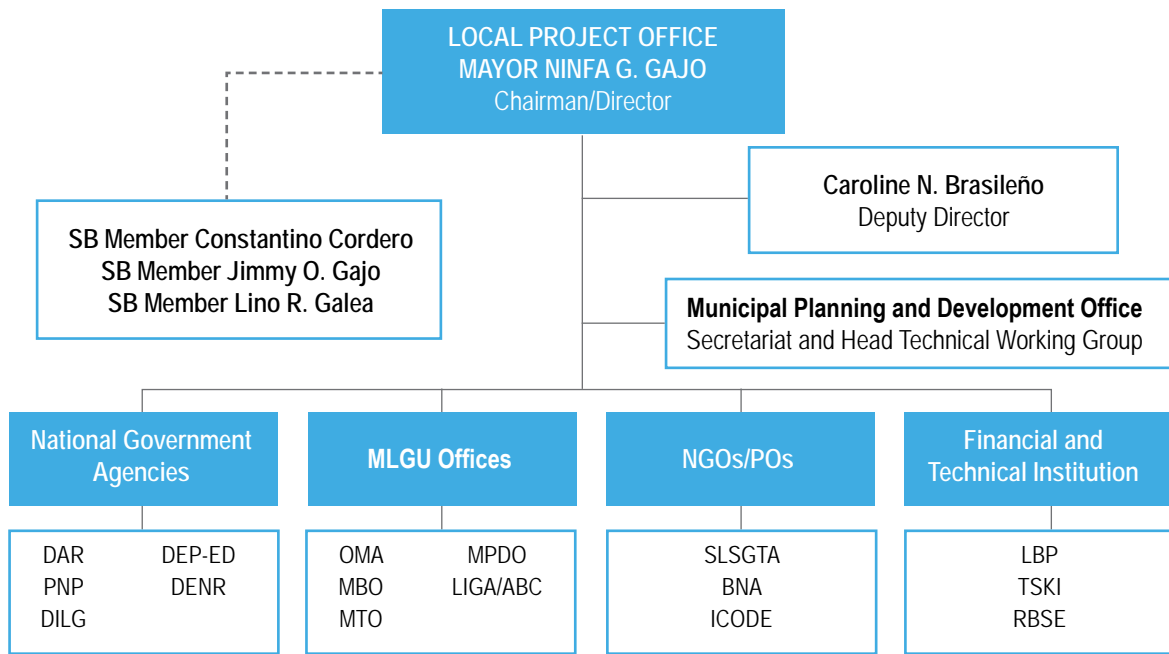
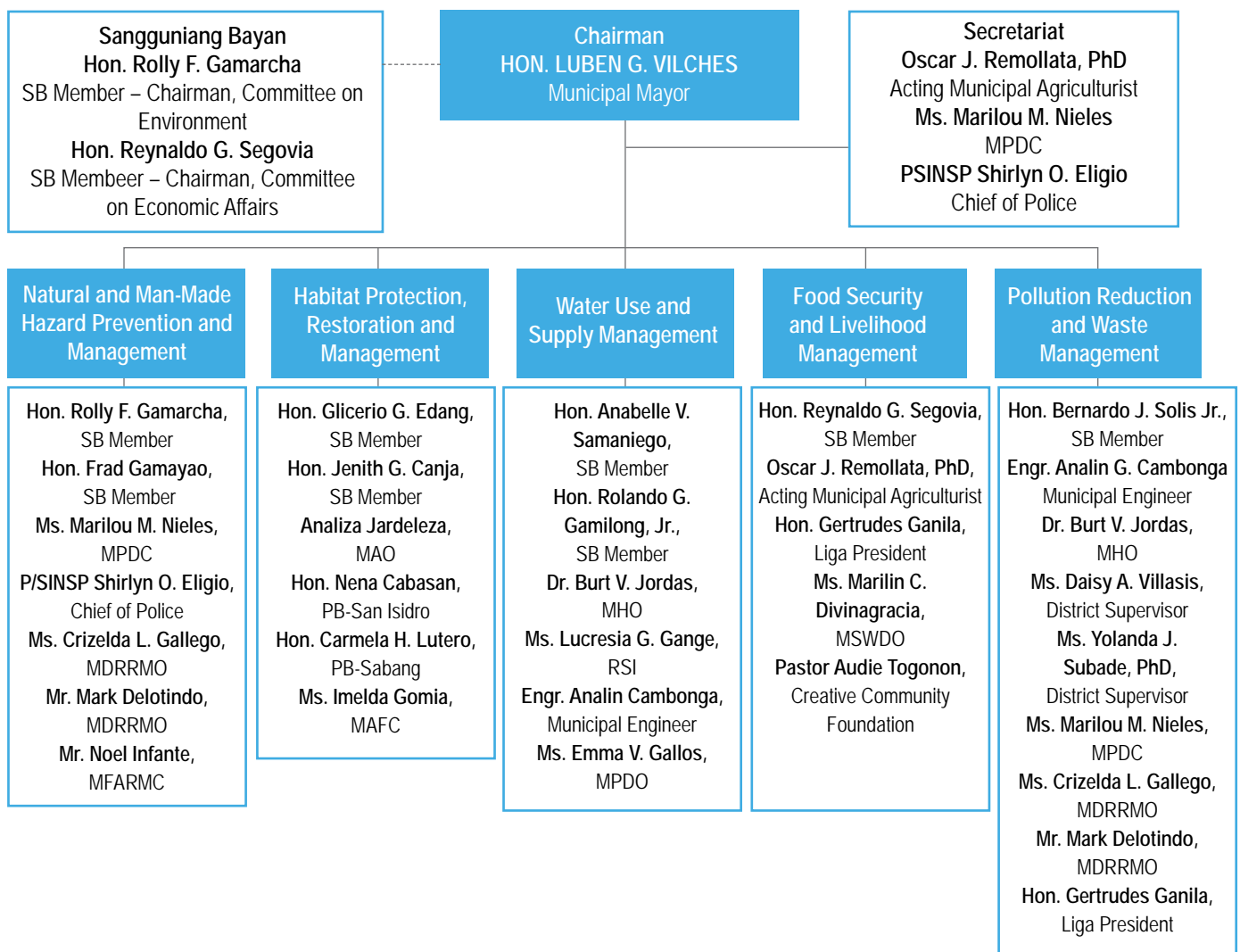


Figure 10. ICM Program Coordinating Committee of the Municipality of Sibunag.



Institutional Arrangements
Coordinating mechanism



Figure 11. ICM Program Coordinating Committee of the Municipality of Jordan.

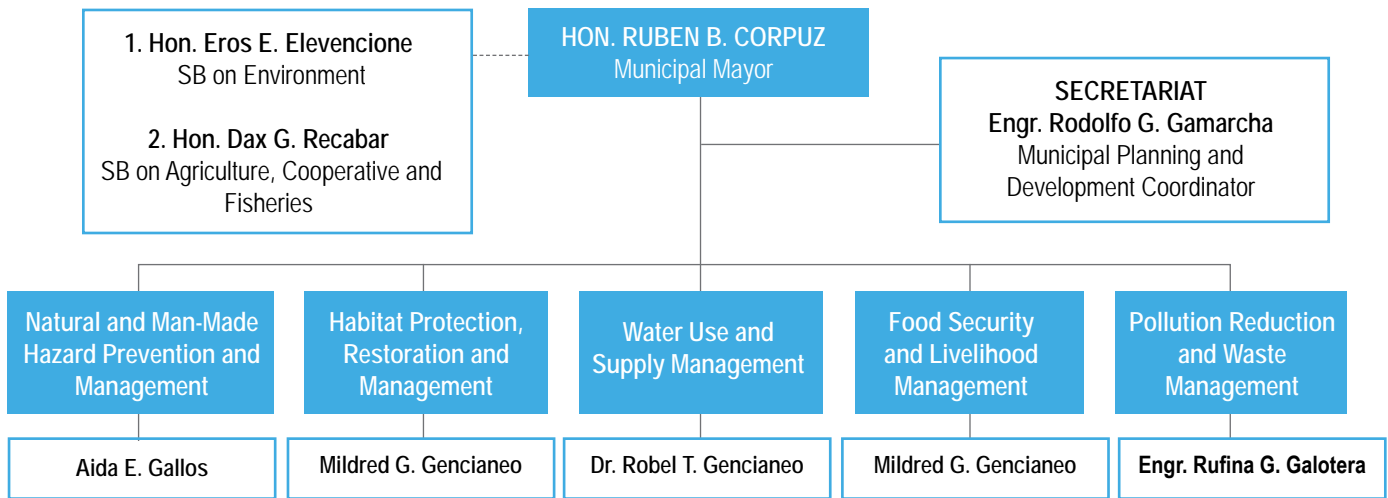
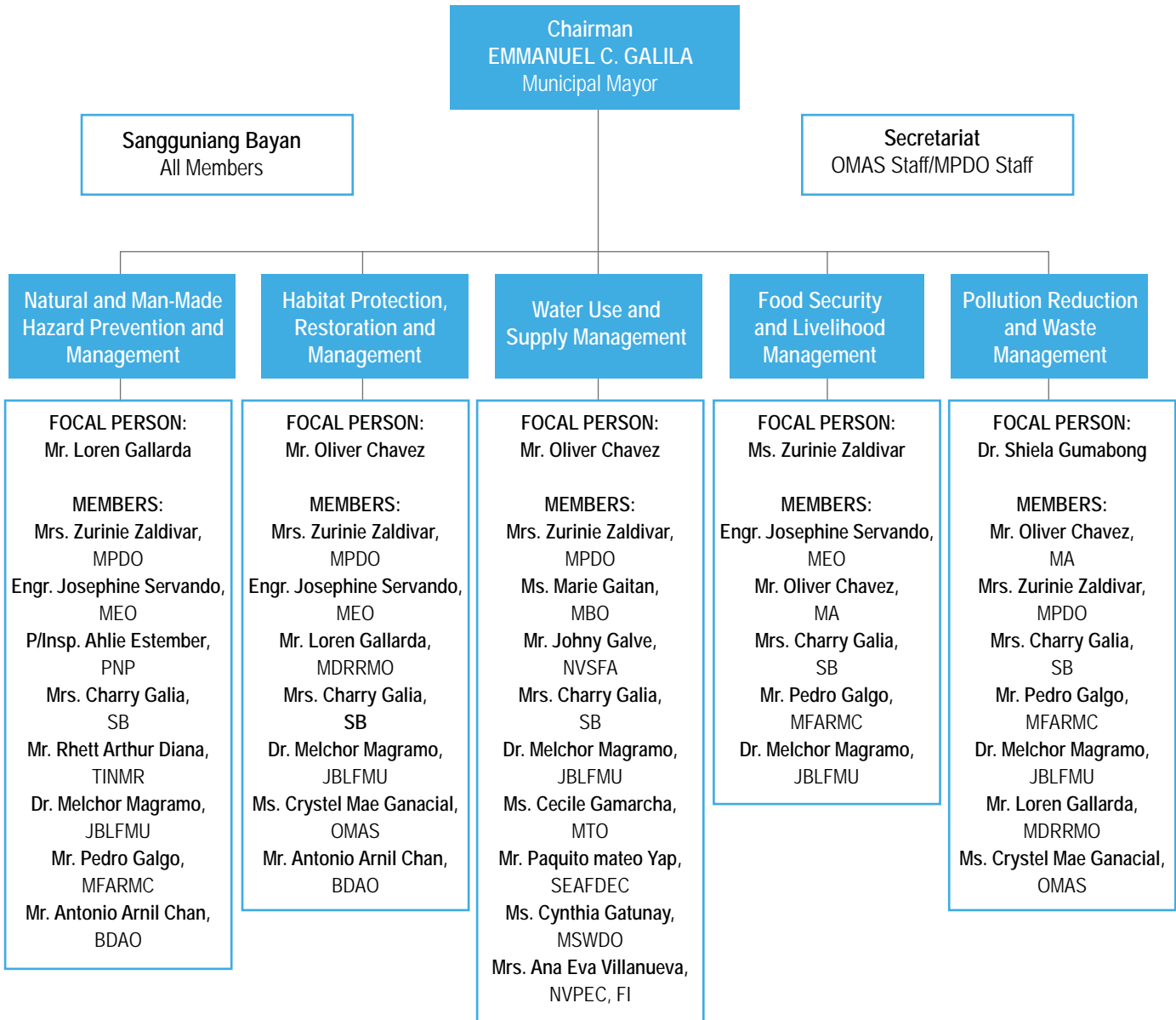


Figure 12. ICM Program Coordinating Committee of the Municipality of Nueva Valencia.



"The creation of the Sub-Committee on Water Use and Supply Management is an excellent strategy of the province to promote our advocacy on efficient water use, and more importantly, on water conservation.

The operations of the Sub-committee should be sustained so that issues and concerns regarding water use and supply are addressed in a proper platform, especially that the ecotourism industry in the province is continuously growing."



Engr. Dione Gabayoyo

Vice Chairperson, Water Use and Supply Management Sub-Committee

Implications and Recommendations

The Province of Guimaras has successfully institutionalized the coordinating mechanism that was created in 2008. The issuance of a new Executive Order seven years after the creation of the PCC saw its evolution from a project-based multi-sectoral coordinating mechanism into a permanent mechanism of the local government.

The creation of the five sub-committees with designated chairs, secretariat support and budget allocation for its operationalization is one of the good practices in the institutionalization of the coordinating mechanism. The sub-committee meetings have served as venue for regular reporting, review and assessment of progress made in management program implementation and in discussing appropriate interventions to address implementation challenges and constraints. It also facilitated the consolidation of various efforts and accomplishments at various levels that can be utilized in the realignment and updating of plans and programs of the local government.

The adoption of the ICM Ordinance is anticipated to further strengthen the role of the interagency, multisectoral coordinating mechanism that embodies the essence of coordination and integration.

Since program implementation rely heavily at the local level, further strengthening of the PCCs at the municipal level is recommended. It is also recommended that regular budget allocation be made for the conduct of regular meetings and consultations and updating the capacity and skills of the members. A year-end policy forum can serve as platform for raising awareness and continuing commitment of the local leaders as well as various stakeholders and partners in ICM implementation.



Regular PCC meeting, 2nd semester of CY 2017.

References

- Executive Order No. 05, Series of 2015. An order amending the Guimaras Integrated Coastal Management (ICM) Project Management Office (PMO) and updating the Program Coordinating Committee (PCC) for implementation of Guimaras ICM Program.
GENRO Financial Record Book (2014-2017)



Institutional arrangements

005 Participation of stakeholders in the coordinating mechanism

Description

This indicator reports the pertinent sectors (government, nongovernment, private, civil society, academe) that are represented in the coordinating mechanism for the ICM program and are part of an integrated decisionmaking process. It further reflects the commitment of government

agencies and other stakeholders to implement, comply with and enforce ICM plans and activities. It also suggests the reality of the execution and performance of ICM initiatives, as well as the degree of acceptance on the part of users subject to the plan.

Rationale

Stakeholder participation is the key to coastal management. The ICM coordinating mechanism provides stakeholders (government and nongovernment) with access to decisionmaking processes and activities. It provides concerned parties with the satisfaction that their views and concerns are taken into account in the planning and decisionmaking process. The concerned sectors include those that exploit and use the natural resources for profit, communities that traditionally use natural resources for their food and livelihood, and the public sectors (local and central) that govern and manage the resources.

Likewise, in order to achieve the targets of sustainable use and development of the oceans and coasts, the commitment of national agencies, local governments and concerned nongovernment stakeholders is essential. Thus, their respective programs, projects and activities should be aligned with the action plans, programs and policies identified in the coastal management plans.

Data Requirements

- Representation of stakeholders in the coordinating mechanism
- Staff and budget allocation of agencies in the coordinating mechanism

Results

The coordinating mechanism established at the provincial and municipal levels are represented by relevant sectors that have responsibilities and interests in the integrated management of Guimaras' coastal and marine areas and resources. **Table 6** shows the membership of the five sub-committees comprising of representatives from the national

agencies, provincial and municipal governments, academe, private and business sector, people's organizations and nongovernment organizations. The coordinating mechanisms are also represented by the relevant committees of the Provincial Council.


The participation of the relevant stakeholders in the coordinating mechanism ensured that their views and insights were taken into consideration in the integrated policy and decision-making processes for the ICM program.

Furthermore, the inclusion of the Chair of the Committee on Environment and Chair of the Committee on Agriculture and Fisheries of the Provincial Council in the sub-committees provided the necessary legislative support for the program.

Table 6. Representation of stakeholders in the sub-committees of the coordinating mechanism.

Natural and Manmade Hazard Prevention and Management	Habitat Protection, Restoration and Management	Water Use and Supply Management	Food Security and Livelihood Management	Pollution Reduction and Waste Management
DENR-PENRO	BFAR, DEpEd	DENR-PENRO, DAR	DA, BFAR, NMRDC	DENR-PENRO, POAS
DPWH,PCG, PNP	DENR-PENRO	DepEd, GSC	DENR-PENRO, DTI	DPWH, DILG, PCG
DOST, PPA DepEd	DBP, UPV, GSC	PHO, PPDO	DOST, DILG, LBP	DepEd, NMRDC
MLFMPC, GRA	ZSL, JBLFMU	GENRO	DepED, DAR	PHO, PGSO, GENRO
GUIMELCO, PVSO	PEDO, POAS, GENRO	Jordan Water District	Taytay sa Kauswagan	SP Chair, Committee on Environment
PEO, POAS PPDO, GSC, JBLFMU	PDRRMO	Buenavista Water District	GCCI, POAS, PEDO, GENRO, JBLFMU	PVSO, PTOUR, GHRA, JBLFMU, GSC
PDRRMO, PSWDO, GENRO PHO, PEDO	KAMAMADO	Nueva Valencia Water District	ZSL, SEAFDEC, GSC, One Network Bank, PTOUR	Jordan Motor Banca Association
SP Chair, Committee on Environment	SP Chair, Committee on Environment	SP Chair, Committee on Environment	SP Chair, Com. on Agriculture and Fisheries	Jordan Motor Banca owners and Sailors Association
3 Representatives from Municipal Gov'ts: MPDC, MDRRMC, SB Chair Com. on Environment	3 Representatives from Municipal Gov'ts: MA, MPDC, SB Chair Com. on Environment MFARMCS	3 Representatives from Municipal Gov'ts: MA, MPDC, SB Chair Com. on Environment	3 Representatives from Municipal Gov'ts: MA, MPDC, SB Chair Com. Agriculture and Fisheries	Association of Bta. Ferry Service Providers, Guimaras Small –Scale Miner's Association, ALH Lime Factory, Sven C Integrated Corp.
Guimaras Small Scale Miner's Association, Trans-Asia Dev't Corp. ALH Lime Factory, Seven C Integrated Corp.				4 Representatives from Municipal Gov'ts: MA, MPDC, SB Chair Com. on Environment MFARMCS




 REPUBLIC OF THE PHILIPPINES
 Province of Guimaras
 Municipality of Nueva Valencia
OFFICE OF THE MUNICIPAL MAYOR

EXECUTIVE ORDER NO. 24
Series of 2017

AN ORDER ESTABLISHING THE MUNICIPAL INTEGRATED COASTAL MANAGEMENT OFFICE (MICO) FOR THE IMPLEMENTATION OF THE MUNICIPAL INTEGRATED COASTAL MANAGEMENT

WHEREAS, Hon. Simeon T. Quinsac, Provincial Governor of the Province of Guimaras issued Executive Order No. 05 Series of 2015 to put in place a management mechanism to officially join the network and adopt ICM as a strategy for sustainable development;

WHEREAS, the Municipality of Nueva Valencia to officially join the network and adopt ICM as a strategy for sustainable development, there is a need also for a management mechanism to be put in place;

NOW, THEREFORE, I **EMMANUEL C. GALJA**, Mayor, Municipality of Nueva Valencia, Province of Guimaras, by the power vested in me by law, rules and regulations promulgated by the duly constituted authority, do hereby establish a management mechanism for the adoption of Integrated Coastal Management as a strategy for sustainable development.

Section 1. Establishment of the Nueva Valencia Integrated Coastal Management Coordinating Committee.

A. Functions

1. Formulate administrative and operational guidelines in relation to sustainable ICM implementation;
2. Identify sources of funds to ensure the delivery of services and implementation of programs/project and activities;
3. Recommend programs/projects/interventions appropriate for integrated coastal management; and
4. Provide assistance to program beneficiaries.



Mr. Loren Gallardo Focal Person	Mr. Oliver Chavez Focal Person	Mr. Oliver Chavez Focal Person	Mrs. Zuzette Zaldivar Focal Person	Dr. Sheila Guzmanberg Focal Person
Mrs. Zuzette Zaldivar, MPOD	Mrs. Zuzette Zaldivar, MPOD	Mrs. Zuzette Zaldivar, MPOD	Eng. Josephine Servando, MCO	Mr. Oliver Chavez, MA
Eng. Josephine Servando, MPOD	Mr. Josephine Servando, MPOD	Mr. Josephine Servando, MPOD	Mr. Oliver Chavez, MA	Mrs. Zuzette Zaldivar, MPOD
PH-Ad. Arni Estombar, PSP	Mr. Loren Gallardo, MPOD	Mr. Johny Galve, MPOD	Mr. Oliver Chavez, MA	Mrs. Cheryl Galve, SA
Mrs. Cheryl Galve, SA	Mrs. Cheryl Galve, SA	Mrs. Cheryl Galve, SA	Dr. Melchor Magrango, JPLFMU	Dr. Melchor Magrango, JPLFMU
Mr. Zhen Arthur Bana, TERRA	Dr. Melchor Magrango, JPLFMU	Dr. Melchor Magrango, JPLFMU	Dr. Melchor Magrango, JPLFMU	Dr. Melchor Magrango, JPLFMU
Dr. Melchor Magrango, JPLFMU	Mrs. Crystal Mae Garsacia, OMAS	Mrs. Crystal Mae Garsacia, OMAS	Mrs. Crystal Mae Garsacia, OMAS	Mrs. Crystal Mae Garsacia, OMAS
Mr. Pedro Gage, SPRANC	Mr. Antonio Arni Chan, SCAD	Mr. Antonio Arni Chan, SCAD	Mr. Ricardo Matico Yap, SCATREC	Mr. Ricardo Matico Yap, SCATREC
Mr. Antonio Arni Chan, SCAD	Mr. Ricardo Matico Yap, SCATREC	Mr. Ricardo Matico Yap, SCATREC	Mrs. Cynthia Dela Cruz, SCATREC	Mrs. Cynthia Dela Cruz, SCATREC
			Mrs. Ana Eva Ylanesna, NUYFEC	

Section 2. Responsibilities of the Project Management Office (PMO).

A. Functions

Prepare, monitor, evaluate, report, implement, refine, and consolidate all programs, projects and interventions related to integrated coastal management in accordance to the framework set by the Partnership in Environmental Management for the Seas of Southeast Asia (PEMSEA). Describe Order No. 53 of the President of the Republic of the Philippines and the Executive Order No. 05 of the Provincial Governor of the Province of Guimaras.

B. Cooperation

Mr. Oliver S. Chavez	-	PMO Director
Mrs. Zuzette Zaldivar	-	PMO Deputy Director
Mr. Antonio Arni Chan	-	Staff
Mrs. Crystal Mae Garsacia	-	Staff
Mrs. Cecilia Caranche	-	Staff

To be assisted by other OMAS personnel with the technical and financial support of its Division Heads

C. Office

The Project Management Office (PMO) shall be located at the Office of the Municipal Agriculture Services, Poblacion Nueva Valencia, Guimaras.

This order shall take effect immediately.

Done the 29th day of December, 2017 at the Municipal Hall, Poblacion, Nueva Valencia, Guimaras.


EMMANUEL C. GALJA
 Municipal Mayor



Regular meeting of the Sub-committee of Natural and Human-Induced Hazard Prevention and Management.

Implications and Recommendations

Every stakeholder in Guimaras has a voice in the integrated management of the coastal and marine areas and resources of the province. The representation of the various sectors and stakeholder groups in the coordinating mechanism ensured that their concerns were conveyed in a proper platform and their interests were given importance in the decision-making process.

More active participation of the scientific community/academe was notable. In addition to conducting research activities in the province, their engagement in the coordinating mechanism has provided the local government easier access

to scientific information that can be utilized in establishing baselines and in updating the environmental profiles of the municipal and provincial governments.

It is recommended that a mechanism to gather stakeholders' satisfaction and feedback on the performance of the ICM program be established so that in addition to the views of the members of the coordinating mechanism, the voice of the general public is also heard. This can pave the way for further enhancing the operations of the coordinating mechanism.

References

- Executive Order (EO) No. 05, Series of 2015. An order amending the Guimaras Integrated Coastal Management (ICM) Project Management Office (PMO) and updating the Program Coordinating Committee (PCC) for implementation of Guimaras ICM Program.
- E.O. No. 2017-052, Series 2017. An Order Designating Personnel to Serve as Official Representative of the Municipality of Buenavista to the Guimaras ICM Project Committee (PCC) Sustainable Development Aspects Sub-committees.
- E.O. NO. 27-A, Series of 2017. An Order Establishing the Municipal Integrated Coastal Management Coordinating Committee and the Local Project Office for the Implementation of the Municipal Integrated Coastal Management Program for the Municipality of San Lorenzo.
- E.O.No. 18, Series of 2017. An Order Establishing the Sibunag Integrated Coastal Management Coordinating Committee for the Implementation of the Guimaras Integrated Coastal Management Program.
- E.O.No. 18, Series of 2017. An Order Establishing the Municipal Integrated Coastal Management Office for the Implementation of Municipal Integrated Coastal Management Program.



Legislation

006 ICM enabling legislation

Description

This indicator describes the existence and adequacy of legislation enabling the implementation of ICM interventions.

Rationale

The existence, adequacy and effectiveness of legislation are important in order to determine if the goals and objectives of coastal management are supported by a clear and enforceable legal basis. Legislation defines what is required,

permitted and prohibited in the coastal and marine area. Awareness and understanding of coastal management legislation promotes compliance and therefore achievement of coastal management goals and objectives.

Data Requirements

- Legislations/local ordinances regarding ICM institutional mechanism and management activities
- Coastal use zoning
- Fisheries, mining and other extraction activities
- Pollution-related activities
- Building structures in the coastal environment, including aquaculture structures
- Access to rules and regulations

Results

Enabling legislations in the form of local ordinances that are in consonance with national laws and regulations were continuously passed by the province and the five municipalities to support the activities of the ICM program in Guimaras since its inception in 2008. **Table 7** shows the different legislations that were enacted for the period 2010-2017 in addition to previous and existing ordinances

that supported ICM implementation. The ordinances covered sustainable development aspects ranging from hazard prevention to fishery, establishment/improvement of marine protected areas, livelihood and food security, pollution and solid waste management, and extraction of natural resources.

Drafting of the landmark legislation entitled, An Ordinance adopting ICM as a strategy for the sustainable development of Guimaras coastal and marine environment and natural resources and establishing supporting mechanism for its implementation and for other purposes, has been spearheaded by GENRO and is anticipated to be adopted by the Provincial Council in 2018. The proposed ICM Ordinance aims to mainstream and institutionalize the ICM system into the local government mechanism in support of its mandate to sustainably manage the coastal and marine resources and environment. The ICM Ordinance will also support the Executive Order on the institutionalization of the coordinating mechanism and coordinating office for ICM program implementation.

The legislative process involved a long and tedious process of drafting the legal document to conducting a series of public consultations and hearings to ensure that all major stakeholders are consulted on the issues being addressed by the ordinance, as well as to create awareness of its eventual passage and approval. The approved regulations were further disseminated to all stakeholders through the Municipal Development Council (MDC) meetings, "*Pulong-pulong sa Barangay*", Barangay Fisheries and Aquatic Resources Management Council (BFARMC) meetings, and different people's organizations, farmers and fisherfolks association meetings.

Table 7. Relevant legislations enacted by the province and municipalities of Guimaras.

Ordinance/ Resolution Number	Year passed	Title
PROVINCE		
3	2010	An ordinance regulating the harvesting and sale of immature mango fruits intended for table ripe consumption in the Province of Guimaras
	2010	The Guimaras HIV/AIDS prevention and control ordinance of 2010
	2010	An ordinance prohibiting the catching, collecting, selling, buying and destroying of spiders and engaging in spider fighting in the Province of Guimaras
	2010	The provincial rabies control ordinance of 2010
3	2011	An ordinance amending Ordinance No. 03, series of 2010, regulating the harvesting and sale of immature mango fruits intended for table ripe consumption in the Province of Guimaras
5	2011	An ordinance enacting the Guimaras Gender and Development Code
7	2012	An ordinance creating the Provincial Disaster and Risk Reduction Management Office (PDRRMO) and its staffing pattern in the Provincial Government of Guimaras
5	2014	An ordinance regulating the use of plastic bags, plastic bottles, in Guimaras and styropor materials in commercial establishments, including resorts and beaches, stalls and wet markets and offices within the territorial jurisdiction of the prov. of Guimaras, promoting the use of alternative and eco-friendly shopping bags or packaging materials, providing for penalties therefor, and for other purposes
8	2014	An ordinance declaring June 19 as official public working holiday in the observance of Arbor Day and celebrating the day for tree planting as an annual event in the Province of Guimaras and for other purposes
10	2014	An ordinance abolishing the Provincial Disaster Risk Reduction and Management Office (PDRRMO) and integrating the same under the Office of the Governor and shall be known as Local Disaster Risk Reduction and Management Section (LDRRMS)
4	2015	An ordinance penalizing any person allowing, consenting, inducing or directing minors to drive motor vehicles and for other purposes
7	2015	An ordinance known and cited as the Guimaras Children's Code as amended
	2017	An ordinance adopting Integrated Coastal Management as a strategy for the sustainable development of Guimaras coastal and marine environment and natural resources and establishing supporting mechanism for its implementation and for other purposes (draft)



Table 7. Relevant legislations enacted by the province and municipalities of Guimaras. (cont.)

Ordinance/ Resolution Number	Year passed	Title
Buenavista		
229	2011	An ordinance amending Municipal Ordinance no. 195, Series of 2007, to prohibit smoking in all enclosed or partially enclosed public spaces, imposing fines and penalties and providing funds thereof
239	2012	An ordinance amending some portions of Municipal Ordinance No. 176, Series of 2004 otherwise known as Anti-Rabies Ordinance of the Municipality of Buenavista
253	2014	An ordinance creating the Municipal Disaster Risk Reduction and Management Office in the Municipality of Buenavista
256	2014	An ordinance establishing a Marine Sanctuary in the municipal waters of Buenavista
259	2015	An ordinance implementing forced evacuation when disaster or emergency has been declared and danger of loss of lives becomes imminent in the Municipality of Buenavista, Province of Guimaras
264	2015	An ordinance enacting the Health and Sanitation Code of the Municipality of Buenavista, Province of Guimaras
271	2016	An ordinance amending Municipal Ordinance no. 211, series of 2009, article iv, section 6 (2) agricultural development zone (2.2) adz 1.1 crop areas principally devoted to permanent tree plantations such as orchards, agro-forestry areas and timber tree plantations including privately owned lots with slopes ranging from 10% to 30% that have a naturally grown cover of trees, shrubs and vines for the collection of minor forest products for domestic consumption, for handicrafts and similar uses for re-classification
283	2016	An ordinance prohibiting the use of handheld electronic devices while driving a vehicle within the territorial jurisdiction of the Municipality of Buenavista
Nueva Valencia		
6	2011	An ordinance amending Municipal Fishery Ordinance No. 06, Series of 2005 of the Municipality by adding administrative provisions specifically on Chapter X, Section 9.19, Paragraph I and Chapter X, Section 10.3
4	2012	An ordinance providing for the establishment, operation and maintenance of Tan-Luc Marine Protected Area
5	2012	An ordinance regulating the catching, selling and buying of swimming blue crabs in the municipal waters of the Municipality of Nueva Valencia
2	2014	An ordinance establishing the Barangay Dolores Marine and Fish Haven in the Municipality of Nueva Valencia, Guimaras, prescribing the rules, regulations and prohibitions therefore
8	2015	An ordinance approving the Health and Sanitation Code of the municipality of Nueva Valencia, Guimaras
4	2015	An ordinance declaring June 19 of each year as official public working holiday for the observation of an arbor day and celebrating the day for tree planting as an environment event in the Municipality of Nueva Valencia
9	2015	An ordinance enacting the environment code of the municipality of Nueva Valencia, Guimaras
2	2016	An ordinance creating the local disaster risk reduction management office under the office of the municipal mayor and the positions under said office, determining their powers, duties and functions
01	2018	An Ordinance establishing the San Antonio Bay Marine Protected Area in the Municipality of Nueva Valencia, Guimaras, prescribing the Rules and regulations for its sustainable management, and providing for the penalties for violations thereof.
Jordan		
1	2010	An ordinance empowering police officers and traffic aides of the Municipality of Jordan to issue citation tickets to violators of municipal traffic ordinance, creating a Taskforce and appropriating funds for the said purpose
4	2011	An ordinance amending ordinance no. 2011-002 otherwise known as an ordinance requiring driver and rider of single motorcycles to wear crash helmets while operating within the territorial jurisdiction of the Municipality of Jordan
5	2011	An ordinance amending ordinance no. 2005-002 otherwise known as the Rabies Control Ordinance of the Municipality of Jordan" to conform with the provisions of R.A. 9482
5	2012	An ordinance declaring the marine waters of Sitio Singcalang, Barangay Balcon Melliza and Sitio Timbad, Barangay Balcon Maravilla, Jordan as marine protected area for all marine life

Table 7. Relevant legislations enacted by the province and municipalities of Guimaras. (cont.)

Ordinance/ Resolution Number	Year passed	Title
10	2012	An ordinance localizing "the prescribed regulatory measures and other applicable provisions of Chapter III food establishments" of the Sanitation Code of the Philippines (P.D. 856)
1	2012	The comprehensive Anti-Smoking Ordinance of the Municipality of Jordan
6	2012	An ordinance amending Ordinance no. 2003-003 to be known as the Gender and Development Code of Jordan
4	2014	The revised Municipal Revenue Code of the Municipality of Jordan as legally infirm, invalid and beyond the powers of the sangguniang bayan to enact
1	2015	"An ordinance amending certain provisions of ordinance no. 2002-004 also known as the Jordan's Children's Code"
3	2015	An ordinance amending certain provisions of Ordinance No. 2012-001 known as the comprehensive Anti-Smoking Ordinance of the Municipality of Jordan
5	2016	An ordinance creating a Municipal Disaster Risk Reduction and Management Office to be called as Jordan Municipal Disaster Risk Reduction and Management Office under the Office of the Municipal Mayor and the positions on the said Office, determining their powers, duties and functions
6	2016	An ordinance declaring the marine waters of Sitio Lusay, a portion of Buringot, Punta Lawi and Ave Maria Islet of Barangay Lawi, Jordan, Guimaras as Municipal Marine Reserve and Sanctuary for all marine life including sea turtles
004	2017	Ordinance declaring the municipal waters from sitio Casita until Sitio Balingasag of Barangay Sinapsapan Jordan Guimaras as Municipal Marine Reserve and Sanctuary for all marine life
	2017	An ordinance approving the Municipal Marine Reserve Management Plan of Lawi MPA
	2017	Municipal Marine Reserve Management Plan of Sinapsapan MPA
	2017	Municipal Marine Reserve Management Plan of Balcon MPA
San Lorenzo		
1	2012	An ordinance revising Municipal Ordinance No. 06, Series of 2003 on rabies control measures
01	2013	An Ordinance implementing forced evacuation as a resort when disaster or emergency has been declared in the Municipality and danger of loss of lives becomes imminent providing penalties therefore and for other purposes
1	2014	An ordinance promulgating policies and measures for the prevention and control of hiv/aids/stis in the mun. of san lorenzo, guimaras creating the San Lorenzo aids council providing for its powers and functions and providing penalties for violation thereof and for other purposes
3	2014	The gender and development code of the Municipality of San Lorenzo
03	2015	Ordinance amending Ordinance Number 99-005, Series of 1999 as official declaration of Tumulintinan Point Marine Protected Area
6	2015	An ordinance prohibiting the sale, distribution and use of firecrackers and other types of explosive devices to minors in the municipality of San Lorenzo, Province of Guimaras"
1	2017	An ordinance prohibiting the burning of solid waste materials, non-hazardous and hazardous on the streets, sidewalks and other public places
5	2015	An ordinance on regulation of production, fortification, storage, trade, import, distribution, sale and trans-shipment of asin (salt) in San Lorenzo, Guimaras
Sibunag		
45	2012	An ordinance revising Municipal Ordinance No. 96-013, the Rabies Control Ordinance of the Municipality of Sibunag, Guimaras
46	2012	An Ordinance Creating the Municipal Disaster Risk Reduction and Management Office in the Municipality of Sibunag, Province of Guimaras
47	2012	The Comprehensive Zoning Ordinance of the Municipality of Sibunag, Province of Guimaras



Table 7. Relevant legislations enacted by the province and municipalities of Guimaras. (cont.)

Ordinance/ Resolution Number	Year passed	Title
52	2014	Ordinance enacting the establishment of the Pamanculan Fish Sanctuary of the Municipality of Sibunag, Guimaras
53	2014	Ordinance Delineating the Municipal Water Boundaries of the Municipality of Sibunag, Province of Guimaras
55	2014	An ordinance enacting the Children's Welfare Code of the Municipality of Sibunag, Province of Guimaras
56	2014	An Ordinance Amending Municipal Ordinance No. 053, Series of 2014 Entitled "Ordinance Delineating the Municipal Water Boundaries of the Municipality of Sibunag, Province of Guimaras"
57	2014	An Ordinance Prohibiting the Use, Sale, Distribution and Advertisement of Cigarettes and other Tobacco Products in Certain Places, Imposing Penalties for Violations Thereof and Providing Funds Therefore, and for Other Purposes
58	2014	"An ordinance enacting the revised Revenue Code of the Municipality of Sibunag"
60	2015	An Ordinance Implementing Forced Evacuation as a Resort When Disaster or Emergency has been Declared in the Municipality and Danger of Loss of Lives Becomes Imminent, Providing Penalties Therefore and for Other Purposes
61	2015	An Ordinance Fixing the Permit Fees and Charges For the Construction and Operation of Wind Turbines in the Municipality of Sibunag and for Other Purposes



Special PCC meeting and public hearing on the ICM ordinance.

Implications and Recommendations

The Philippine Development Plan 2017-2022 identified ICM in the priority legislative agenda of the current administration. It aims to institutionalize ICM as a national strategy for the sustainable development of the coastal and marine areas of the country. In support of this government priority, Senate Bill No. 423 and House Bill No. 5672 were filed in 2016 and 2017, respectively and are currently being reviewed by the 17th Congress.

Guimaras Province is the first province in the Philippines that initiated the development of an ICM Ordinance. More importantly, the provisions and articles of the ordinance are aligned to the ICM Bill and Executive Order 533 requirements. As recommended in the first SOC Report of Guimaras, the ICM Ordinance is necessary as it will provide the necessary integrating framework to harmonize related legislations and to establish the institutional arrangements for ICM implementation at various levels of governance, i.e., barangay, municipal and provincial, including putting in place the necessary capacity and financing support.

In addition to the ICM Ordinance, the Guimaras Environment Code is on the process of updating, as required by the Local Government Code, which is also anchored on the principles of sustainable development, people's participation and integration.

In terms of municipal fishery laws, the five municipal governments came to an agreement to issue fishing permits and impose a uniform fee for selected gears and fishing activities only. A unified municipal fishery ordinance is not seen as effective since there are different fishing methods and gears that are utilized in some municipalities.

Active public participation in the consultation process in the development and adoption of the various ordinances has been consistently noted over the years.

References

Guimaras Environment Code
 Guimaras Environment Related Ordinances, GENRO Files
 Office of the Sangguniang Panlalawigan Archives
 Office of the Sangguniang Bayan Archives, Municipality of Buenavista
 Office of the Sangguniang Bayan Archives, Municipality of Jordan
 Office of the Sangguniang Bayan Archives, Municipality of Nueva Valencia
 Office of the Sangguniang Bayan Archives, Municipality of San Lorenzo
 Office of the Sangguniang Bayan Archives, Municipality of Sibunag



Legislation

007 Administration and monitoring of compliance to legislation

Description

This indicator reports the various types and frequency of inspections conducted in the area to determine compliance

with coastal policies and legislation. It further looks into the effectiveness of enforcement of legislation.

Rationale

The available capacity within government to enforce laws and ensure compliance with coastal policy and regulations is paramount to successful implementation of ICM programs. The effective management of illegal and uncontrolled

activities taking place along the coast and in coastal waters is an important step in addressing and minimizing unsustainable practices.

Data Requirements

- Types of environmental compliance monitoring/ inspection (i.e., market inspections for fishery violations, aquaculture, manufacturing, coastal polluting and coastal tourism establishments, ports and water transportation)

- Frequency of environmental compliance monitoring/ inspection including coastal patrols

Results

The manner of conducting inspections to monitor compliance to legislations is dependent on the type of activity being regulated and monitored. Permits are generally issued by concerned offices and agencies to regulate a specific economic activity. **Tables 8 and 9** show the number of permits issued for quarrying activities as well as commercial sand and gravel extraction for the period 2014-2017.

Compared to the reported number of extraction permits issued in 2003-2009, the current data is within the same range.

The frequency in conducting monitoring for Environmental Compliance on the other hand varies across the five municipalities. **Table 10** shows the schedule of monitoring and inspection and the number of personnel involved in the inspection.

Table 8. Number of quarry permit holders.

Year	Status of operation		Total
	Expired	On-going	
2014	11	15	26
2015	1	13	14
2016	4	10	14
2017	-	11	11

Table 9. Number of approved commercial sand and gravel permit holders.

Year	Status of operation		Total
	Expired	On-going	
2014	3	4	7
2015	4	4	8
2016	0	4	4
2017	-	3	3

Table 10. Environmental compliance monitoring conducted by the municipalities.

Activity	Schedule of monitoring/inspection					Number of personnel conducting inspection
	Buenavista	Jordan	Nueva Valencia	San Lorenzo	Sibunag	
Sanitary Inspection to establishments (commercial, residential)	Annually	Quarterly	Twice a week	Quarterly	Quarterly	1
Sanitary inspections to market	Daily	Bi-Annual	Once a Week	Twice a Week	Monthly	1
Bantay Dagat Patrolling	As scheduled	Twice a Week	24/7	Daily	Daily	3
Anti-Plastic Ordinance Monitoring						6 Environmental Task Force

Table 11 shows the number of environmental compliance certificates issued by DENR EMB for the period 2011-2015. The ECC is a requirement for any project in the Philippines that poses a potential environmental risk or impact. The data shows that among the provinces in Region 6, Guimaras has the lowest number of ECCs issued totaling 40, during the 5-year period. As part of the monitoring and verification

of compliance to the ECC, the province through the ICM program, has conducted an inventory of coastal structures that are compliant to the Philippine Environmental Impact Statement System (PEISS). Table 12 shows the list of the coastal structures in the province that were covered in the inventory conducted in 2015-2016.

Table 11. Environmental compliance certificates issued by DENR-EMB (2011-2015).

Province	2011	2012	2013	2014	2015
Guimaras	5	6	4	14	11



Table 12. Inventory of coastal structures in Guimaras Province (2015-2016).

Year	Type of establishment	Number of establishment with ECC/CNC	Number of establishment without ECC/CNC	Number of establishment with Mayor's permit	Remarks
2015	Beach resorts	3	36		
	Gasoline stations	2-ECC 1-CNC	5		
2016	Beach resorts	15	36		Most of the resorts have no appropriate design for waste treatment facility, only 2 out of 51 listed have waste treatment facility, while there are no standard facility for solid waste
	Gasoline stations	4-ECC 4-CNC	4		
	Wharves	2	7		Most of the wharves established under Philippines Ports Authority have no ECC based on the list of establishments/ infrastructures issued with ECC and CNC from EMB Region 6
	Others	0	10		3 backyard piggeries 1 market 1 laboratory 2 rice mills 2 steel works 1 commercial bldg. for rent

Table 13 shows the FLA application and their status as of 2017. Guimaras Province has a total of 160 foreshore lease applications. To date, there are 4 approved lease applications, 3 of which are active while 1 is considered as delinquent.

After a review of the FLAs, DENR-PENRO Guimaras indicated that 83 applications were rejected and 33 were subject for rejection, 33 of which were from the Municipality of Buenavista, 32 from the Municipality of Jordan and 51 from the Municipality of Nueva Valencia. Nineteen applications are still to be inspected. The eighteen applications that have no record were filed in the 1950s.

Table 13. Foreshore Lease Agreement (FLA) applications in Guimaras Province and status as of 2017.

Municipality	2011	2012	On process	Rejected	Subject for rejection	For inspection	No record	RPA	TOTAL
	Active	Delinquent							
Buenavista	2	1		33		2	9	1	48
Jordan	1				32	3	3		39
Nueva Valencia			1	50	1	13	6	1	72
Sibunag						1			1
TOTAL	3	1	1	83	33	19	18	2	160

*RPA – Revocable Permit Application



Jordan Wharf Terminal

Implications and Recommendations

Enforcement and monitoring of compliance with coastal policies and legislations is being implemented by the province and municipal governments. Their effectiveness, however, remains an issue in view of several administrative and operational factors that the local government have to tackle.

The overlapping roles of national agencies and local governments in permit issuance and licensing (foreshore areas) still exist. It was recommended that the regular meetings of the Municipal Development Council can be utilized as venue for introducing, for instance, DENR-EMB's ECC requirements and to discuss how coordination can be better facilitated among and between responsible agencies and entities and the local government.

Patrolling of the municipal waters and marine protected areas is being done by the Bantay Dagats and deputized Fish Wardens.

The inventory of coastal structures as part of monitoring of environmental compliance of coastal tourism establishments showed that there were no proper waste treatment facilities and solid waste management programs that were in place. The FLA inspections also showed that the 20-meter easement requirements were not observed.

Reference

Annual Performance Report (GENRO 2014-2017)
Foreshore, DENR-PENRO, Guimaras
Regional State of the Brown Report (2015), DENR-EMB

Law enforcement trainings were available for the law enforcers and volunteers at the five municipalities, i.e., Fishery Law Enforcement and Enhancement Training (FLEET), Wildlife Enforcement Officer (WEO), Bantay Gubat. However, majority of the enforcers are hired on a job order basis or are volunteers and thus sustaining the enforcement and monitoring activities is at stake.

There is a need to review the gaps in the current mechanism that are in place in order to improve the administration and compliance monitoring of the province.



Compliance monitoring conducted by the Multipartite Monitoring Team on commercial sand and gravel permits.

Legislation



Administration and monitoring of compliance to legislation

Legislation

008 Environmental cases filed/resolved

Description

This indicator reports the total number of cases filed and resolved, and the total value of fines issued for non-compliance of relevant coastal legislations.

Rationale

Effective enforcement of environmental legislation taking place in the marine and coastal areas can be reflected by the number of cases filed, resolved and fines collected resulting

thereof. The strict enforcement of relevant legislation is an important step in addressing and minimizing unsustainable practices in the coastal areas.

Data Requirements

- Total number of reported complaints
- Total number of violations where violators were arrested
- Total number of violations penalized
- Total value of fines collected for non-compliance with relevant legislations

Results

Records showed that fishing owners and operators in the five municipalities secure annual licenses to operate in compliance with the fishery ordinances issued by their respective municipalities. Violations, however, in the form of illegal fishing, in the five municipalities were notable as shown in Table 14. Fines were imposed and collected and were channeled to the General Fund of the local governments. Cases were also filed and, in some instances, a verdict was passed.

The Municipality of Jordan has the least number of violations recorded. This was attributed to the limited capacity of the local enforcers to apprehend violators, particularly small-scale commercial trawlers, that often operate during bad weather conditions. In addition, the Municipal *Bantay Dagat* (Sea Patrol) Patrol boats from BFAR cannot match the speed of commercial trawler fishing boats. Nueva Valencia, on the other hand, was frequented by fishing violators from the neighboring province of Negros Occidental.

Table 14. Summary of environmental violations in Guimaras Province.

Year	Type of violation	Number of violations/person	Amount of fines collected (Php)	Case filed
Province				
2017 (4th Quarter)	Anti-plastic ordinance	98	32,000.00	13 (4 were sentenced guilty)
2014	Illegal quarrying/mining		30,000.00	
2015			30,000.00	
2016			40,000.00	
Buenavista				
2010	Illegal fishing	87	472,500.00	
2011	Illegal fishing	38	83,000.00	
2012	-	-	-	-
2013	Illegal fishing	103	208,500.00	
2014	Illegal fishing	1	10,000.00	36
2015	Illegal fishing		223,000.00	80
2016	Illegal fishing		54,037.00	
2017	Illegal fishing	8		10
Jordan				
2012	Illegal fishing	0		
2013	Illegal fishing	14		3
2014	Illegal fishing	9	6,000.00	1
2015	Illegal fishing	0		
2016	Illegal fishing	14		3
2017	Illegal fishing	0		
San Lorenzo				
2011	Illegal fishing (Palanas method)	4	10,000.00	
2012	Fishing w/out permits (Panabagak)	2	1,500.00	
2015	Illegal fishing (Palanas method)	7	17,500.00	
2016	Fishing w/out permits	19	9,500.00	
	Illegal fishing	8	20,000.00	
	Possession of illegally caught fish	9	22,500.00	
2017	Fishing w/out permits	6	3,000.00	
	Possession of illegally caught fish	2	5,000.00	
Nueva Valencia				
2013	Sec. 9.04, 9.06, 9.07	3/196	169,000.00	39
2014	Sec. 9.04, 9.06, 9.07, 9.14	4/238	291,000.00	41
2015	Sec. 9.04, 9.06, 9.07, 9.14	4/105	70,000.00	
2016	Sec. 9.04, 9.06, 9.07, 9.14	4/115	271,000.00	
2017	Sec. 9.04, 9.06, 9.07, 9.14	4/71	512,000.00	442 cases filed
Sibunag				
2012	Illegal fishing	22		4
2013	Illegal fishing	5		1
2014	Illegal fishing	0		0
2015	Illegal fishing	16		3
2016	Illegal fishing	13		3
2017	Illegal fishing	13		7

Legislation



Environmental cases filed/resolved

In terms of forest products, **Table 15** shows the number of apprehensions made in 2017. The violators, however, were not penalized.

Table 15. Summary of total volume of apprehended forest products in 2017.

Type/Kind	Number of apprehension	Total volume apprehended (in bd.ft.)	Total estimated value of apprehended forest products (in PhP)	Total volume confiscated (in bd.ft.)	No. of violators penalized
Lumber	6	593.37	20,767.95	229.67	0
Charcoal		220.3637	44,100.00		



Consultation dialogue with market supervisors per municipality on November 8, 2017 at CAVES Conference Room, San Miguel, Jordan regarding the implementation of Provincial Ordinance No. 2014-05, also known as the Anti-Plastic Ordinance of Guimaras Province.



Bantay Dagat (Sea Patrol) of the Municipality of Nueva Valencia.

Implications and Recommendations

Intensified enforcement of environmental laws has generated positive results. The massive advocacy and awareness campaign and livelihood support provided to the communities and fisher folks have also contributed significantly to better response from the people in terms of compliance to legislations.

Despite the intensified effort of the local governments to curb illegal fishing activities, the number of fishery violations remained significant. Encroachment of commercial fishers from nearby provinces, such as Iloilo and Negros Occidental, is being seen as the one of the causes in the increase in the number of violations.

While there has been improvement in the monitoring and enforcement of legislations, it is recommended that the local governments identify more efficient and systematic means of documenting the violations and penalties imposed. It is also recommended that assistance from BFAR in the implementation of fishery regulatory activities that are applicable to LGUs be sought to further improve the assessment of enforcement effectiveness.

References

Office of the Municipal Treasurer Report of Collection (Violation of Municipal Ord. No. 193), Municipality of Buenavista
 PENRO-DENR Accomplishment Report C.Y. 2017
 PNP Accomplishment Report 2013-2017, Municipalities of Buenavista and Sibunag

Legislation

Environmental cases filed/resolved



Information and Public Awareness

009 Public education and awareness

Description

This indicator reports on communication plans, staff and budget allocations, and public awareness programs initiated by various sectors, and the different communication channels used to promote public awareness.

Rationale

Easy access to information can promote awareness of stakeholders. Public education promotes increased awareness of the value of the coastal and marine resources,

the issues affecting the environment, and the need for coastal management to protect and conserve these resources.

Data Requirements

- Communication plan available
- Budget and staff allocation for implementation of communication plan
- Local governments have facilities for public access of information
- Local awareness programs
- Frequency of community participation activity
- Number of participants in community participation activity

Results

Regular public awareness activities were conducted to inform and educate the public on the environmental issues and other emerging concerns, including the management responses being undertaken by the local government and partners. More importantly, the awareness raising activities aimed to create an informed public who are interested and committed to participating and contributing to environmental protection.

Local awareness programs such as Arbor Day, which is celebrated every 19th of June annually as a tree planting

activity involving the province, municipalities and barangays has elicited wide participation and support from the public (**Table 16**).

Initiatives of other partners such as DENR PENRO through the Coastal and Marine Ecosystem Management Program (CMEMP) included the conduct of IEC and distribution of IEC materials on environmental conservation, protection and management to various schools in Guimaras in 2017.

Collaborative projects implemented in the province generated outputs that were intended to communicate to the public the importance of marine resources. The Marine Plant and Marine Life Guidebook developed under the Yeosu Project III were launched in collaboration with the Department of Education and copies were distributed to public high schools and other stakeholders.

Several facilities were installed in the province to allow easier access to information by the public. These included two MPA information centers that were built in the Municipalities of San Lorenzo and Sibunag as one of the major outputs of the Yeosu Project III; a Library Hub of the Department of Education in Jordan; the Guimaras Guest Assistance Center; the Farmers Information Technology

Services Centers in the Municipalities of Nueva Valencia and Buenavista; Guimaras Trade and Information Center, and the Provincial and Municipal Tourism Offices (Table 17).

The Taklong Island National Marine Reserve (TINMR) has a communication plan which aims to raise awareness on the importance of the protected area.

Other major public awareness activities conducted in Guimaras included coastal clean up with the engagement of women, youth, indigenous people, and other stakeholders.



Table 16. Facilities for public access to information.

Facility	Location	Remarks
Pamanculan Sanctuary Information Center	So. Gumawod, Brgy. Sabang, Sibunag	
Tumalintinan MPA Information Center	Brgy. Suclaran, San Lorenzo	
DepED Library Hub	San Miguel, Jordan, Guimaras	
Guimaras Guest Assistance Center	Jordan Wharf, Rizal, Jordan	
Farmers Information and Technology Services (FITS) Center	OMAS, Nueva Valencia	POAS, Buenavista MAO
Provincial & Municipal Tourism Offices		



IEC materials posted at the entrance of CAVES building.



Table 17. Awareness programs and activities conducted in Guimaras Province.

Agency	Activities	Frequency	Number of participants
Municipality of Buenavista	Arbor Day Celebration, Farmers and Fisherfolks Day, Integrated Pest Management, Farmers Field School	Yearly	
Municipality of Jordan	Arbor Day Celebration	Yearly	
Municipality of Nueva Valencia	Arbor Day Celebration	Yearly	
	Fisherfolks' Assembly	Monthly	17 Coastal Barangays
	Coastal Clean Up	Yearly	22 Barangays
	Farmers Assembly	Quarterly	
	Farmers Field School	Yearly	
	Techno-Demo	Yearly	
Municipality of San Lorenzo	Arbor Day Celebration	Yearly	
	Techno-Demo	Yearly	
	Farmer Field School	Yearly	
Municipality of Sibunag	Arbor Day Celebration	Yearly	
	Public Hearing/Consultation		
	Organic Month Celebration	Yearly	
	Farmer Field School	Yearly	
BFAR	Fish Conservation Week	Yearly (October)	
DENR PENRO	World Wetland Day • Lecture on Dugong	February and April 2017	205
	Press Release (Kalikasan Newsletter)	12 Issues (2017)	
	Dalaw Turo at schools	5 exhibits	142, 130, 159, 50
	Conduct of Environmental Lectures (Climate Change, RA 9003)	11 lectures	
	Month of the Ocean Celebration	1	
	Consultative meeting with the stakeholders	May 10, 2017	Sitio Lusay Marine Reserve
	Eco-summer camp for student leaders from Iloilo and Guimaras in collaboration with DENR 6 and JBLFMU, Earthing Philippines	May 23-26, 2017	
	School Fora re: Orientation on World Water Day		135 students
	International Clean-Up Day	1/yr. (3rd Saturday of September)	404 B/MLGUs
	Environment Month Celebration	1/yr. (June)	
	Earthday Celebration		5 municipalities
Province	Technical Conference on the Results of Water Quality Monitoring	Yearly	30 (MLGU Reps, Resort Owners, and Policy Makers)
	Coastal Clean-up	1/yr. (October)	Coastal Barangays
	Enhancing Environmental Law Enforcement Awareness Program	Once	Provincewide
	Agri-Eco Day during Manggahan Festival	Every Manggahan Festival	Farmers, Fisherfolks, YES-O
	Press Release (Butlak Guimaras)	Quarterly	
	Padyak Kalikasan (in collaboration w/ JBLFMU)	1/yr.	
KOICA	Perception Survey	Once	Municipality of Sibunag and San Lorenzo



Recycling contest during the Manggahan Festival 2017. Representatives from the 5 municipalities have woven bayongs made from used plastic bottles.



Fisherfolks Assembly/IEC on Illegal, Unregulated and Unreported Fishing.



Turn-over of the Yeosu Project III books distributed to public and private high schools. Held at GTIC Boardroom on December 12, 2017 during the ICM PCC meeting.



Lecture on Climate Change and Solid Waste Management Program for Brgy. Officials and residents of Brgy. Dasal and Maabay, Sibunag Guimaras, September 5, 2017, Sibunag Municipal Covered Gym.



Implications and Recommendations

Better involvement and active participation of stakeholders in environmental protection and coastal management-related activities have been notable. In order to assess the effectiveness of these activities in changing the behavior and perception of the stakeholders toward environmental protection, it is recommended that a perception survey be conducted.

A communication plan must also be formulated to ensure that the different target audiences and stakeholders are receiving the right information at the right time in the most

effective manner. Other forms of communication channels like the social media (e.g., Facebook, Twitter, Instagram) to convey important information that can reach a wider group of stakeholders, particularly the youth, can also be explored.

Making available the Guimaras “*Butlak*” publication, which showcases important events and accomplishments by the local government, can be made available in the local government’s website to make Guimaras more visible in the Internet.

Reference

DENR-PENRO, Guimaras Annual Accomplishment Report C.Y. 2017
IEC Activities of other Agencies
TINMR Communication Plan

Information and Public Awareness

010 Stakeholder participation and mobilization

Description

This indicator reports the number of nongovernmental organizations, civil society groups and other stakeholder organizations who are contributors to sustainable development of the coastal and marine areas.

Rationale

The active involvement of stakeholders reflects their understanding on the value of implementing coastal management and mobilizing activities related to it.

Data Requirements

- Nongovernmental organizations, civil society groups and other stakeholder organizations with environment-related programs and activities
- Types of environment-related programs and activities
- Number of members

Results

Active non-government, civil society and peoples' organization that are essential partners of the local governments in carrying out activities to support the ICM program have been increasing. The list of active civil society, NGOs and POs in the province with programs and activities that support environmental protection and management is given in **Table 18**, including the contact person, total membership, and registering agency. Environment-related activities ranged from community resource protection and management (e.g., mangrove

nursery establishment and reforestation, etc.) to livelihood enhancement on agriculture and fisheries (e.g., seaweed production and trading, etc.); entrepreneurship; civic and health assistance; community organizing and development; disaster management; cottage industries; coastal clean up; waste management (e.g., waste recycling, composting, etc.); agri tourism activities (e.g., cashew tree planting, organic farming, vermi compost production, weaving, galleon making, etc.), and capacity building.

Table 18. Active civil society, nongovernmental and people's organizations in Guimaras Province.

NGOs/POs	Contact person/ Contact number	Number of members		Registering agency	Types of environment-related objectives/ programs and activities
		Male	Female		
Buenavista					
Tinadtaran Women's Sewers Association	Emelyn Aldea	0	20	DOLE	
Agsanayan-San Isidro Farmers Association	Efren Gabalonso (Quarterly)	78			
Avila-Umilig Farmers Association	Rosaline Andaluz (Monthly)	39		DOLE	Coastal Clean-up, Maintenance of Avila Marine Sanctuary
Banban, Cansilayan & San Nicolas FA (BACASAN)	Francis Molomaya (Quarterly)	62			
Buenavista Wayang Rainfed Cluster Association	Jovie Galusong (Quarterly)	274			
Daragan Farmers Association	Susanny Sumanghid (Quarterly)	35			
East Valencia Farmers Association	Feme Vilches (Monthly)	89			
Getulio, San Miguel & Navalas FA (GSN)	Gaudencio LArgado (Monthly)	95			
Pina Farmers Association	Romeo Jornadal (Quarterly)	25			
Salvacion-Zaldivar FA (SAL-VAR)	Joel Gabutin (Quarterly)	15			
Supang-San Pedro Farmers Association	Percenette Jasangas (Quarterly)	53			
Tanag-Bacjao Farmers Assoc (TABA)	Janie Legista (1st Monday of the month)	91			
Tastasan Farmers Association	Ricardo Gabales (Quarterly)	20			
Tinadtaran, Pina, Agsanayan, & San Roque (TPAS MPC)	Helen Grace Lisandra (Monthly)	81			
Old Poblacion Farmers Association	Vicente Nieves (Quarterly)	19			
TPAS Irrigators Association	Dominador Rey Sr. (23rd of the month)	100			
Buenavista Organic Growers Association	Agustin Zaragoza (monthly)	26			
Katilingban sang mga Agri-Aqua sang Tumandok sa isla de Guimras	Rene Geroche, Jr.	5	28	DOLE	Coastal Clean up
Taminla Fisherfolk Organization	Ronel Rodriguez	46	54	DOLE	Coastal Clean up
Taminla Upland Farmers Association, Inc.				SEC	
Guimaras Model Galleon Makers Association	Benito Ferrer	36	3	DOLE	
Mabini Limers and Farmers MPC	Mark Eñano 09955344686/ 09296046667				Tree Planting, Nursery Management
Brgy. Umilig Small Fisherfolks Association	Carlo Pillora				Coastal cleanup, mangrove planting



Table 18. Active civil society, nongovernmental and people's organizations in Guimaras Province. (cont.)

NGOs/POs	Contact person/ Contact number	Number of members		Registering agency	Types of environment-related objectives/ programs and activities
		Male	Female		
Avila Fisherfolk Association	Restituto Diamante (Quarterly)	30		SEC	
Buenavista Development Cooperative	Adelina Garganza (Monthly)	1319			
San Pedro Irrigators Association, Inc.	Dante Gargaceran (Quarterly)	22			
San Roque Neighborhood Association	Sherlita Ermina (Last Friday of the month)	42			
Guimaras Upland Farmers Association, Inc.	Ofelia Giaman (Quarterly)	24		SEC	
Jordan					
Alaguissoc ARC	Carlito Hermano (Last wed of the month)	36			
Bucao-TARog Farmers Assoc. (BUTACFA)	Robin Herrera (2nd Friday of the month)	25			
BALMAR Rice Cluster	Anecita Tamiano (2nd wed of the month)	32			
BALMAR Vegetable Growers Association	Mariza Ganancial (1st wed of the month)	32			
Barosbos Esperanza Small Farmers Association	Elena Gonzaga (2nd Tuesday of the month)	15			
Balcon Melliza Irrigators Association	Rodito Alip				
Bugnay Farmers Association	Erlinda Azuela (Last Wed of the month)	55			
Mangkas Small Farmers Association	Rosalina Misme	16			
Ambak-Tubig MPC	Danilo Amatorio (1st mon of the month)	28			
Dumalagdag Small Farmers Association	Rosemarie Taasan (3rd tues of the month)	21			
Parreno Estate Bugnay Agri-Fisheries (PEBABEA)	Lea Gania (2nd thurs)	32			
Bugnay Weavers Association (BWA)	Gaudiosa Gallego (on call)	18			
San Miguel Rice Cluster	Ronilo Tahum (Last Friday)	30			
Sitio Odiong Small Farmers Association	Ana Marie (3rd Saturday)	28			
Sition Kapitongan Farmers Association	Rolly Yesca (Last Friday of every month)				

Table 18. Active civil society, nongovernmental and people's organizations in Guimaras Province. (cont.)

NGOs/POs	Contact person/ Contact number	Number of members		Registering agency	Types of environment-related objectives/ programs and activities
		Male	Female		
Buluangan Farmers Association	Joselito Gotera (Last Friday of every month)	47			
Bucao Small Farmers Association	Maricar Lizondra				
Sitio Kahil Rice Cluster	Antonio Ganancial	22			
Bulan Bulan Farmers Association	Nena Jauro (3rd Thursday)	26			
Sta. Teresa Vegetable Association	Virgie Jauro (Last Friday)	35			
Lutong Small Farmers Assoc. (LUSFA)	Rufino Galvez (3rd Thursday)	18			Swine production, community vegetable and tree planting
Jordan Organic Growers Association	Lorenzo Dolar	22			
Jordan Kasuy Producers and Processors Association	Ma. Theresa Gabasa (Quarterly)	18			
Alaguisoc RIC	Jovelle Pillora (2nd Friday)	25			
Balcon Maravilla RIC	Clarita Ganzon (Last Tuesday)	20			National Green Day, tree planting, community clean up
Balcon Melliza and Maravilla Arbs Association	Johnas Segube Ecubeza	8	34	DOLE	
Poblacion Farmers Association	Rodelas B. Robles	18	8	DOLE	
Guimaras Sewer's Association	Emalyn G. Espinosa	1	17	DOLE	
Kasilingan Water Services Farmer Beneficiaries Association	Robert Pacardo	17	24	DOLE	
Bulan-Bulan Water Sanitation Association		60			Potable Water System Operations
Federation of Senior Citizens Association of the Philippines-Guimaras	Angela M. Gotera 09107128311	14			
YOUTH-PYAP (Pag-asa Youth Association of the Philippines)	Gil Gabasa	14			Tree Planting Clean-up Drive
Cabaling Parish Group Association				SEC	
Hoskyn Fisherfolks Association Inc.				SEC	
San Lorenzo					
Igcawayan Vegetable Grower and Farmers Association	Reynaldo L. Lancero	8	14	DOLE	
Igcawayan Women Vendors Association	Zenaida C. Gamarcha	0	31	DOLE	
San Lorenzo Vegetables Growers Association	Ryniell Fritz M. Ramirez	8	10	DOLE	
Progreso Growers and Farmers Association	Felicitas Embardo	12	14	DOLE	
Barangay Tamborong Agrarian Reform Beneficiaries and Farmers Association (TARBFA)	Jerebill I. Tomulto	16	29	DOLE	
Guardians Brotherhood Inc.	Rogelio Ferrer, Jr. 09993963522	187		SEC	Maintain peace and order



Table 18. Active civil society, nongovernmental and people's organizations in Guimaras Province. (cont.)

NGOs/POs	Contact person/ Contact number	Number of members		Registering agency	Types of environment-related objectives/ programs and activities
		Male	Female		
Sapal Weavers Association		43		DOLE	Production and marketing of native woven products
Sapal Integrated Social Forestry Association Inc.				SEC	
Mantasic Small Coconut Farmers Organization (MSCFO)	Mary Jean G. Villanueva 09297429752	24		DOLE	
For Environment and Progress Inc. (UCEP)	Ruel Pillora 09093828455	20		SEC	1. Salt Production 2. Mangrove Planting 3. Coastal Clean-up 4. Children Outreach 5. Value Formation Activity
Association of Barangay Kagawad (ABAKA)	Melchora G. Villarma 09095887897	84		SEC	
ARBA Igawayan	Agnes Quiatchon 09089233570	59		DOLE	1. Tree and vegetable planting
Langab Agrarian Reform Beneficiaries Farmers Association (LARBFA)	Agustin Misalbas	21		DOLE	Serve the interest of members, helping to resolve their economic, social & human problems & to serve the overall needs of the association
Cabungahan Sewers Association	Jina F. Casquero	28		DOLE	
Constancia Community-Based Forest Management Association, Inc.				SEC	
Igawayan Fisherfolks Association (IFA)	Quirino Talagon, Jr.	52		DOLE	Mapauswag ang pangabuhian sang mga katapu, lakip na ang pangabuhian sosyal, espiritwal, ekonomiya kag kultura. Makaagum proyekto para sa katapu sang asosasyon. Makatuon kag makabulig amlig sa dunang manggad sang pungsod kag sang kalibutan
Igawayan Fisherfolks Association – Rice Cluster (IFA-RC)	Artemio G. Tanaleon	43		DOLE	1. Increase farmer's income 2. To improve farming technique 3. To develop skills of the farmers
Guimaras Maharlika Association (GUIMAHAR)	Sane R. Pauchano 09286913951/ 09172431270	84		DOLE	
Taos Puso Foundation, Inc.	Ofelia G. Garfin, MD, MPH (033) 329 5637	60,000		SEC	Promote advocacy issues pertaining to gender, environment, human rights and social equity.
National Auxiliary Chaplaincy Philippines, Inc. (NACPhil)	Chaplain Efren V. Delmo 09062978126 09183664167 09178912633				

Table 18. Active civil society, nongovernmental and people's organizations in Guimaras Province. (cont.)

NGOs/POs	Contact person/ Contact number	Number of members		Registering agency	Types of environment-related objectives/ programs and activities
		Male	Female		
Network Alliance for Moral Recovery Program (NACMRP)-Guimaras	Ricky J. Segundera 09164448858/ 09997710705	13		SEC DSWD DILG	
Igcabano-Balabago Farmers/Fisherfolks Association	Pablito Geral Jr. 09184593179	38		DOLE	
Gaban Small Farmers Association	Rodolfo G. Garcia	26		DOLE	
Balayong Strive and Curiapao Builders Association (BSCBA)	Leonora Gallego	16		SEC	
Guimaras Citizen Crime Watch Association Inc. (GCCWA)	Jessie T. Cordero	15		DOLE	
Sibunag					
Palhe Small Water Irrigators Association	Salvacion Galve/ 09123766756				
Sebaste-Bubog Salt Maker Association	Cenen J. Gambito/ 09072331648				
Creative Community Foundation	Edwin Arana/ 09082204481 Audie Togonon/ 09362914890				
TAOS-PUSO Foundation, Inc.	Ofelia G. Garfin, MD/ (033) 329-56-37 Mila Calambro/ 09106922683				
Association of Barangay Health Workers of Sibunag	Guia S. Job/ 09127663892				
Barangay Nutrition Scholars Association of Sibunag	Lani C. Gajo/ 09121355149				
Association of Barangay Secretaries in Sibunag	Ariel M. Gallego/ 09094771354				
Samahan sa Sabang ng mga Mangingisda	Nestor Gonzales/ 09054435464				
Nagkakaisang Kababaihan Asosasyon ng Sibunag	Dolores V. Togonon/ 09979024863				
Sibunag Women's Association in Carpentry (SWAC)	Anita B. Tacardon	26		DOLE	
Sibunag Women's Association in Sewing (SWAS)	Dolores V. Togonon	28		DOLE	
Ayangan Farmers Association		28		DOLE	Community seed banking
Bubog Farmers Association		21		DOLE	Community seed banking
Concordia Sibunag Farmers Association		27		DOLE	Community seed banking
Sibunag Farmers and Fisherfolks Association		16		DOLE	Community seed banking
Dasal Farmers Association		28		DOLE	Community seed banking, vegetable production
Maabay Farmers Association		48		DOLE	Community seed banking
Millan Small Farmers Association		70		DOLE	Community seed banking
Oracon Sibunag Farmers Association		37		DOLE	Community seed banking



Table 18. Active civil society, nongovernmental and people's organizations in Guimaras Province. (cont.)

NGOs/POs	Contact person/ Contact number	Number of members		Registering agency	Types of environment-related objectives/ programs and activities
		Male	Female		
Sabang Farmers Cluster Association		32		DOLE	Community seed banking
Sabang Fisherfolks Association		102		DOLE	Seaweed Marketing
San Isidro Farmers Association		34		DOLE	Community seed banking
Malanay, Sebaste Seaweed Growers Association		16		DOLE	Seaweed Production
Sebaste Port Seaweed Growers & Fisherfolks Association		28		DOLE	Seaweed Production
Tanglad Rice Farmers Cluster Association		44		DOLE	Community seed banking
Bubog Seaweed Growers Association		40		DOLE	Seaweed Production
San Isidro Mangrove Growers Association				DOLE	
Sabang Agro-Forestry Association, Inc.					
Sitio Atgang Small Farmers Association					
Sitio Baybay Fisherfolks Association, Inc.				SEC	
Sitio Baybay-Sebaste Small Fisherfolks Association, Inc				SEC	
Katilingban sang Magagmay nga Mangingisda sa Alegria, Inc.				SEC	
Integrated Women's Alliance of Guimaras Date of registration: March 24, 2017 Barangay Millan Chapter (RO605-201703-WA-009); Barangay San Isidro Chapter (RO605-201703-WA-016); Barangay Oracon Chapter (RO605-201703-WA-014); Barangay Maabay Chapter (RO605-201703-WA-010); Barangay Tanglad Chapter (RO605-201703-WA-012); Barangay Bubog Chapter (RO605-201703-WA-011); Barangay Concordia Chapter (RO605-201703-WA-017); Barangay Ayangan Chapter (RO605-201703-WA-015); Barangay Ravina Chapter (RO605-201703-WA-020); Barangay Sebaste Chapter (RO605-201703-WA-013); Barangay Alegria Chapter (RO605-201703-WA-018); Barangay Sabang Chapter (RO605-201703-WA-008); Barangay Dasal Chapter (RO605-201703-WA-019).					
Nueva Valencia					
Nueva Valencia Tricycle Owners and Drivers Association	Rofel G. Geonanga	35	5	DOLE	Inactive
Barangay Dolores Farmers Association	Bernabe G. Gentola	17	17	DOLE	
RIC- Poblacion	Loryvic Socorro E. Galila	1	21	DOLE	
Integrated Women's Alliance of Guimaras (IWAG) Nueva Valencia Chapter	Maritess L. Torrefiel		74		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Concordia Chapter	Mieliza Valenta		52		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Dolores Chapter	Sherlita G. Garlan		45		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Igang Chapter	Divina Inoceto		54		

Table 18. Active civil society, nongovernmental and people's organizations in Guimaras Province. (cont.)

NGOs/POs	Contact person/ Contact number	Number of members		Registering agency	Types of environment-related objectives/ programs and activities
		Male	Female		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Lanipe Chapter	Vilma Gallero		41		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Lucmayan Chapter	Angelita T. Gaitan		50		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Magamay Chapter	Dielyn Parayray		44		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Napandong Chapter	Teresa Galleto		60		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Oracon Sur Chapter	Violeta Alavata		49		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Pandaraonan Chapter	Jinky Magon		60		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Salvacion Chapter	Marilou Delumpa		69		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Tando Chapter	Ma. Elena Llenes		41		
San Roque Farmer's Association	Flor Calaycay	19	19		
San Roque Motor Banca Operators Association	Isidro Geogangco	17	4		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Cabalagnan Chapter	Marilyn Yarra		77		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Canhawan Chapter	Myrna V. Tesoro		48		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Igdarapdap Chapter	Ma. Daisy Galleto		71		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. La Paz Chapter	Ester V. Geraldoy		36		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Panobolon Chapter	Josphine T. Pueyo		50		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Poblacion Chapter	Maribeth Galgo		94		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. San Roque Chapter	Nora T. Gamuyao		39		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Sto. Domingo Chapter	Lani R. Gallarda		78		
Integrated Women's Alliance of Guimaras (IWAG) Brgy. Guiwanon Chapter	Zosie Galve		70		
Panobolon Unified Fisherfolks' Association					Develop, improve and harness of fisherfolks potentials and provide opportunities that will accelerate their equal and full participation in socio-economic development
Tando-Lucmayan MPA Fisherfolk's Association					To improve the condition of the natural resources, increase fish catch and livelihood of the fisherfolks and members, train and deputize fish wardens, enforce the no-take zone and reduce illegal fishing



Table 18. Active civil society, nongovernmental and people's organizations in Guimaras Province. (cont.)

NGOs/POs	Contact person/ Contact number	Number of members		Registering agency	Types of environment-related objectives/ programs and activities
		Male	Female		
Katilingban sang Magamay nga Mangingisda sa Dolores (KAMAMADO)				DOLE	To form a strong and viable organization for the rehabilitation, protection, conservation of natural resources in order to alleviate the living conditions in Barangay Dolores
San Antonio Cluster Association					Establish linkage with federation, coalition, and network of farmers and conduct continuous IEC to the member
Cabalagan Small Fisherfolk's Association					To protect the natural resources that is abused by other fishers through illegal actigal activities
Nueva Valencia Organic Farmers Association					To provide support mechanism to members who practice the organic agriculture that will condition and enrich the fertility of the soil, increase farm productivity, reduce pollution, destruction of environment, prevent the depletion of natural resources and to protect the health of farmers, consumers, and general public
Concordia Farmer's Association					Promote cooperation of the farmers and for them to know the importance of restoring and protecting the natural resources and their health
Concordia Poultry and Livestock Raisers Association			41	DOLE	Ensure the continuous education to increase awareness of the members and promote cooperation of the members and for them to know the importance of restoring and protecting the natural resources and their health
Lanipe Farmers Association					Ensure the continuous education to increase awareness of the members and promote cooperation of the members and for them to know the importance of restoring and protecting the natural resources and their health

Table 18. Active civil society, nongovernmental and people's organizations in Guimaras Province. (cont.)

NGOs/POs	Contact person/ Contact number	Number of members		Registering agency	Types of environment-related objectives/ programs and activities
		Male	Female		
Igdarapdap Farmers and Fisherfolks Association					Develop, improve and harness all farmers and fisherfolks potentials and provide opportunities that will accelerate their equal and full participation in the socio-economic development
Lactad Small Water Impounding System Association			16	DOLE	Constructing/acquiring, controlling, operating and managing irrigation systems and fixing, charging and collecting from its members service fees and maintenance charges to efficiently maintain the irrigation services
Lapaz Motorboat and Fisherfolks Association					Institutionalize the motorboat owners and fisherfolks to be an active members of the community, and allow the development of their skills and maximize their potentials as productive members of the barangay and the community
Lucmayan Farmers Association					Promote cooperation of the members and for them to know the importance of restoring and protecting the natural resources and their health
Magamay Farmer Association					Promote sustainable farming system
Oracon Cluster Farmer Association					Promote cooperation of the members and for them to know the importance of restoring and protecting the natural resources and their health
Pandaraonan Unified Association			67	DOLE	Develop, improve and harness all farmers, fisherfolks and Rural Improvement Club members potentials and provide opportunities that will accelerate their equal and full participation in the socio-economic development
Poblacion Rural Improvement Club					To become useful citizens, ideal wives and mothers, functional socio-economic partners in development and active community leader



Table 18. Active civil society, nongovernmental and people's organizations in Guimaras Province. (cont.)

NGOs/POs	Contact person/ Contact number	Number of members		Registering agency	Types of environment-related objectives/ programs and activities
		Male	Female		
Sta. Ana Small Fisherfolks Association (SASFA)					Develop, improve and harness all fisherfolks potentials and provide opportunities that will accelerate their equal and full participation in the socio-economic development
San Roque Farmers Association (SAROFA)			38	DOLE	Develop, improve and harness all farmers potentials and provide opportunities that will accelerate their equal and full participation in the socio-economic development
Sitio Tamsik Seaweed Planters Association					Develop, improve and harness all seaweed planters potentials and provide opportunities that will accelerate their equal and full participation in the socio-economic development
Samahan ng Maliliit na Mangingisda sa San Antonio					Develop, improve and harness all fisherfolks' potentials and provide opportunities that will accelerate their equal and full participation in the socio-economic development
San Roque Fisherfolks Association			66	DOLE	Develop, improve and harness all fisherfolks potentials and provide opportunities that will accelerate their equal and full participation in the socio-economic development
Lucmayan Fisherfolks Association					Develop, improve and harness all fisherfolks potentials and provide opportunities that will accelerate their equal and full participation in the socio-economic development
Comian Small Water Impounding System Association					Promote sustainable farming system
Lucmayan Mangrove Growers Association				DOLE	
Tando Mangrove Growers Association				DOLE	
Igang Small Farmers and Fishermen Association				DOLE	



Implications and Recommendations

With the increasing number of NGOs, CSOs and POs with environmental-related programs, their contribution to ICM program implementation is very important. A mechanism where the accomplishments and good practices generated from the various efforts of the NGOs, CSOs and POs are

reported and consolidated is necessary. A regular forum can be one of these mechanisms where the NGOs, CSOs and POs can share, learn and appreciate the scope and extent of their contribution to sustainable development of Guimaras Province.

Reference

List of Registered CSOs (2017), San Lorenzo
List of Registered Workers Association (2016), DOLE
OMAS-Nueva Valencia Files of PO

Capacity Development

011 Availability/accessibility

Description

This indicator reports access to facilities and training programs, staff and budget allocation, and technical resources available for coastal management. It also measures the extent to which local personnel can impart

their knowledge and experiences in coastal management as well as the presence of universities, research institutions and local experts in the area.

Rationale

Building local capacity to plan and manage their own resources is essential in ICM programs. Similarly, access to facilities and training programs, and budget allocation are essential in building local capacity. Local capacity is also enhanced by the availability of institutions such as universities, research institutions and local experts, which

can be tapped in implementing coastal management activities and training and education programs. Local personnel with the appropriate skills must be able to impart their knowledge and experiences in coastal management to other coastal and natural resource managers.

Data Requirements

- Access to facilities and training programs
- Staff and budget allocation for capacity development
- List of experts
- Universities and research institutions in the area with related courses/research activities
- Local capacity to conduct trainings

Results

The institutionalization of the coordinating mechanism in Guimaras Province has ensured that continued support from the local government is provided to the ICM program. In particular, staff were designated and budget was allotted for capacity development of the PMO and staff from the five municipalities. Budget was allotted for trainings, seminars and strengthening of NGOs, CSOs and POs with environment and coastal management-related initiatives (Table 19).

For the coordination of ICM program implementation in the province, seven staff were assigned at the provincial level and one from each relevant provincial offices (i.e., POAS, PPDO, PEDO, PEO and PHO). At the municipal level, the number of staff assigned to coordinate ICM program implementation ranged from 3-10 staff (Table 20).

Table 19. Budget allocation for capacity development.

Municipality	Year	Activity	Budget (OMAS) (PhP)
Jordan	2010	FARMC and MAFC Strengthening	55,000.00
	2011	FARMC and MAFC Strengthening	125,000.00
	2012	FARMC and MAFC Strengthening	115,000.00
Nueva Valencia	2010	Capacity Building	70,000.00
		Trainings and Scholarships Expenses	10,000.00
	2011	Trainings and Scholarships Expenses	20,000.00
		Capacity Building	45,000.00
	2012	Trainings and Seminar	20,000.00
		Capacity Building	45,000.00
	2013	Strengthening of FARMC, MAFC, etc.	50,000.00
		Capacity Building	130,000.00
		Trainings and Scholarships Expenses	20,000.00
	2014	Trainings and Scholarships Expenses	40,000.00
		Capacity Building	110,000.00
		Institutional Development program (FARMC, MAFC, etc.)	200,000.00
	2015	Institutional Development program (FARMC, MAFC, etc.)	180,000.00
		Trainings and Seminar	40,000.00
	2016	Institutional Development program (FARMC, MAFC, etc.)	200,000.00
Trainings and Scholarships Expenses		60,000.00	
2017	Institutional Development program (FARMC, MAFC, etc.)	200,000.00	
	Trainings and Scholarships Expenses	60,000.00	
San Lorenzo	2011	FARMC/MAFC Strengthening	10,000.00
		Strengthening of Agri – Based Council	40,000.00
		Capacity Development	180,000.00
	2012	Skills Training	180,000.00
		Strengthening of Councils & Special Bodies	70,000.00
	2013	Strengthening of Councils & Special Bodies	70,000.00
	2017	MAFC Strengthening	30,000.00
MFARMC		90,000.00	
Sibunag	2011	Support to BFARMC & MFARMC	50,000.00
	2013	Trainings and Seminar Expenses	20,000.00
		Support to MFARMC & MAFC	30,000.00
	2014	Trainings and Seminar Expenses	20,000.00
	2015	Trainings and Seminar Expenses	35,500.00
	2016	Support to MAFC/MFARMC & Farmer/Fisherfolks Ass.	30,000.00
Trainings and Seminar Expenses		35,500.00	

Table 20. Staff allocation for coordination of ICM program implementation CY 2017.

Local government unit	Number of staff for ICM-PCC	Legal basis
Buenavista	10	E.O. No. 2017-052, Series 2017
Jordan	6	
Nueva Valencia	8	E.O.No. 18, Series of 2017
San Lorenzo	3	E.O. NO. 27-A, Series of 2017
Sibunag	8	E.O.No. 18, Series of 2017
Province (GENRO)	7	
PLGU	5 (POAS, PPDO, PEO, PEDO, PHO)	
BFAR-PFO	1	
DENR-PENRO	2	

Universities and research institutions in the area continued to provide scientific information and technical support for coastal management-related activities. These included the BPI-Guimaras National Crop Research Development and Production Support Center (previously National Mango

Research and Development Center), UPV, SEAFDEC, Guimaras State College, and UP Biological Station in Taklong Island. **Table 21** shows the list of relevant research studies conducted by Guimaras State College to inform policy and decision making.

Table 21. List of studies/researches conducted in Guimaras Province by Guimaras State College.

Title	Authors	Abstract	Period covered
Lime Industry in Buenavista, Guimaras: A Situationer	Lilian Diana B. Parreño, Ph.D. Victor Michael Bolaño Daisy B. Ibieza Jo Ann T. Gerada	Guimaras Province produces high grade quality lime products and by-products used for industrial and agricultural purposes. The study was conducted to create a database on the lime industry situationer in Buenavista, Guimaras. The respondents of the study were the workers and owners/managers of the different lime factories and quarry sites. Lime processing use voluminous amount of firewood as fuel. Effects on the local environment are loss of wildlife habitat, trees including emission of airborne pollutions. Gross income of the quarry site owners was bigger compared to lime factories. The lime workers socio-demographic condition was good considering that many of them have a monthly income ranging from P5, 000.00 – P10, 000.00. The workers have perception of the health hazards involve in lime production. It is recommended that the government should regulate the operations of these lime factories and quarry sites in order that no lasting ill effect will take place in the environment and to the workers.	AY 2010-2011
Abundance And Distributional Ecology Of Irrawaddy Dolphins (Orcaella Brevirostris) In Guimaras Island	Dr. Lilian Diana Parreño, Dr. Romeo Caturao, Jo Ann Gerada, Jonathan Eliedia, Victor Michael B. Bolaño	Marine mammals identified in Guimaras included Irrawaddy and Spinner dolphins, Dugongs and Whale Sharks. Historical data showed that marine mammals were frequently seen during the months of April-June and September- November. Deaths of marine mammals were confirmed. The bones of Irrawaddy dolphin and pictures of Dugongs and whale sharks served as bases for the establishment of identification keys. It was confirmed that the critically endangered Irrawaddy dolphins were sighted in Guimaras Strait which received fresh water input from Jalaur River in Panay Island. These findings can serve as basis for the marine mammals' protection and conservation programs in the island.	AY 2012-2013

Table 21. List of studies/researches conducted in Guimaras Province by Guimaras State College. (cont.)

Title	Authors	Abstract	Period covered
Abundance, Ecology and Fishery of Lobsters in Buenavista, Guimaras: Its Contribution to the Socio-Economic Condition of the Fisher Folks	Dr. Lillian Diana Parreño, Dr. Rogelio Artajo, Jo Ann Gerada	Lobster (<i>Panulirus sp.</i>) is highly priced marine crustacean both in local and international markets. The study was conducted to determine the abundance, ecology and fishery of lobster in Buenavista, Guimaras and their contribution to the socio-economic condition of the fisher folks. The respondents of the study were the lobster fisher folks. The data gathered are composed of volumes of catch as to male and female, catch size during lean and peak seasons, ecology of the area and socio-economic condition of the fisher folks. Spiny tiger lobster habituated most the area and many of them are male. Majority of the fisher folk earned a monthly income of PhP 5,000.00 and below, which is not a good indicator based on NEDA's economic threshold level.	AY 2012-2013
Distribution, Abundance, Stranding and Human Interactions of Marine Mammals in Guimaras Island	Dr. Lillian Diana Parreño, Dr. Romeo Caturao, Jo Ann Gerada, Jonathan Eliedia, Victor Michael B. Bolaño	The study determined the distribution, abundance, stranding and human interactions of marine mammals found in Guimaras Island, Philippines. Interviews with fisher folks coming from 48 coastal villages were done using the marine mammal checklist and by-catch instrument. Responses of the fisherfolks showed that marine mammals were commonly seen during months of April, May, June and October, November and December each year. As early as 1970s fisherfolks have seen marine mammals in the area and majority of them sighted them in years 2010-2012. Many of the fisherfolks of Buenavista and Nva. Valencia, Guimaras have close encounters with marine mammals majority of which were Irrawaddy dolphins and other species of dolphins, sea cows and whale sharks. Majority of the respondents have sighted the animals between 51-200 meters from shoreline. Since 1995 to 2010 8 incidents of stranding and death of animals were documented. Close encounters of marine mammals with human activities put their lives in jeopardy. Protection, conservation and populace education on marine mammals must be done.	AY 2012-2013
GIS-Based Analysis of Mango Production and Practices in Western Visayas	Dr. Lillian Diana B. Parreño, Agronomy Guimaras State College (GSC), Dr. Marilyn Romaquin, Horticulture Aklan State University (ASU), Dr. Federito Launio, Horticulture/Agronomy Capiz State University (CapSU), Ms. Helen Bignayan, Horticulture National Mango Research and Development Center (NMRDC), Dr. Mae Flor Posadas, Social Science Negros Occidental State College of Agriculture	This study was conducted to analyze the mango production practices in Western Visayas using GIS and to identify strategies to improve and sustain the productivity and profitability of the mango industry in Region VI. The study employed purposive survey to gather the needed data in the six (6) provinces in Western Visayas. Respondents included identified barangays and mango farmers in the six (6) provinces of Western Visayas. Data for biophysical conditions was gathered from government agencies like the Bureau of Soil, DENR, DA, etc. These were digitized as map layers and were used as input in the spatial analysis. Data was analyzed in terms of the correlation of the various factors that contribute to an improved production of mango. The common problem seen in mango production was the presence of pests while on the marketing side; the common problem was on the buying price.	2015



Table 21. List of studies/researches conducted in Guimaras Province by Guimaras State College. (cont.)

Title	Authors	Abstract	Period covered
Ecological Conditions of Mangrove Resources Among Coastal Barangays in Buenavista, Guimaras: Bases for Rehabilitation, Maintenance and Reforestation Program	Lilian Diana B. Parreño, Jo Ann t. Gerada, Ethel P. Junco, Nenita G. Morada, Reilyn F. Crispe-GSC Juneline S. De la Cruz, Arlette Depamaylo-PENRO Guimaras Gerald Gamo-LGU Buenavista Tyler Hassig- Peace Corp (Voulnteer/ consultant)	This study was conducted to determine the condition of mangrove resources in coastal barangays of Buenavista, Guimaras. Mangrove resources were assessed using the transect plot technique. The data gathered were regeneration rate per square meter, crown cover, average tree height and disturbances/cuttings of mangrove noted during the data gathering. Common species of mangrove per barangay were also recorded using Field Guide to Philippine Mangroves. For categorizing the overall health of the mangrove, the PCRA Training Guide was used. Among the seven locations, the overall health of the six locations ranges from excellent to good and only one location showed poor condition.	2014
Students' Comprehension of Global Warming Terminologies: Disaster Risk Reduction Management Awareness	Jocyl C. Caber Antonietta Espin	The study was conducted to determine students' comprehension of global warming terminologies: disaster risk reduction management awareness and limited to the college students of the Guimaras State College – Mosqueda Campus for Academic Year 2016 -2017, regarding their profiles on age, sex, course, family income, municipality belong, and languages and terminologies being acquainted with the global warming terminologies which served as basis for disaster risk reduction management awareness of the college as well as in the communities. The level of student's comprehension in the terminologies used in global warming was significantly differs in in terms of age and municipalities they were residing. Furthermore, the results show that students comprehend few terminologies of global warming, therefore more efforts must be done to increase their level of comprehension for a better management and preparation of natural disasters and risks that may occur in their respective areas.	2016
Impact of Mangrove Rehabilitation Project: A Community Based Conservation	Julius T. Vergara, Helbert L. De la Cruz, Wendel A. Pangaral and Rodrigo G. Paglomutan Jr.	This study was conducted to assess the impact of mangrove rehabilitation project implemented in the municipality of Buenavista, Guimaras covering seven (7) barangays with a total of 177 beneficiaries as participants. The collaborative mangrove rehabilitation project of Guimaras State College (GSC) and Bureau of Fisheries and Aquatic Resources (BFAR) has planted about 430,695 mangrove propagules covering 96.8 hectares area with 85.17% survival rate. The local government officials and the beneficiaries appreciated the projects' positive impacts in terms of Economic, Environmental and Social aspects and the beneficiaries have high satisfaction on the Mangrove Rehabilitation Project implemented by GSC and BFAR.	2015
Development of a Conservation Program for the Irrawaddy Dolphins (<i>Orcelia Brevirostis</i>) in the Visayas in Line with the Coral Triangle Initiative National Plan of Action	Lilian Diana B. Parreño	This study was conducted from December 2012 to March 2014 with a grant from Deutsche Gessellschaf fur Internationale Zusammenarbeit (GIZ), through the Adaptation to Climate Change in Coastal Areas (ACCCoast) Project that is being implemented by the Department of Environment and Natural Resources (DENR)-Protected Areas and Wildlife Bureau (PAWB). The general aim of the project was to develop an ecosystem-based conservation and management plan for the protection of the Irrawaddy dolphin population in the Visayas. The main protection strategy targeted by this project was to help local government units establish marine protected areas in the core habitats of the dolphins. Alongside helping LGUs in establishing MPAs in the dolphins' core habitat, an information education campaign and capacity building were planned as part of the conservation strategy.	2015



SEAFDEC Aquaculture Department - Igang Marine Station.
(Source: thebrokenheartedtraveller.wordpress.com)



Guimaras National Crop Research Development and Production Support Center in Brgy. San Miguel, Jordan.
(Source: [A lifestyle blog by Camile Adriene](#))

Implications and Recommendations

The establishment of the ICM-PMO has facilitated the smooth coordination of ICM implementation in Guimaras. Continuous strengthening of the technical and management skills of the PMO and local personnel at the provincial and municipal levels, including regular funding allocation from the local governments are vital to ensuring the effective implementation of the ICM program.

The researches conducted by the partner universities, state colleges and research institutions in the province as well as their engagement in various technical working groups and sub-committees established for the ICM program is also providing positive benefits, including easier access to technical and scientific advice.

It is recommended that Guimaras continue to strengthen the partnerships and collaboration that have been established between the local government with the academic institutions, including other stakeholders, (e.g., NGAs, OGAs, NGOs, POs/CSOs) to ensure that functional and sectoral integration remain strong.

A mechanism to recognize the outstanding performance and dedication of the various stakeholders in promoting and actively participating in the implementation of the environmental programs of the local government should be put in place to build lasting support to the ICM Program.

References

Executive Orders Establishing ICM Coordinating Committee (FF66, ICM Files GENRO)



Capacity Development

012 Human resource capacity

Description

This indicator measures local capacity in implementing coastal management in terms of skilled human resources.

Rationale

The knowledge and skills of local personnel is essential for effective implementation of coastal management.

Data Requirements

- Number of people trained in ICM
- Number of skilled personnel working in ICM programs
- Number of graduates in ICM-related courses
- Number of required ICM trained people

Results

Guimaras has been a recipient of a number of coastal management-related capacity building activities that were supported by various agencies and partners (Table 22). These capacity building activities were conducted and supported by various partners within the Philippines and abroad, which provided opportunities for wider exposure of the local staff and local stakeholders as well as opportunities for networking with other agencies and local governments. This has built the confidence among the local staff and stakeholders in sharing Guimaras experiences in

the application of certain tools and methodologies that were learned from the various training activities.

Guimaras in turn also organized a number of training and consultation workshops involving a wide range of local stakeholders, particularly in the establishment of the IIMS, development of the SOC report, development of the CS/CSIP and others (Table 23). This ensured that the local stakeholders were able to contribute to the development of a certain output to which they are proud to be part of.

Table 22. Trainings related to coastal management attended by local government staff.

Year	Training	Organization that conducted the training	Number of personnel trained
January 18-20, 2010	Consolidation and Validation of the Guimaras State of the Coasts Report	PGG and PEMSEA	3
January 21-22, 2010	Coastal Strategy Development	PGG and PEMSEA	3
May 12-15, 2010	ICM Course 1 - Understanding Integrated Coastal Management	DENR R6 and PEMSEA	4
June 15-18, 2010	Dalaw Turo Trainers' Training	DENR R6, Human Resource Development Section, Regional Public Affairs Office and Protected Areas Wildlife Division, PAWCZMS	1
October 11-14, 2010	Integrated Coastal Management (ICM) Training of Trainers Course	Coastal and Ocean Management Institute (COMI)-Xiamen and PEMSEA	1
November 4-7, 2010	2010 PEMSEA Network of Local Governments for the Sustainable Coastal Development (PNLG) Workshop on Integrated River Basin and Coastal Area Management	PEMSEA	1
March 10, 2011	National SDS-SEA Action Plan Regional Consultation Workshop	PEMSEA and DENR	2
March 6-19, 2011	Coastal Aquaculture Training Program	Korea International Cooperation Agency (KOICA) and the Overseas Fisheries Cooperation Center, Pukyong National University	1
September 26-29, 2011	Orientation & Training on PRMF's Environmental Management System	Australian Aid Program and DILG	1
January 30-February 1, 2012	Provincial Environmental Impact Statement System Training	Australian Aid Program, DILG, and PGG	1
May 14, 2012	Safety on Seas Swimming Program Trainers' Training	Municipality of Nueva Valencia-Municipal Risk Reduction & Management/Climate Change Adaptation Council	2
May 28-29, 2012	State of the Coasts Workshop "Mainstreaming SOC Reporting & Initiating Climate Change Adaptation"	Marine Science Institute-UP Diliman, MERF, GIZ, and DENR	1
June 6-8, 2012	Training for TAPs on Coastal and Fisheries Resource Management Planning and Implementation	The Philippine Business for Social Projects	2
July 31-August 2, 2012	Training of Trainers for Technical Assistance Providers (TAPs) for Coastal Resource Management	The Philippine Business for Social Projects	2
October 7-12, 2012	Mainstreaming Disaster Risk Reduction into Local Development Planning Process through the Provision and Use of Rapid Earthquake Damage Assessment System (REDAS) Software	DOST-The Philippine Institute of Volcanology and Seismology (PHIVOLCS) and PGG	1
November 6-9, 2012	Integrated Information Management System (IIMS) Training for Module I	River Basin Control Office (RBCO), DENR and PEMSEA	1
December 2, 2012	Open Water Dive Course	Professional Association of Diving Instructors (PADI), GIZ, and Iloilo Scuba Dive Center (ISDC)	2
January 30-February 1, 2013	Writeshop to Draft the M&E Manual for the Provincial Government of Guimaras	Philippines Provincial Road Management Facility, DILG, Australian Aid Program, and PGG	1



Table 22. Trainings related to coastal management attended by local government staff. (cont.)

Year	Training	Organization that conducted the training	Number of personnel trained
March 14-15, 2013	Training on IIMS Query System and Linkage to GIS (IIMS Module 2)	PGG and PEMSEA	5
March 19-31, 2013	Seminar on Integrating Gender and Development Into Disaster Risk Reduction and Management	Gender and Development Coordinating Office (GADCO) – Province of Guimaras	1
April 15-19, 2013	Underwater Biophysical Reef Assessment Training	GIZ	2
June 9-22, 2013	Capacity Building for Marine Protected Areas Management	Korea International Cooperation Agency (KOICA) and Korea Marine University	3
June 24-26, 2013	Introduction to Remote Sensing	GEODATA System Technologies, Inc.	2
August 19-23, 2013	Knowledge Enhancement Workshop and 10-Year SWM Pln Formulation Workshop for the Province of Guimaras and Capiz	DENR-Environmental Management Bureau R6	1
August 26-September, 2013 and November 11-15, 2013	Capacity Development Workshop on Baseline Data Collection, Analysis and Reporting	Research Institute for Mindanao Culture (RIMCU) and PGG	1
September 25, 2013	Training-Workshop on Process-Based Risk Assessment	PGG	1
September 30-October 1, 2013	Training Workshop on Conservation and Rational Utilization of Marine Habitats and their Resources	GENRO and KIOST	4
October 2-3, 2013	Training Workshop on Management Policy and Strategy for MPA-Best Practices	GENRO and KIOST	5
March 3-4, 2014	Workshop on the Development of a Conservation Strategy for the Irrawaddy Dolphins in the Visayas	Silliman University, GIZ, TMRC, ACCCoast, GSC	1
March 7, 2014	Building Momentum for Low Carbon Development Round Table Discussion for Local Government Units – Visayas & Mindanao	WWF-Philippines	1
August 19, 2014	Enhancing Transparency during Project Implementation thru Geo-Referencing: A Short Training for Implementing Agencies	National Economic and Development Authority	1
September 1-4, 2014	The International Training Program on Marine Ecosystem Valuation and Spatial Management Tools	Korea Maritime Institute (KMI) and PEMSEA	1
December 3-5, 2014	Coral Rehabilitation Training	U.S. Peace Corps and University of San Carlos Marine Biology Section	1
January 28-29, 2015	Workshop on Understanding the ICM Code and ICM System Implementation and the ICM System Certification Process	PEMSEA	1
October 8-10, 2016	Marine Biophysical Assessment Training	BFAR, GENRO, POAS	3
June 6-9, 2017	Workshop on the ICM Code and ICM System: Strategic Planning	PEMSEA and GENRO	
March 28-31, 2017	Integrated Information Management System (IIMS) Module 1&2 Training	PEMSEA and GENRO	28
November 2017	Training on aquaculture	PNLG	2

Table 22. Trainings related to coastal management attended by local government staff. (cont.)

Year	Training	Organization that conducted the training	Number of personnel trained
December 4-7, 2017	2017 PNLG Forum: "Ecological Restoration of Coastal Areas for Blue Economy"	PNLG and PEMSEA	5
December 4-8, 2017	Training Workshop on the Nutrient Analysis and Quality Assurance/Quality Control: Enhancing Reliability and Comparability of Data for the Integrated Environmental Monitoring Program (IEMP)	PEMSEA, Ministry of Ocean and Fisheries (MOF), RO Korea, KOEM (Marine Environment Education Center), KIOST (APEC Marine Environmental Training and Education Center)	1
December 5-8, 2017	Training on Open Water and Advance Open Water Diving	DENR-PENRO Guimaras	3
May 13, 2017	Coral Reef Enhancement Training	DENR-PENRO Guimaras	
May 2-5, 2017	Dalaw Turo Training Workshop for Information Officers	DENR-PENRO Guimaras	
October 26-28, 2010	LGU Capacity Building (Capacity Development-SWM-Planning) Training/ Workshop	Environmental Management Bureau-Department of Environment & Natural Resources	2
May 8-10, 2012	Mainstreaming Disaster Risk Reduction and Management and Climate Change Adaptation in the Comprehensive Development Plan Formulation	Department of the Interior and Local Government	
September 10-12, 2014	Workshop on Mainstreaming Evacuation Support in Disaster Risk & Reduction Management	International Organization for Migration (IOM)	
March 23-25, 2015	Training of Facilitators in Contingency Planning	Regional Disaster Risk Reduction and Management Council	
May 24-26, 2016	Program Orientation, Feasibility Study/ Project Proposal Preparation and MW4SP Orientation	Department of the Interior and Local Government	
August 18-19, 2016	Seminar/Workshop for the Formulation of Sibunag Watershed Characterization Report	Department of Environment and Natural Resources Regional Office VI	
February 23-24, 2017	Bamboo Propagation, Plantation Development Management	Provincial Environment and Natural Resources Office – Guimaras Field Office	3
March 28-31, 2017	Training on Operationalization of the Integrated Information Management System (IIMS) in Guimaras Province (Establishment of IIMS, IIMS Query System and GIS Linkage)	Guimaras Environment and Natural Resources Office	2
April 7-8, 2017	Fruit and Vegetable Processing for Elderly	Department of Agriculture – Regional Field Office 6	
May 9-11, 2017	Training on Good Agricultural Practices (GAP) for Production of Corn	Department of Agriculture – Regional Office 6	1
June 6-8, 2017	Cassava for Foods Livelihood Training	POAS	
June 20, 2017	Consultative Meeting cum Workshop on the Draft Philippine Standard for Soft Shell Crab and the Good Aquaculture Practices for Mollusk and Aquatic Plants Seaweed	BFAR 6	2
June 20-21, 2017	Fruit Processing (Based on Mango)	POAS	2



Table 22. Trainings related to coastal management attended by local government staff. (cont.)

Year	Training	Organization that conducted the training	Number of personnel trained
June 23, 2017	Briefing and Orientation on the AFMech Law and Consultation Workshop	Department of Agriculture – Agricultural Training Institute	6
July 11-13, 2017	Training on Livestock Emergency Guidelines and Standards	Department of Agriculture – Agricultural Training Institute	1
July 13-14, 2017	Training on Corn & Cassava Program	Department of Agriculture – Regional Field Office 6	1
August 16-18, 2017	Agricultural Extension Worker Congress 2017	Department of Agriculture – Regional Field Office 6	
Sept. 4-7, 2017	Workshop on Integrated Coastal Resource Management (ICRM) Planning	DA-PRDP	3
October 4-6, 2017	Periodic Monitoring and Evaluation (M&E) using the Management Effectiveness Tracking Tool (MEAT)	DA – PRDP	3
October 19-21, 2017	Gender and Development for Agricultural Extension Worker and Women Farmers cum Herb	ATI, POAS	
October 23-24, 2017	Organizational Entrepreneurship for Women	POAS	
Nov. 15-17, 2017	Rice Crop Manager (RCM) Regional Updating and Planning Workshop	DA-RFO 6	1
Nov. 27-29, 2017	3-Day Live-in Rapid Damage Assessment and Needs Analysis	PSWDO, OCD	55
November 7-10, 2017	Writeshop on Integrated Coastal Fisheries Management (ICFM) Plan	PRDP – RARE	6
November 7, 2017	Coastal Strategy Implementation Plan (CSIP) Fine Tuning Workshop	Guimaras Environment and Natural Resources Office	

Table 23. Trainings provided to stakeholders.

Training	Agency	Number of person trained	Date and venue	
Integrated Information Management System Module I and II Training	MLGU Buenavista	2	March 28-30, 2017 Nueva Valencia Multi Purpose Cooperative	
	MLGU Jordan	2		
	MLGU Nueva Valencia	2		
	MLGU San Lorenzo	2		
	MLGU Sibunag	2		
	PLGU	GENRO		4
		PHO		1
		PSWDO		2
		PPDO		1
		GO		1
		PEDO		2
		PTourO		2
	NGAs	DENR		2
BFAR		2		
Academe	UPV	2		
	GSC	1		
ICM Code/System Strategic Planning Workshop	MLGU Buenavista	3	June 6-8, 2017 EON Centennial, Iloilo City	
	MLGU Jordan	1		
	MLGU Nueva Valencia	2		
	MLGU San Lorenzo	2		
	MLGU Sibunag	0		
	PLGU	PEDO		1
		PTourO		1
		GENRO		6
		POAS		1
		PEO		1
		PDRRMC		1
BFAR	1			
DENR	1			
Watershed Community Dialogue and Workshop	Nueva Valencia	26	September 27, 2017 Brgy. Hall Lanipe, Nueva Valencia, Guimaras	
CSIP Municipal Stakeholders' Consultation Workshop	Buenavista	24	September 2017 Municipal Hall (Buenavista, Jordan, Nueva Valencia, San Lorenzo, Sibunag)	
	Jordan	24		
	Nueva Valencia	24		
	San Lorenzo	24		
	Sibunag	25		
CSIP Fine Tuning Workshop		19	CAVES Conference Room	





Training Workshop on Seawater Nutrient Analysis Quality Assurance and Quality Control, Busan, Republic of Korea, December 4-8, 2017.



Seminar Workshop on ICM Code, EON Centennial Plaza Hotel, June 6-8, 2017.



Capability building for student leaders of Iloilo and Guimaras, May 23-26, 2017, JBLFMU Eco-park. (Photo credit: DENR PENRO)





Integrated Information Management System (IIMS) Training for Modules 1 and 2.



Seminar on Green Ecological Aquaculture for ASEAN Countries, November 2-8, 2017, Xiamen, China.

Implications and Recommendations

Capacity building activities in Guimaras cut across the various stages of ICM program development and implementation. It also cut across the various sectors and stakeholder groups. As a result, more local staff and stakeholders were trained and introduced to supporting tools and methodologies for ICM. Their direct involvement in program implementation has also served as on-site training in tool application.

The availability of technical personnel, funding, and training institutions have facilitated access by the local governments to facilities and training programs that support ICM implementation. The LGUs on the other hand also has funding allocations to carry out their respective capacity development initiatives.

As new and emerging environmental concerns may be encountered by the province in light of changing climate in addition to global and national developments and commitments, capacity building must be designed in response to these concerns and commitments while taking into consideration the specific needs of the local government. A training needs assessment (TNA) can be conducted regularly to determine the capacity needs of the local government and the stakeholders and means of filling the gap.

References

- Attendance Sheet ICM Meetings (2017)
- Certificates of Training of ICM Staff-GENRO Files (FF22)



Financing Mechanisms

013 Budget for ICM

Description

This indicator reports the financial requirements for coastal management and the government allocation including investments for environmental infrastructures. It also looks

into the financial sources for coastal management, such as loans, and grants from financing institutions and donors.

Rationale

The activities for coastal management have specific budgetary requirements and thus need financial allocation for their implementation.

Data Requirements

- Total budget identified for coastal management
- Total budget allocated by LGU
- Total expenditure for coastal management
- Grants and loans from external sources
- Investments in environmental infrastructure

Results

Financial allocations of the provincial and municipal governments for coastal management for the years 2010-2017 are shown in **Table 24**. The provincial and municipal governments have consistently allocated budget for the past 8 years and the level of funding varied depending on the activities that were implemented for a particular year.

In addition to the local government's budget, the Department of Natural Resources and Environment has implemented 4 major projects in Guimaras with corresponding budgetary allocation (**Table 25**). Two projects, i.e., CMEMP and

SCREMP were focused on coastal and marine management while the National Greening Program focused on forest management, which covered both upland and coastal areas.

Furthermore, the Province has been a recipient of grants from a number of international sources such as those from KOICA, Yeosu Foundation and PEMSEA (**Table 26**). The ICM Program has opened up opportunities for Guimaras to gain access to funding sources, which was relatively limited in the past.

Table 24. Financial allocation of the local governments in Guimaras Province for coastal management.

Source of Fund	Year	Amount requested for coastal management (Php)	Amount allocated for coastal management (Php)	Amount spent for coastal management (Php)
Province	2010		550,000.00	
	2011		755,476.00	
	2012		750,000.00	
	2013		1,000,000.00	
	2014		1,500,000.00	
	2015		3,900,000.00	
	2016		4,000,000.00	
Jordan	2010		40,000.00	27,436.00
	2011		35,000.00	
	2013		2,000.00	2,000.00
	2014		15,000.00	13,000.00
	2015		50,000.00	50,000.00
	2016		50,000.00	50,000.00
Nueva Valencia	2010	752,000.00		
	2011	140,000.00	140,000.00	
	2012	190,000.00	190,000.00	
Sibunag	2010		1,277,169.50	
	2011		314,000.00	
	2012		1,750,000.00	
	2013		1,830,000.00	
	2014		1,612,868.00	
	2015		870,000.00	
	2016		500,000.00	
Buenavista	2014		90,050.00	
	2015		300,000.00	
	2016		400,000.00 250,000.00	
San Lorenzo	2010		360,000.00 488,042.50	63,445.10 485,255.00
			335,000.00 366,000.00 50,000.00 30,000.00	109,789.60 449,057.06
	2012		75,000.00 300,000.00 1,300,000.00 30,000.00	
			100,000.00 280,000.00 30,000.00	105,652.00 278,100.00 16,605.27



Table 24. Financial allocation of the local governments in Guimaras Province for coastal management. (cont.)

Source of Fund	Year	Amount requested for coastal management (PhP)	Amount allocated for coastal management (PhP)	Amount spent for coastal management (PhP)	
San Lorenzo	2014		750,000.00	619,938.00	
				280,000.00	299,411.48
				30,000.00	10,575.00
	2015		750,000.00		
				300,000.00	
				30,000.00	
	2016		750,000.00		
				350,000.00	
				100,000.00	
	2017		750,000.00		
				350,000.00	
				100,000.00	
			70,000.00		
			200,000.00		
			90,000.00		
		30,000.00			

Table 25. Financial allocation of DENR for coastal management in Guimaras Province.

Source of Fund/Project	Year	Amount (PhP)
1. Coastal and Marine Ecosystems Management Program (CMEMP)	2017	22,521,000.00
2. National Greening Program (NGP) - including Mangrove & Beach Forest Development Project, Bottom-Up-Budgeting, Brgy. Forestry Program and Enhanced NGP (Plantation Establishment, Maintenance and Protection), Establishment of Mangrove & Bamboo Nurseries	2017	6,454,000.00
	2016	1,035,798.00
	2015	5,972,440.00
	2014	389,880.00
	2013	69,970.00
	2012	30,000.00
3. Individual Plus Tree (IPT)	2017	300,000.00
	2016	300,000.00
	2015	500,000.00
	2014	337,500.00
	2013	1,000,000.00
4. Sustainable Coral Reef Ecosystems Management Program (SCREMP) - TINMR Operation	2017	1,170,000.00
	2016	1,710,000.00
	2015	1,710,000.00
	2014	1,499,000.00
	2013	223,000.00
	2012	241,000.00
5. Community Forest Based Management (CBFM) – CARP	2015	1,152,192.00
	2012	878,055.00

Table 26. Grants received from external sources.

Source of Fund/Project	Date contracted	Amount (PhP)
KOICA		
1. "Provincial Disaster Risk Reduction and Management Framework of Guimaras Province"	2011	367,787.00
Yeosu Foundation		
1. "Provincial Disaster Risk Reduction and Management Framework of Guimaras Province II: Strengthening Disaster Preparedness through Critical Habitat Conservation in Guimaras Province, Philippines"	2013	1,442,704.54
2. "Provincial Disaster Risk Reduction and Management Framework of Guimaras Province III: Implementation of MPA Management in Guimaras Province, Philippines"	2015-2016	4,308,317.93
PEMSEA		
1. Strengthening ICM Implementation in Guimaras Province in Support of the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA)	October 2016-December 2018	2,284,000.00
Philippine Rural Development Project (PRDP)		
1. Seaweed Dryer cum Storage	2017	10,000,000.00

Implications and Recommendations

It can be discerned that the LGUs have consistently allocated budget for coastal management and the budget allocations have been increasing, which is a good indication of their commitment for ICM implementation. This good practice has provided the opportunity for Guimaras to access other sources of funding, particularly from the national agencies, as well as international partners. In most cases, partners are interested to know if the local governments have existing commitments that can serve as counterpart funding for the implementation

of collaborative activities. The increasing funding support also indicates the level of confidence and recognition of the partners in Guimaras' capacity to manage and implement projects.

It is recommended that proper monitoring and reporting of fund utilization be made to promote transparency and more importantly, to determine the level of investments made in environmental protection that can be linked to the benefits that will accrue later.

References

Allocated budget for ICM 2010-2017 by year
DENR-PENRO, Guimaras Approved Work and Financial Plan



Financing Mechanisms

014 Sustainable financing mechanisms

Description

This indicator takes account of the institutionalization of measures and means to support environmental conservation and environmental infrastructure improvements. Economic and market-based instruments, such as public-private partnerships, environmental user fees, user pay schemes, and corporate social responsibility (CSR) programs are

among the tools being considered. The indicator also considers policies and programs put in place to enhance the climate for public and private sector financing of coastal management activities and for constructing and operating environmental infrastructure.

Rationale

Financial support for coastal management implementation may come from different sources. The sustainability of ICM programs is dependent on how revenue sources are developed and managed.

allocation from the government, various financing options must be explored to sustain financial inputs for coastal management activities and environmental infrastructure and service.

Transparency in all financial transactions is necessary to avoid suspicion from stakeholders. Apart from regular

Data Requirements

- Corporate social responsibility
- Private sector financing (e.g., PPP)
- Environment user fees
- Percentage of environment-user fees allocated to environment projects
- Private sector investment for environmental infrastructure
- Standard procurement process in place (e.g., defined ceilings for bidding, canvassing, and shopping)
- Provincial/city/municipality authorized to engage in public-private partnership

Results

Several private sector partners through their Corporate Social Responsibility programs have participated and provided technical and funding support to various activities that contributed to environmental protection (Table 27). In most cases, the activities engaged the communities in various livelihood programs and the youth in environmental awareness and advocacy.

Trans-Asia Renewable Energy Corporation, a subsidiary of PHINMA Energy Corporation, has constructed a 54-megawatt wind farm scattered in four barangays of San Lorenzo and has plans of expanding its operation in Sibunag. The 54-mw wind farm is the first wind energy project under the Renewable Energy Act of 2008. The investment has earned the host municipality an annual real property tax of

PhP 50 million and has also improved the municipality's access road with the development of some 15-kilometer road. Furthermore, the project has provided jobs to around 800 Guimarasnons. The province's tourist arrivals have also increased by 68 percent from 2013 to 2016. TAREC has

helped build facilities to further improve tourism experience in San Lorenzo. These included viewing deck, food and souvenir stalls and comfort rooms (<https://news.mb.com.ph/2017/05/10/p4-b-budget-for-expansion-of-wind-farm-project-in-guimaras/>).

Table 27. Programs on corporate social responsibility and public-private partnerships in Guimaras Province.

Company/Organization	Corporate Social Responsibility (CSR) programs/Activities and Public-Private Partnerships	Fund allocation (PhP)
John B. Lacson Foundation Maritime University	<ul style="list-style-type: none"> • Sustainable Management of Igang Bay Marine Sanctuary <ul style="list-style-type: none"> ◦ Continuous IEC ◦ Coastal Clean-up ◦ Mangrove planting ◦ Coral Gardening ◦ Deployment of artificial reef ◦ Biophysical assessment ◦ Daily Surveillance and Patrolling • JBLFMU Annual Eco-Adventure Camp <ul style="list-style-type: none"> ◦ 4-day environmental themed activity for the youth of Guimaras • Guimaras Bike Paradise Project <ul style="list-style-type: none"> ◦ Promoting biking as mode of transportation and healthy lifestyle to practice ◦ Padyak Series: Trail Ride for a Cause (Padyak Kalikasan) • Creation of Young Environmental Warriors <ul style="list-style-type: none"> ◦ Composting and School Garden Project (Igang Elementary School) 	
Trans-Asia Renewable Energy Corporation (TAREC)	<ul style="list-style-type: none"> • Provision of HELP Earth Multimedia Corners, student and teachers training, organization of HELP Earth Savers Club • Support in the Brigada Eskwela or pre-classes opening clean-up program • Maintenance of 27-hectare Arboretum in Brgy. Tanglad, Sibunag through a MOA with DENR and BLGU where 1,200 seedlings were planted in the year 2016 • Established livelihood programs in five barangays including beads and accessories making in Cabano, bamboo crafts in Cabungahan, herbal and artisan soaps in Suclaran • Support to construction of the San Lorenzo Pasalubong Center 	268,655.00 (2016-2018)
Smart Communications Inc.	<ul style="list-style-type: none"> • 2 hectares Mangrove Rehabilitation at TINMR • Mangrove enrichment at Hoskyn, Jordan in coordination with DENR, Hoskyn Fisherfolks Association, Philippine Coast Guard and local government officials 	40,653.30
Globe Telecommunications Inc.	<ul style="list-style-type: none"> • 4 hectares Mangrove Rehabilitation at TINMR 	
Loob Foundation	<ul style="list-style-type: none"> • Mangrove Rehabilitation at TINMR 	





Souvenir stalls supported by PHINMA Energy Corporation.



Coral gardening project of JBLFMU at Igang Bay Marine Sanctuary in collaboration with DENR-PENRO Guimaras, GENRO and POAS.

The Province follows the manner of procurement prescribed by R.A. 9184, also known as the "Government Procurement Reform Act" and its Implementing Rules and Regulations. Under R.A. 9184, the Philippine Government Electronic Procurement System (PhilGEPS) is the single portal that serves as primary source of all government procurement information. The Province through its Bids and Awards Committee (BAC) has been using the PhilGEPS as a tool to modernize its procurement process and achieve greater transparency.

Implications and Recommendations

Economic development is catching up in Guimaras. The province has identified priority investment areas for public and private sector financing focusing on tourism, manufacturing, agri-business, services and real estate development. A clear criterion in the determination of these investment areas has been set, which takes into consideration the environmental impact, economic soundness, long term comparative advantage, extent of contribution to specific development goal, market and technical considerations and social benefits.

With the construction of the wind farm in San Lorenzo, adjustment in the development direction of the municipality is necessary in view of the steady increase in tourist arrivals. With this development, it is recommended that

Guimaras explore the implementation of environmental user fee system to complement existing and future regulatory systems in the province and municipalities for environmental protection and management. As the population of the province continue to increase, it is also necessary that investments in environmental infrastructure be taken into consideration

It is also recommended that recognition be afforded to the various corporations and partners for their contribution to the attainment of sustainable development in the province. This will further encourage their cooperation and continue to contribute in achieving the development goals of the province.

References

DENR-PENRO, Guimaras Approved Work and Financial Plan



Natural and Man-made Hazard Prevention and Management

015 Level of preparedness for disasters

Description

This indicator measures the availability of disaster preparedness and management plans, capable people, equipment, budget and preparations to anticipate, reduce, respond to, and recover from various hazards/disasters.

Rationale

Local communities and disaster management personnel must be prepared to respond to various hazards, if the number of deaths and property losses due to natural and man-made

hazards are to be minimized. Moreover, proper preparation and mitigation measures can reduce the frequency of man-made hazards and severity of disasters.

Data Requirements

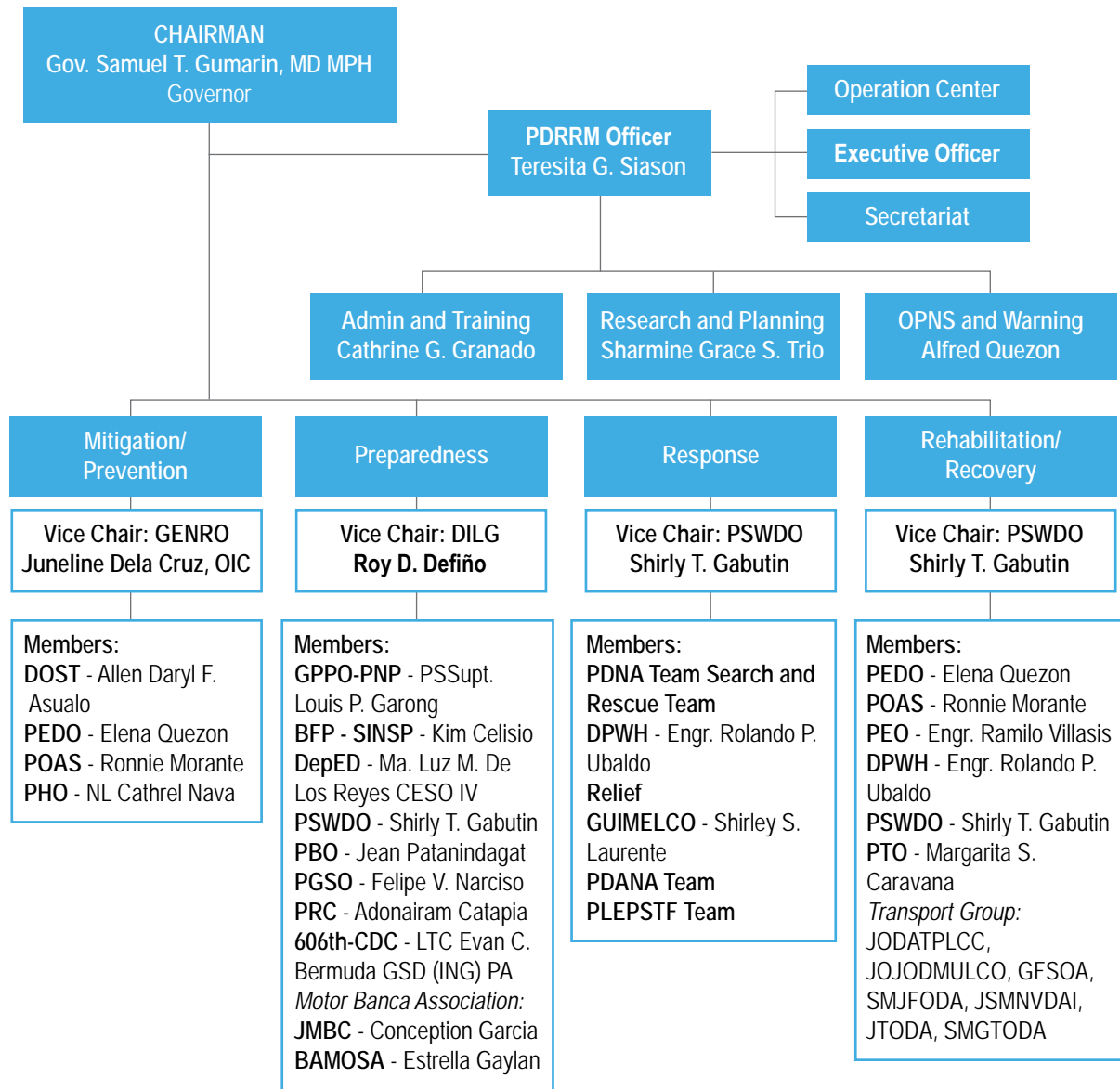
- Availability of natural/man-made disaster/environmental emergency response plan
- Scope of natural/man-made disaster/environmental emergency response plan (e.g., floods, earthquakes, oil spill, etc.)
- Identification of mitigation strategies
- Institutional mechanism for the implementation of the emergency response plan
- Number of trained and non-trained personnel allocated
- Early warning system in place
- Availability of adequate equipment
- Budget allocation for natural/man-made disasters

Results

The institutional mechanism for disaster preparedness and management has evolved since the creation of the Provincial Disaster Coordinating Council through Executive Order No. 70 in 1992. In 2012, Provincial Ordinance No. 7, Series of 2012 was issued creating the Provincial Disaster Risk Reduction and Management Office (PDRRMO) in order to systematically implement disaster-related actions in Guimaras Province. In 2014, Provincial Ordinance No. 10, Series of 2014 was adopted abolishing the Provincial Disaster Risk Reduction and

Management Office (PDRRMO) and integrating the same under the Office of the Governor and became the Local Disaster Risk Reduction and Management Section. Executive Order No. 56 Series of 2016 was also passed reorganizing the Provincial Disaster Risk Reduction and Management Council (**Figure 13**). The Provincial Disaster Risk Reduction and Management plan is systematically implemented by the PDRRMC through the PDRRMO.

Figure 13. Organizational structure of the Provincial Disaster Risk Reduction and Management Council.



Natural and Man-made Hazard Prevention and Management

Level of preparedness for disasters

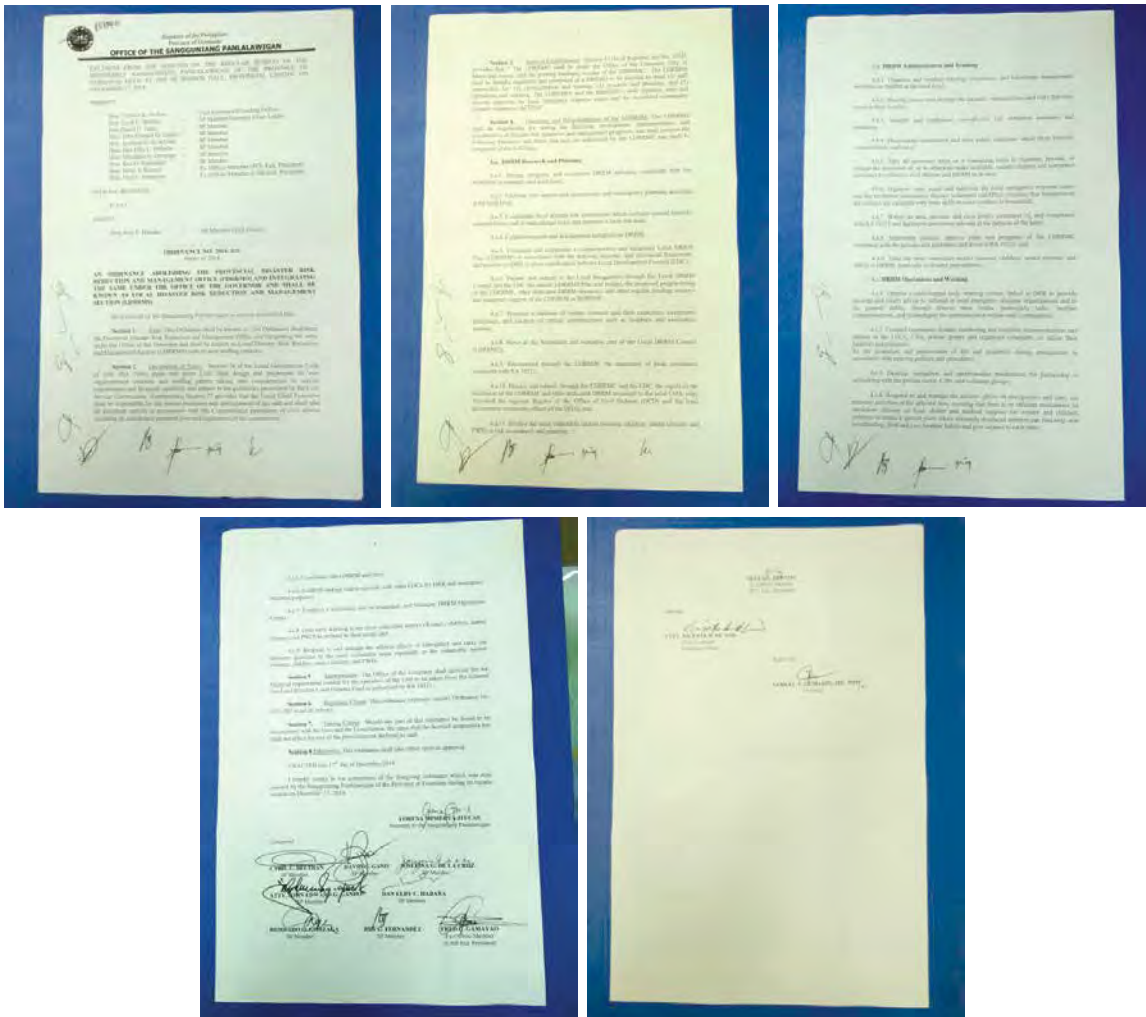


The five municipalities have established their respective Municipal Disaster Risk Reduction Councils and Office. The Provincial/Municipal Disaster Risk Reduction and Management Councils (P/MDRRMCs) were created to ensure the integration of disaster risk reduction and climate change adaptation into local development plans, programs and budget (Table 28).

The P/MDRRMCs have developed and adopted their respective DRRM Plans. The plans cover actions related to mitigation, preparedness, response and rehabilitation for floods, earthquakes, landslides, storm surge, and other natural and human-induced hazards/calamities. The Municipality of Buenavista has added sinkholes in the disaster coverage in view of its occurrence and the hazard that they bring to the communities. Continuing training of personnel involved in disaster risk reduction and budgetary

allocations are all in place at the provincial and municipal levels (Tables 29 and 30).

The institutional mechanism and plan development for disaster risk reduction took into consideration the recommendations from the PDRRM Framework of the Province of Guimaras, which was an outcome of a collaborative research conducted by Korea Maritime Institute and Guimaras Province. The document was prepared with financial support from the Organizing Committee for the Expo 2012 Yeosu Korea and Korea International Cooperation Agency (KOICA) and published in 2011. The framework included proposed recommendations for the institutional mechanism as well as activities related to mitigation, preparedness and response and rehabilitation activities.



Provincial Ordinance No. 10, Series of 2014.

Table 28. Natural and human-induced disaster/environmental emergency response plans.

Province	Scope of the plan/sectors covered	Coverage years
Guimaras	Disaster Risk Reduction and Management Framework of Guimaras Province <ul style="list-style-type: none"> Flood Landslide Erosion Oil Spill 	Year Published 2012
Guimaras	Local Climate Change Action Plan <ul style="list-style-type: none"> Rapid Loss of Habitat Sea Level Rise Extreme Weather (Stronger Typhoons, El Niño/La Niña Health Hazards (Dengue, Leptospirosis, Skin Disease, etc.) Environmental Impact (Solid Waste Management) 	2017

Table 28. Natural and human-induced disaster/environmental emergency response plans. (cont.)

Scope of the plan/sectors covered	Coverage years
Buenavista	
Municipal Disaster Risk Reduction and Management Plan (MDRRMP) Of The Municipality of Buenavista, Guimaras <ul style="list-style-type: none"> • Landslides • Flooding • Stormsurge • Sinkholes 	2016, 2018
Jordan	
Municipal Disaster Risk Reduction and Management Plan <ul style="list-style-type: none"> • Typhoon • Flood • Earthquake • Landslide/Erosion • Storm Surge • Fire • Oil Spill 	2017 - 2019
Nueva Valencia	
Municipal Disaster Risk Reduction and Management Council Plan <ul style="list-style-type: none"> • Drought/Climate Change • Earthquake • Infestation/Pestilence • Fire • Sea/Air/Land Accidents • Redtide/ Pollution • Civic Strife/Terrorism/Hostage/Bomb Threats • Natural Calamities (Typhoon Flood, Earthquake) 	
San Lorenzo	
MDRRM Work and Financial Plan	2013-2017
Local Climate Change Action Plan (draft)	2015-2019
MDRRM Contingency Plan <ul style="list-style-type: none"> • Typhoon and El Niño • Evacuation 	2014 2015
Sibunag	
Municipal Disaster Risk Reduction and Management Plan <ul style="list-style-type: none"> • Landslide, Flooding, Coastal/Bank Erosion, Coastal Accretion/Siltation, Storm Surge • Peace and Order and Public Safety Plan (POPS Plan) • Peace and Order Program • Anti-Drug Campaign • Police Services 	2010-2018 2017-2019
Local Climate Change Action Plan <ul style="list-style-type: none"> • Contingency Plan • Drought • Tsunami • Oil Spill • Typhoon 	2017-2019 2017
BFAR	
El Niño Mitigation Plan <ul style="list-style-type: none"> • Aquaculture Fishpond, Seaweeds, Shellfish Farms, Capture Fisheries, Corals 	



Table 29. Budget allocation for natural and human-induced disaster management.

Local government unit	Budget year	Budget allocation (PhP)
Province	2010	1,173,894.14 (5% LDRRMF Surplus)
	2011	14,757,762.00 (DRRM Program - 5% LDRRMF)
	2012	14,805,267.00(DRRM Program - 5% LDRRMF)
	2013	17,047,469.00 (DRRM Program - 5% LDRRMF)
	2014	19,022,289.00 (DRRM Program - 5% LDRRMF)
	2015	21,931,550.00 (DRRM Program - 5% LDRRMF)
	2016	23,974,302.70 (DRRM Program - 5% LDRRMF)
	2017	26,984,199.80 (DRRM Program - 5% LDRRMF)
Buenavista	2013	3,940,500 (5% MDRRM Fund)
	2014	4,500,500.00 (5% MDRRM Fund);
	2015	5,000,000 (5% MDRRM Fund); 250,000 (Peace and Order Program)
	2016	5,655,250 (5% MDRRM Fund) ; 200,000 (Peace and Order Program)
Jordan	2010	10,321.00 (20% DF); 3,000,000.00 (5% IRA)
	2011	21,000.00 (GF); 3, 159,650.00 (5% IRA)
	2012	3,275,400.00 (5% IRA)
	2013	3,564,710.00 (5% IRA)
	2014	4,047,168.40 (5% IRA)
	2015	4,599,980.00 (5% IRA)
	2016	4,991,031.00 (5% IRA)
	2017	5,469,350.00 (5% IRA)
Nueva Valencia	2010	100,000 (Municipal Peace and Order Council Program)
	2011	100,000 (Municipal Peace and Order Council Program)
	2012	3,090,632.10 (LDRRM Fund)
	2013	100,000 (Municipal Peace and Order Council Program); 3,462,699.15 (LDRRM Fund)
	2014	100,000 (Municipal Peace and Order Council Program); 3,897,653.70 (LDRRM Fund)
	2015	100,000 (Municipal Peace and Order Council Program); 4,427,384.15 (LDRRM Fund)
	2016	100,000 (Municipal Peace and Order Council Program); 4,839,792.65 (LDRRM Fund)
	2017	5,382,029.60 (LDRRM Fund)
Sibunag	2010	174,005.80 (Disaster Management Program), 100,000 (Peace & Order Program)
	2011	1,953, 915.00 5% LDRRM Fund, 00,000 (Disaster Management Program), 80,000.00 (Peace & Order Program), 20,000 (Fire Prevention Program)
	2012	2,038,057.00 (5% LDRRM Fund, 100,000 (Peace & Order Program); 20,000 (Fire Prevention Program)
	2013	2,356,460.00 (5% LDRRM Fund); 79,200 (Peace & Order Program)
	2014	2,664,300.00 (5% LDRRM Fund); 79,200.00 (Peace & Order Program)
	2015	3,038,449.65 (5% LDRRM Fund); 79,200.00 (Peace & Order Program)
	2016	3,333,304.50 (5% LDRRM Fund); 99,000.00 (Peace & Order Program)
	2017	4,137,892.25 (5% LDRRM Fund); 44,000.00 (Peace & Order Program)

Table 29. Budget allocation for natural and human-induced disaster management. (cont.)

Local government unit	Budget year	Budget allocation (Php)
San Lorenzo	2010	1,897,950.00(5% Calamity Fund)
	2011	2,011,608.30 (5% Calamity Fund) 86,000.00 (Peace and Order Program)
	2012	2,072,741.98 (5% Calamity Fund)
	2013	2,830,360.60 (5% Calamity Fund)
	2014	2,704,455.40(5% MDRRM Fund); 100,000.00 (Peace and Order Program)
	2015	3,115, 550.65 (5% Calamity Fund)120,000.00 (Peace and Order Program)
	2016	150,000.00 (Peace and Order Program); 100,000.00(Climata Change Development Program)
	2017	242,400.00 (Peace and Order Program); 3,889,300.00 (5% MDRRMF); 100,000.00(Climata Change Development Program)

Table 30. Number of trained and non-trained personnel/responder per municipality, available equipment and early warning system.

Local government unit	Number of Personnel	Specialization	Equipment	Early warning system
Buenavista	12	1 - MDRRMO 11 - Rescuers	1 unit ambulance 1 Rescue vehicle 2 Generator sets (100 & 125 KBA) for power supply 1 rescue boat 2 Back Hoes 1 Water Tanker 3 Dump Trucks	Rain Gauge
Jordan	13	3 - MDRRMO Staff 1 - Radio Operator/ Supply Officer 1 - Driver 12 - Jordan Emergency Rescue Team	2 ambulance, water and land rescue equipments, Rain gauge in NMRDC	
Nueva Valencia	29	Water Search and Rescue, First Aider, Fire Fighter	Splint board, laptop, printer, camera, oxygen guage/ humidifier,extension ladder, chainsaw, oxygen tank, cellphone, hand held radio, generator,shovel,hammer, axe, megaphone, fire extinguisher, first aid kit, binoculars, helmet, life jacket, life ring, ambulance, dump truck elf, portalet, etc.	Rain Gauge, Signages
San Lorenzo	21	3 - Staff 18 - Rescuers	Megaphone, fire extinguisher, chainsaw, life jacket, rope, kitchen utensils, flashlight/headlights, hand held radio, cellphones, bolo, axe, raincoat, spine board and splint board, bandages, LPG burner, bulldozer, backhoe, dump truck, fire truck, van, bantay dagat patrol boat.	



Table 30. Number of trained and non-trained personnel/responder per municipality, available equipment and early warning system. (cont.)

Local government unit	Number of Personnel	Specialization	Equipment	Early warning system
Sibunag	10	4 - MDRRMO Staff 6 - Rescuer	- 1 unit Rescue Ambulance - Life ring, life jacket, splint & spine board, hard hat/helmet, plastic drums, aluminum ladder, plastic water tank, first aid kit, axe, Bolo, Rope, Cellphone, Hand Held Radio, GPS - 3 Dump Trucks - 1 Patrol Boat - 1 Back Hoe - 1 Road Compactor - 1 Chainsaw - 1 Lever Block	Rain Gauge, Water Level Marker, Signages
PDRRMC	54	22 - PDRRMS Staff 33 - Rescuers	shovel, Bara de Kabra, combination wrench, socket wrench, grinder, electric drill, lift-mate with accessories (big & small), 3 generator set, bolt cutter, life jacket, life ring, torpedo can, megaphone, aluminum ladder, emergency light, search light, rain coats, boots, chain block (5 tons), spine board, scoop stretcher, stair chair, fold away stretcher, wheel chair, freezer, satellite phone, GPS, helmet, folding bed, utility rope, piko (pick), 2 ambulance, dup truck, motorcycle, welding machine, flood lamp, head light, bolo, 2 chainsaw, CPR Maniquin, pulse oximeter, digital BP Apparatus, Glucometer, projector, LCD screen, Hot Water Bag, Axe, C-collar, First Aid Kit, Mallet, monoblock bed & chair, rescue boat, ice bag, foam, pillows, laptop, camera	<ul style="list-style-type: none"> • 4K (Komunikasyon Kontra Krimen at Kalamidad) - operational 24/7 • 4 Automated Rain Gauges • 1 Auto mated Weather Station • 1 Agromet Station



Barangay Fire Olympics held at Provincial Capitol Grounds, July 30, 2015, in coordination with BFP.



Standard First Aid Training and Basic Life Support conducted in Sibunag, July 18-21, 2017, in coordination with Red Cross Guimaras Chapter.



Installation of early warning system.

Implications and Recommendations

The ICM program has facilitated the publication of the Guimaras Disaster Risk Reduction Framework through linkages with international development agency such as KOICA. The province has also initiated the development of the Oil Spill Contingency Plan through the conduct of consultation and planning workshops.

The allocation of the 5% of the IRA for disaster risk reduction has made it possible for the province and municipalities to strengthen the P/MDRRMC and P/MDRRMOs, including the designation of personnel with capacity building measures to implement the DRRM plans. Prevention/mitigation, preparedness, response and recovery/rehabilitation has been mainstreamed and integrated in the system. Linkages and collaboration were also strengthened among government agencies.

Although regular budget has been allocated through the 5 per cent IRA, there is still limited staffing for DRRM since personnel services cannot be charged to the 5 per cent IRA. It is recommended that the local governments seek other funding sources to compensate for this limitation. It is also recommended that the updating of the respective P/MDRRM Plans must adopt a science-based approach such as the Climate and Disaster Risk Assessment (CDRA) where several academic institutions in the Philippines are offering technical assistance as part of their extension services. Finally, it is imperative that Guimaras completes and adopts the Oil Spill Contingency Plan.

References

Buenavista MDRRM Plan
 Guimaras PDRRM Framework 2012
 Jordan MDRRM Plan
 Nueva Valencia Approved Annual Budget (Municipal Accounting Files)
 Nueva Valencia MDRRM Plan
 MDRRMC Sibunag Work and Financial Plan
 San Lorenzo MDRRM Plan
 Sibunag MDRRM Plan



Natural and Man-made Hazard Prevention and Management

016 Degree of vulnerability to disasters

Description

This indicator measures the degree to which populations are at risk of exposure to natural and man-made hazards, i.e., populations living within various multihazard zones.

Rationale

The greater the degree of potential exposure to natural and man-made hazards, the more that government and local communities should be prepared and must put in

place mitigation measures for disasters. Identification of the levels of threat from various hazards can also help focus preparations on the most relevant types of threat.

Data Requirements

- Availability of multihazard (landslides, storms, floods, etc.) map
- Number of people located in hazard-prone areas
- Number of people relocated or moved away from hazard-prone areas

Results

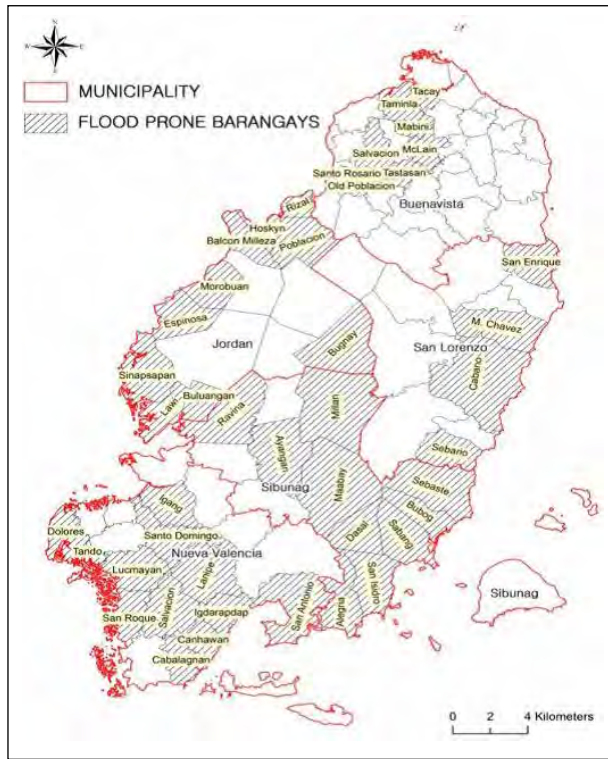
Being an island province, Guimaras is exposed to a number of natural and human-induced hazards. Major natural hazards identified included flooding and landslide that were aggravated by typhoons and monsoon rains, including storm surges and tsunamis. Guimaras is situated within the major maritime routes in Western Visayas. As such, human-induced hazards that the province is susceptible to included oil spill from maritime incidents resulting from transport of oil, vessel collisions, ship grounding, marine operations and from other sources.

Multi-hazard maps indicating the locations of hazard prone barangays have been prepared (Figure 14, Tables 31 and 32).

Multi-hazard and building footprints map has also been prepared to aid the local government in planning, public works and safety and taxation (Figure 15).

The National Mapping and Resource Information Authority (NAMRIA) conducted a nationwide mapping of low-lying areas (0-12 m elevation) and assessed the vulnerability at various sea level rise scenarios (0.5m, 1m, 2m and 3m). Figure 16 shows the areas in Guimaras Province that are vulnerable to sea level rise. The assessment showed that the municipalities and barangays located in the eastern side of the province are more susceptible to SLR compared to the western side.

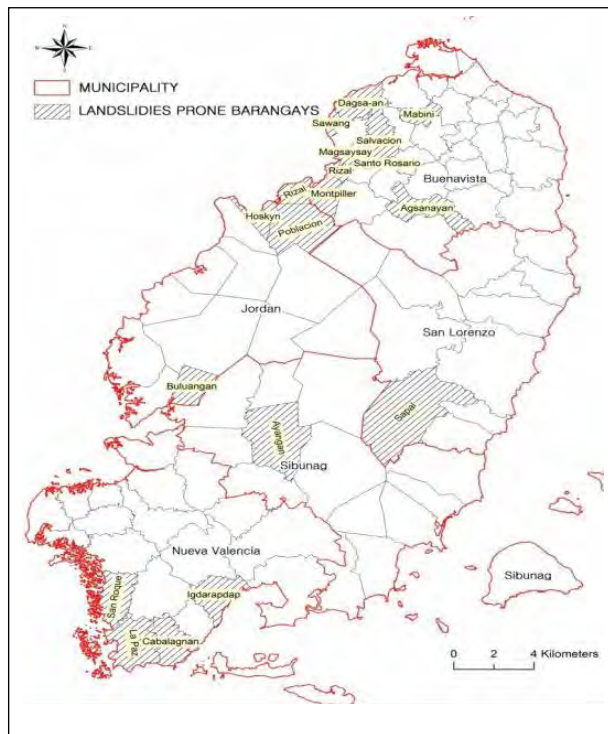
Figure 14. Hazard-prone barangays in Guimaras Province.



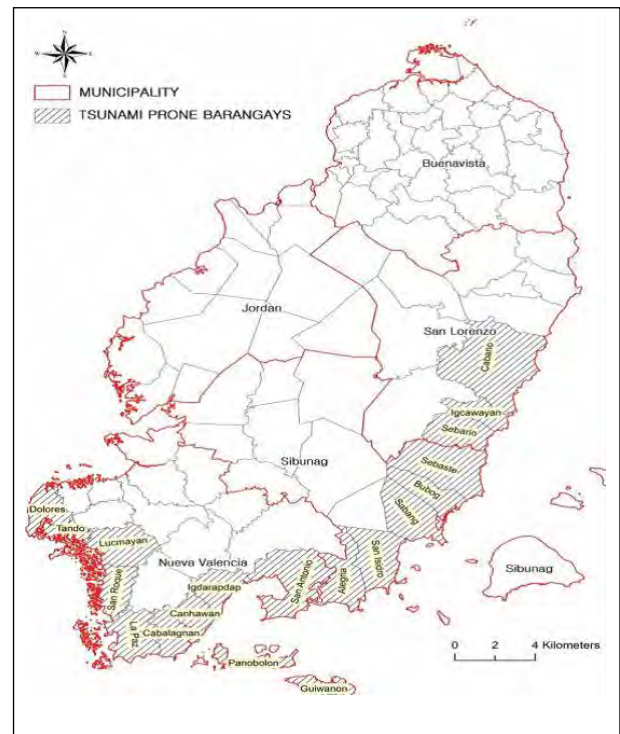
(a) Flood-prone barangays



(b) Storm surge-prone barangays



(c) Landslide-prone barangays



(d) Tsunami-prone barangays



Table 31. Hazard-prone barangays in Guimaras Province.

Municipality	Flood-prone	Storm surge-prone	Landslide-prone	Tsunami-prone
Buena Vista	Tacay	Umilig	Dagsa-an	
	Taminla	Tanag	Mabini	
	Mabini	Bacjao	Sawang	
	Mclain	Navalas	Salvacion	
	Salvacion	Tacay	Magsaysay	
	Sto. Rosario	San Miguel	Sto. Rosario	
	Tastasan	Sawang	Rizal	
	Old Poblacion	Zaldivar	Agsanayan	
		Magsaysay	Montpiller	
		Sto. Rosario		
		Rizal		
		Montpiller		
San Lorenzo	San Enrique	San Enrique	Sapal	Cabano
	M. Chavez	Suclaran		Igcawayan
	Cabano	M. Chavez		Sebario
		Igcawayan		
		Sebario		
Jordan	Rizal	Rizal	Rizal	
	Hoskyn	Hoskyn	Hoskyn	
	Poblacion	Poblacion	Poblacion	
	Balcon Melliza	Morobuan	Buluangan	
	Morobuan	Espinosa		
	Espinosa			
	Sinapsapan			
	Lawi			
	Buluangan			
	Ravina			
Bugnay				
Sibunag	Ravina	Sebaste	Ayangan	Sebaste
	Ayangan	Bubog		Bubog
	Millan	Sabang		Sabang
	Maabay	San Isidro		San Isidro
	Dasal	Alegria		Alegria
	Sebaste			
	Bubog			
	Sabang			
	San Isidro			
	Alegria			

Table 31. Hazard-prone barangays in Guimaras Province. (cont.)

Municipality	Flood-prone	Storm surge-prone	Landslide-prone	Tsunami-prone
Nueva Valencia	Igang	Igang	San Roque	Dolores
	Sto. Domingo	Magamay	La Paz	Tando
	Dolores	Pandaraonan	Igdarapdap	Lucmayan
	Tando	Dolores	Cabalagnan	San Roque
	Lucmayan	Sto. Domingo		La Paz
	Lanipe	Lucmayan		Igdarapdap
	San Roque	Tando		Canhawan
	Salvacion	San Roque		Cabalagnan
	Igdarapdap	La Paz		San Antonio
	Canhawan	Igdarapdap		Panobolon
	Cabalagnan	Canhawan		Guiwanon
	San Antonio	Cabalagnan		
		San Antonio		
		Panobolon		
	Guiwanon			

Table 32. Hazard-prone areas in the Municipality of Nueva Valencia.

Name of Barangay	Tsunami	Flood/storm surge	Typhoon	Landslide
Cabalagnan	High	High-Sitio Baybay	/	
Calaya			/	Moderate-Sitio Budhi-an, Calaya
Canhawan	High	High-Purok 1,2,3 & 4	/	
Napandong			/	
Pandaraonan	Low	Low-Sitio Baka	/	
Lanipe			/	High- Sitio Bantayan, lanipe
Igdarapdap	High	High-Sitio Proper	/	
San Antonio	High	High-Pandan	/	Low-Sitio Pandan
San Roque	High	High	/	
Lapaz	High	High	/	Moderate-4 Sitios(Sumirib,Lusong, Alman Norte & Luzaran)
Dolores	High	Sitio Tinuslukan-Moderate Sitio Banuyo-Low to Moderate	/	High- Sitio Guisi Low- Sitio Gumban
Tando	High	Moderate	/	
Lucmayan	High	Moderate	/	Moderate- Sitio Dungca-an
Igang	Low	High	/	
Poblacion	Low	Moderate	/	
Concordia			/	Low- Sitio Bungan2
Oracon			/	



Table 32. Hazard-prone areas in the Municipality of Nueva Valencia. (cont.)

Name of Barangay	Tsunami	Flood/Storm surge	Typhoon	Landslide
Guiwanon	High	High	/	
Panobolon	High	High	/	
Salvacion			/	
Sto. Domingo	Low	Low	/	Moderate-Sitio Bunlao
Magamay	Low	Low	/	Moderate- JNHS
Total No.	16	16	22	9

Figure 15. Multi-hazard and building footprints in Guimaras Province.

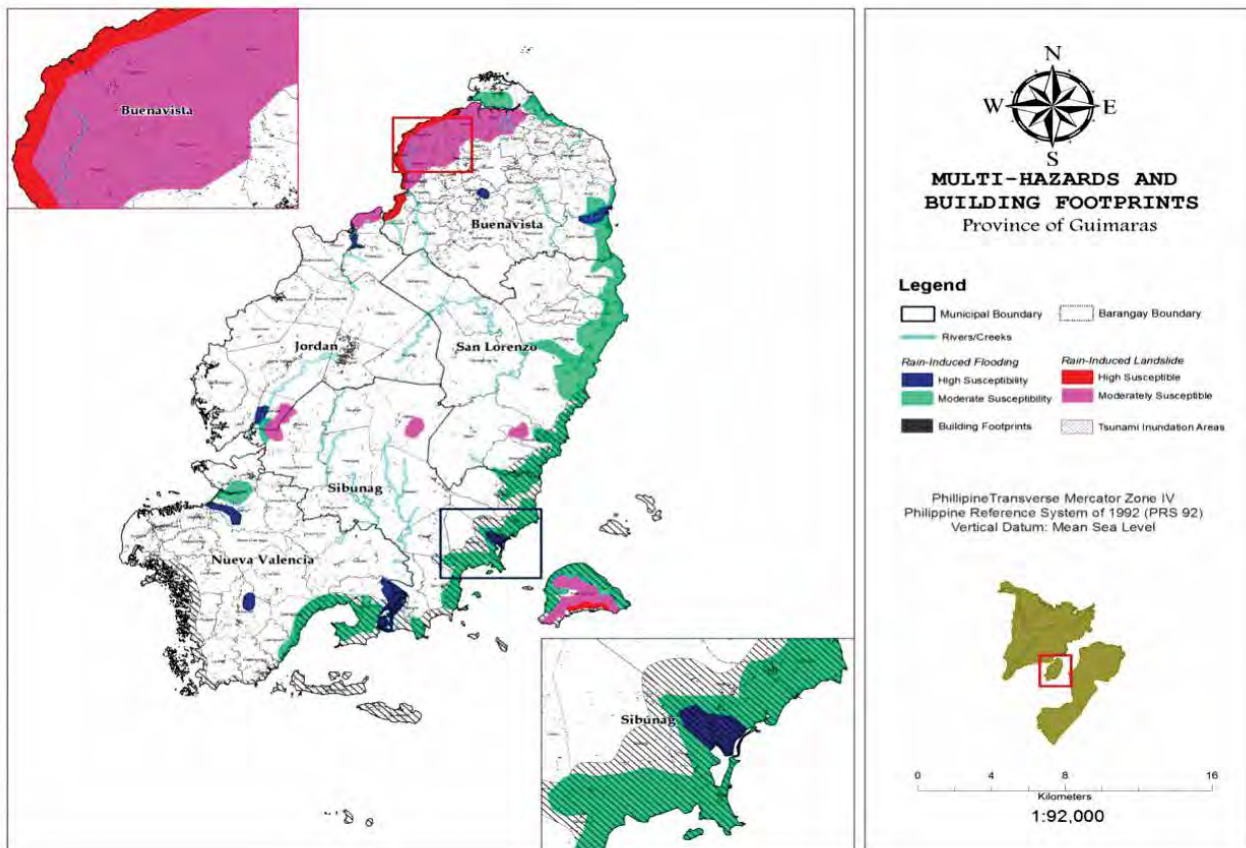
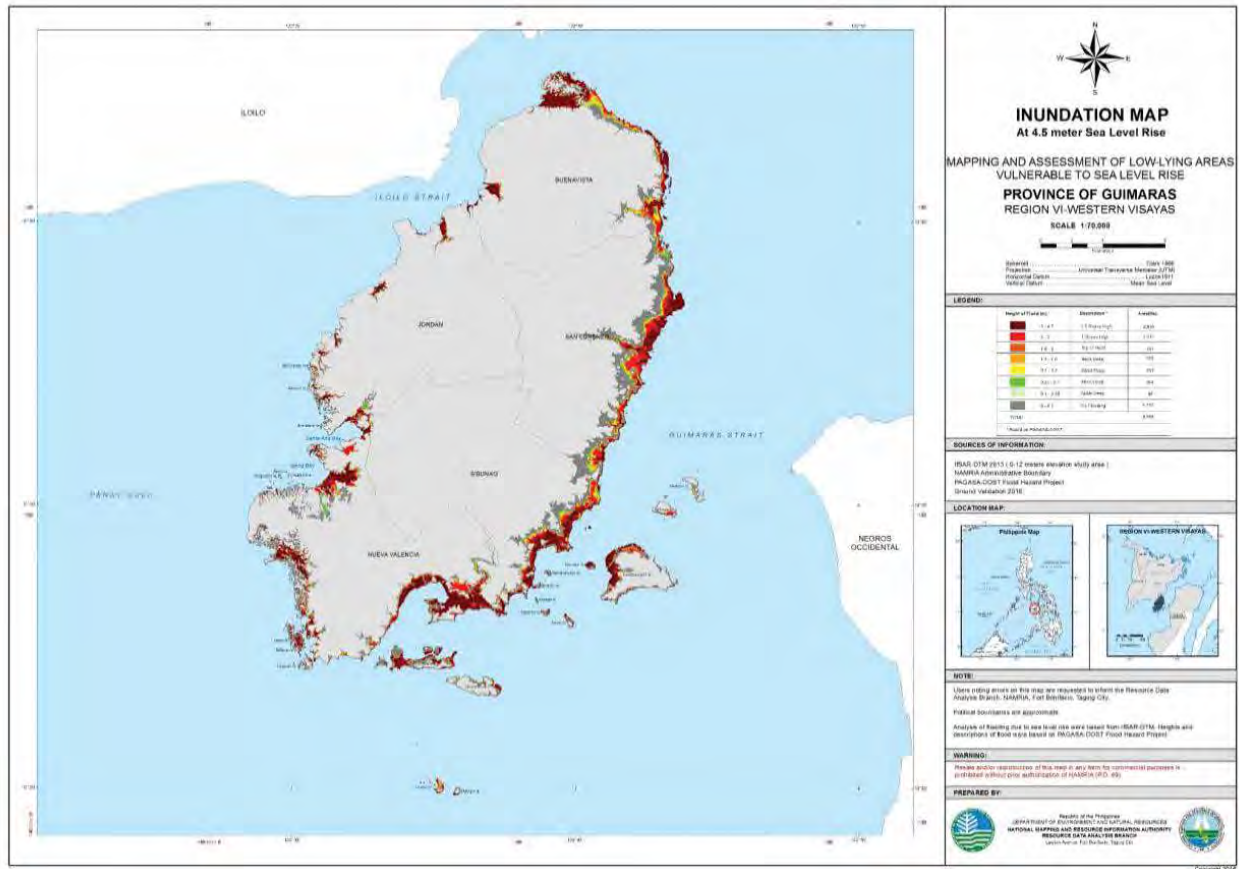


Figure 16. Inundation map of Guimaras Province.



Implications and Recommendations

National legislations such as the Climate Change Act of 2009 (RA 9729) and Disaster Risk Reduction and Management Act of 2010 (RA 10121) provide the necessary backdrop for the province and municipalities to review and evaluate the PDRRMP and MDRRMP, respectively, and facilitate the integration of DRR measures into the CDPs and CLUPs. The hazard maps developed and the results of various assessments are very important in the updating of the plans and programs of the local government.

The installation of early warning systems in areas that are identified to be potentially exposed to natural hazards like flood, landslide and tsunami ensures that the communities are notified in advance of impending threats in their areas.

It is important that the updating of the masterlist of households located in vulnerable areas is done regularly.

The five municipalities have formulated evacuation plans with prescribed actions to be taken before, during and after the disaster incident. Evacuation centers are also identified to serve as temporary shelters for families who are displaced and at risk during the disaster incident.

The province and municipalities must also continue their information dissemination drive by distributing flyers and leaflets to enhance the awareness of the residents of the different hazards that they are exposed to.

Finally, it is recommended that the PDRRMC conduct training and orientations as well as regular drills for the Barangays, in coordination with the Barangay Captains and engage the residents and communities in hazard mapping.

References

Guimaras DRRM framework plan
 Inundation map low-lying areas vulnerable to sea level rise, NAMRIA
 Natural and Man-made Hazard Prevention and Management



Natural and Man-made Hazard Prevention and Management

017 Social and economic losses due to disasters

Description

This indicator measures the population affected, deaths and economic losses due to each type of disaster (including the severity of the cause of disaster). It is a measure that integrates: (a) the level and location of hazards vis-à-vis

populations; and (b) the level of preparedness and response mechanisms that result in the frequency and severity of actual disasters.

Rationale

Disasters set back development and especially impacts those least developed. The number of deaths, people and property

affected are what hazard prevention and management ultimately aims to reduce.

Data Requirements

- Frequency of disaster incidents by type
- Number of people severely affected by natural/man-made disaster incidents
- Number of people that have died due to natural/man-made disaster incidents
- Total amount of economic losses due to natural/man-made disaster incidents

Results

Guimaras Province was affected by Typhoon Yolanda (international name Haiyan), the strongest typhoon so far that affected the disaster-prone country, when it made a landfall in November 2013. Economic losses in terms of infrastructure and agriculture were incurred although not as severe compared to the northern portion of Western Visayas and Eastern Visayas area, which was directly hit by the typhoon. No casualties were recorded (Table 33).

The PAGASA Weather Outlook of September 2015 indicated that Guimaras Province was one of the provinces affected by drought due to El Niño phenomenon starting on the last quarter of 2015 until the second quarter of 2016. For the period December 2015 – March 2016, it was observed and monitored that the temperature in the

province ranged from 30°C Celcius to 33°C, which is 2°C more than the average temperature recorded before this period. The PDRRMC received reports of water shortages from almost all barangays and schools during this period. Damages to agriculture, fishery, livestock and environment were reported and two municipalities (San Lorenzo & Nueva Valencia out of five were affected). In March 2016, the province was declared under a state of calamity through Resolution No. 40, Series of 2016 due to the impacts of El Niño phenomenon.

Among the human-induced hazards, fire incidents, which coincided with the occurrence of El Niño phenomenon were recorded.

Table 33. Economic losses due to disaster.

Type of disaster	Date occurred - date ended/ period covered	Municipality	Number of persons affected	Casualties	Total economic loss					
					Infrastructure	Crops	Livestock	Fisheries/ Aquaculture	Total	
Typhoon Yolanda	November 8, 2013	Buenavista	3,870	0						
		Jordan	1,117	0						
		Nueva Valencia	2,206	0						
		San Lorenzo	2,756	0	4	Banana 3000 hills Papaya 1,500 hills Mango 62 trees Jackfruit 120 trees Rice 78 hectares Corn 2 has.		1 ha. submerged		
		Sibunag	1,644	0						
Total			11,593	0	PhP 32,400,000	PhP 6,824,200	PhP 6,000	PhP 1,980,000	PhP 41,210,200	
El Niño Phenomenon	March 2016	Buenavista	Rice: 831 Corn: 26							
		Jordan	Corn: 12							
		Nueva Valencia	Corn:3 Rice: 953							
		San Lorenzo	Corn:9 Rice: 760			Rice Fields: 925 has., Cash crops, Banana and Orchards: 30 has.	1,000,000	4,200 Milkfish pieces	PhP 39,000,000	
		Sibunag	Rice: 884 Corn:2			Rice (Based on Cost of input: 5,297,528.00 Rice (Based on Farm Gate Price): 29,166,900.00		Seaweed: 480,850.00 Milkfish: 59,760.00		
Total					PhP 114,318,659.50					
Fire Incidents (Residential)	4th Quarter of 2015	Buenavista	3 (cases)						PhP 50,000	
		Jordan	3 (cases)						PhP 137,000	
		Nueva Valencia	1 (case)	3					PhP 165,000	
		San Lorenzo	1 (case)						PhP 1,600	
		Sibunag	-						-	
	Total		8 (cases)						PhP 353,600	
	1st Quarter of 2016	Buenavista	None							-
		Jordan	4 (cases)							PhP 82,000
		Nueva Valencia	3 (cases)							PhP 119,000
		San Lorenzo	4 (cases)							PhP 110,000
Sibunag		1 (cases)							PhP 150,000	
Total								PhP 461,000		





Sibunag Relief Operations during Typhoon Yolanda.



Sibunag Relief Operations during Typhoon Yolanda

Implications and Recommendations

Records showed that the number of people affected and the economic losses due to disasters was lesser compared to previous data. Disaster planning and preparedness in this case can be considered as operationally and functionally active in Guimaras.

It is recommended that the province and municipalities further improve the recording system and harmonize the reporting format to facilitate consolidation. It is also recommended that the Road Safety Plan be integrated into the DRRM Plan to include safety measures for road accidents.



Habitat protection, restoration and management

018 Habitat management plan and implementation

Description

This indicator measures the availability of plans, people, and budget to manage coastal habitats and heritage.

Rationale

Coastal habitats serve as critical life-support systems for a multitude of aquatic living resources. The quality of these habitats must be maintained and improved to sustain their benefits. Local governments need to identify specific

strategies and action plans for habitats and the means to implement these action plans indicate the degree to which habitats will be effectively managed.

Data Requirements

- Availability of habitat management plan
- Staff and budget allocation for habitat management

Results

The five municipalities have crafted their Coastal and Fisheries Resource Management Plans with support from PRDP that included protection and rehabilitation of coastal ecosystems such as mangroves, seagrass and coral reefs.

DENR, in collaboration with the province and five municipalities, has initiated the development of the Forest Land Use Plan for the period 2017-2026. The FLUP aims to

formulate and identify management zones for production and protection of forest resources in Guimaras and develop a proposed land use plan for this purpose. The FLUP will serve as road map for the management of forest and forest lands of the province.

DENR has also initiated the development of Guimaras Provincial Foreshore Development and Management

Plan for the period 2017-2025. The plan aims to provide guidance for the future use, development and management of the foreshore areas of the province in support of inclusive growth and efficient utilization and management of resources.

The province is also a recipient of support from DENR for the implementation of the Coastal and Marine Ecosystem Management Program (CMEMP), a National Program which aims to comprehensively manage, address and reduce

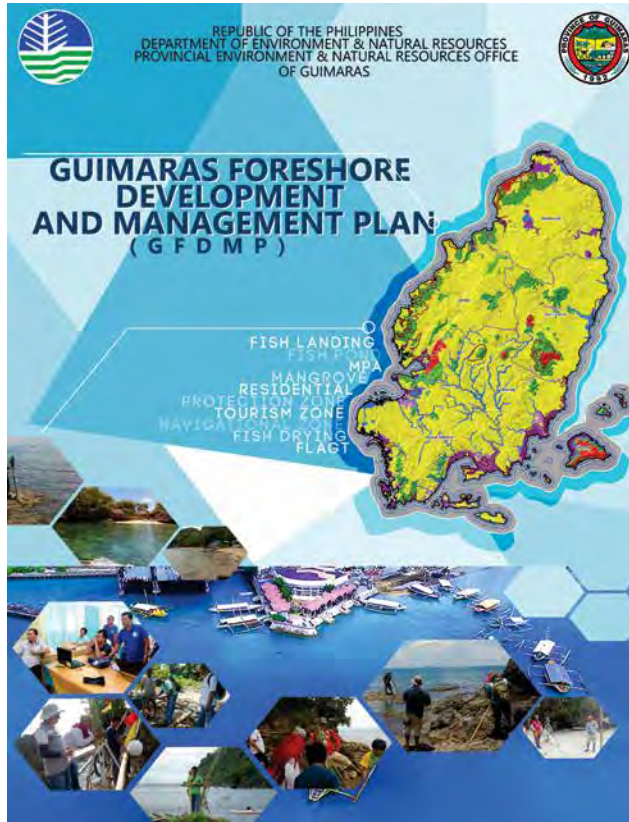
the threats to the coastal and marine ecosystems through various measures, including the establishment and protection of marine protected areas.

Table 34 shows the staff allocation and budget for habitat management. It can be noted that the province and 4 municipalities have received technical assistance and support from the US Peace Corps Volunteers, particularly in the conduct of habitat assessments and MPA management.

Table 34. Staff and budget allocation for habitat management.

Local government unit	Staff allocation (2017)	Budget allocation (Php)
Province	Coastal Resource Management Section: 1 Project Development Officer III 2 Project Development Officer I 1 Aquaculturist II 1 Agriculturist II 1 Planning Officer II 1 US Peace Corp Volunteer (2014-2015) 2 Job-Hired	2015: 550,000.00 2016: 600,000.00 2017: 1,200,000.00
Buenavista		2015: 500,000.00 (Coastal Resource Management Program) 2016: 116,000.00 (Improvement of Municipal Nursery & Tree Planting)
Jordan	1 AT 1 US-PCV (2010-2012, 2015-2017)	2010: 15,000.00 (Tree Planting/Nursery); 65,000.00 (Mangrove Rehabilitation) 2011: 25,000.00 (Tree Planting/Nursery); 100,000.00 (Mangrove Rehabilitation); 50,000.00 (MPA Management) 2012: 15,000.00 (Tree Planting/Nursery); 10,000.00 (MPA Management) 2013: 277,000.00 (Tree Planting/Nursery) 2014: 48,736.00 (Construction of Nursery) 2015: 20,000.00 (Tree Planting/Nursery); 250,000.00 (20% DF: Construction & Development of Concrete ARs) 2017: 30,000.00 (Tree Planting/Nursery); 350,000.00 (MPA Management)
Nueva Valencia	1 AT-Coordinator 1 Bantay Dagat Action Officer 3 AEW 1 Encoder 1 US-Peace Corps Volunteer, CRM Program (2010-2012, 2015-2017)	2011: 50,000.00 (Support to IBMS); 2012: 3,000.00 (Continuous monitoring of oil spill affected areas) 2015: 30,000.00 (Municipal Plant Nursery Development) 2016: 30,000.00 (Municipal Plant Nursery Development) 2017: 30,000.00 (Municipal Plant Nursery Development)
San Lorenzo	1 AT-Coordinator 1 Bantay Dagat Action Officer 1 US-Peace Corps Volunteer (2017) 2 MPA Managers (shifting) 4 Fish Wardens	2012: 400,000.00 (Reforestation of Upland & Coastal Areas including rehabilitation of riverbanks & watershed areas) 2013: 120,000.00 Development of Fish Sanctuary 2014: 130,000.00 Development of Fish Sanctuary 2017: 30,000.00 (Operation of MMPAMB); 1,000,000.00 (Maintenance of Marine Protected Area Facilities); 180,000.00 (Tumalintinan Point MPA); 50,000.00 (Maintenance of Municipal Nursery)
Sibunag	1 Acting Municipal Agriculturist 1 Agricultural Technologist I 4 Fish Wardens	2010: 50,000.00 (Establishment of MPA) 2012: 100,000.00 (Support to Municipal Nursery) 2013: 50,000.00 (Support to Municipal Nursery); 50,000.00 (Establishment of MPA) 2015: 80,000.00 (Operation of Marine Protected Area) 2016: 80,000.00 (Operation of Marine Protected Area) 2017: 40,000.00 (Operation of Marine Protected Area)





Guimaras Foreshore Development and Management Plan



Habitat Assessment Training for Balcon and Lawi MPA Monitoring Team, August 15-16, 2017 (Photo credit: DENR PENRO)



Habitat Assessment Training for Tan-Luc MPA Monitoring Team, July 5-6, 2017 (Photo Credit: DENR PENRO)

Implications and Recommendations

Significant improvements can be noted in terms of availability of plans, people and budget with support from various partners to step up efforts in managing the coastal and marine resources of the province.

While the support provided by various partners, including DENR, in the development of FLUP and GPFDM, is commendable, it is necessary that these plans are mainstreamed into the plans and programs of the province and municipalities to ensure that the proposed interventions and measures are harmonized and taken into consideration by the local government.

While budget and staff are available to facilitate coordination of the implementation of the approved and adopted coastal resources and fisheries management plans and other plans, there is huge potential for securing external sources of financial and technical support. Through the adopted plans, the province and municipalities can show to potential partners how their support can contribute to achieving the goals and objectives of managing the coastal habitats and resources and, ultimately, to the well being of the coastal communities.

Reference

Approved ICM Program Proposal (2015-2017)
Nueva Valencia Approved Annual Budget (2010-2017)



Habitat protection, restoration and management

019 Areal extent of habitats

Description

This indicator measures the area of various natural habitats (coral reefs, seagrass beds, mangrove forests, beaches, forests, urban green areas).

Rationale

Natural habitats and associated species help sustain products and services that support and benefit human

activities. The extent and condition of various habitats also indicate the populations of associated species.

Data Requirements

- Total area (km²) of coastal habitats (coral reef, seagrass, mangrove, natural beach, forest (excluding mangrove), and urban "green" area)

Results

The Forest Land Use Plan includes an estimate of the forest and forestland cover of Guimaras, which is placed at 5,459.40 hectares and are located in fifty-three barangays. The plan primarily focuses on the forest and forestland that are categorized as protection and production areas. The protection area, which is characterized by high biodiversity of forest and mangrove species, areas with aesthetic and natural landscape and unclassified forest lands (islands and

islets) and riverbanks cover 3,611 hectares. The production area on the other hand, which covers 1,848.40 hectares are slated mainly for production of fuel wood, agro-forestry using high valued crops and fishpond development. Table 35 shows the vegetative cover of Guimaras Province in 2017.

The Guimaras Foreshore Development and Management Plan on the other hand, estimated the foreshore at 212.515

km in total length and an area of 960.3221 hectares, excluding islets and islands. Various land uses observed in the foreshore area included facilities and structures, as well as settlements, including fishponds, fish landings, wharfs/ports and beach resorts. Habitats covered included mangroves, cliffs, and sandy beaches.

The DENR-PENRO Guimaras has implemented the National Greening Program in 2011-2017, which included mangrove rehabilitation and upland reforestation covering a total area of 570 hectares and 1, 033.8 hectares, respectively. The upland reforestation included forest trees, fruit trees and fuel wood commodities.

NAMRIA conducted a nationwide coastal resource mapping and assessment in 2012-2016 with the aim of updating the maps on coastal resources covering mangroves, corals, seagrasses and substrate (i.e., rocky or sandy bottom) through the application of remote sensing and GIS and complemented with field validation and surveys (Figures 17 and 18). Guimaras Province was included in the first cycle of mapping and assessment. An estimate of the area

covered by these resources will be made available once the field validation is completed.

The province has established partnership with academic institution like UPV, JBLFMU and GSC to undertake assessments and monitoring of coastal habitats, especially in the established MPAs. Figures 19 to 22 show the results of assessments for corals, mangroves, seagrass and the associated fish densities in 10 MPAs for the years 2015, 2016 and 2017.

Through the CMEM program of DENR, coastal habitat assessment and mapping were also undertaken in the priority MPA sites covered by the program

Finally, a collaborative project between the province, the Municipality of Buenavista and GSC, focusing on mangrove assessment in the coastal barangays using qualitative description of the cover ranging from fair to excellent was conducted in (2014). The results showed that majority of the areas covered has good mangrove cover (Table 38).



Table 35. Vegetative cover of Guimaras Province in hectares (2017).

Vegetative cover/Land-use	Land Classification				Total
	*FL (Upland)	*FL (Fish Pond)	*FL (Mangrove)	Unclassified	
Brushland/Grassland	308.92	20.825	4.887	26.856	246
Built-up Area	21.964	9.418	1.467	34.742	67.59
Coconut Plantation	40.884	1.793		351.52	394.16
Fishpond	12.919	775.637	49.936	53.201	891.69
Mangrove	4.631	122.426	142.723	293.702	563.48
Mixed Plantation	1039.561	64.011	39.174	940.512	2083.26
Non-plantable area	1.828	2.171	2.484	81.505	877.99
Open cultivated	79.926	5.273	0.457	7.37	93.03
Rice paddies	88.763	117.462	11.259	34.765	252.25
Water Bodies		4.562	7.07	24.57	36.20
Woody Shrubs	616.417	10.289	1.566		628.27
Total	2,215.77	1, 133.87	261.02	1,848.74	5459.41

* FL - Forest Land

Figure 17. Coastal resource map of Guimaras Province.

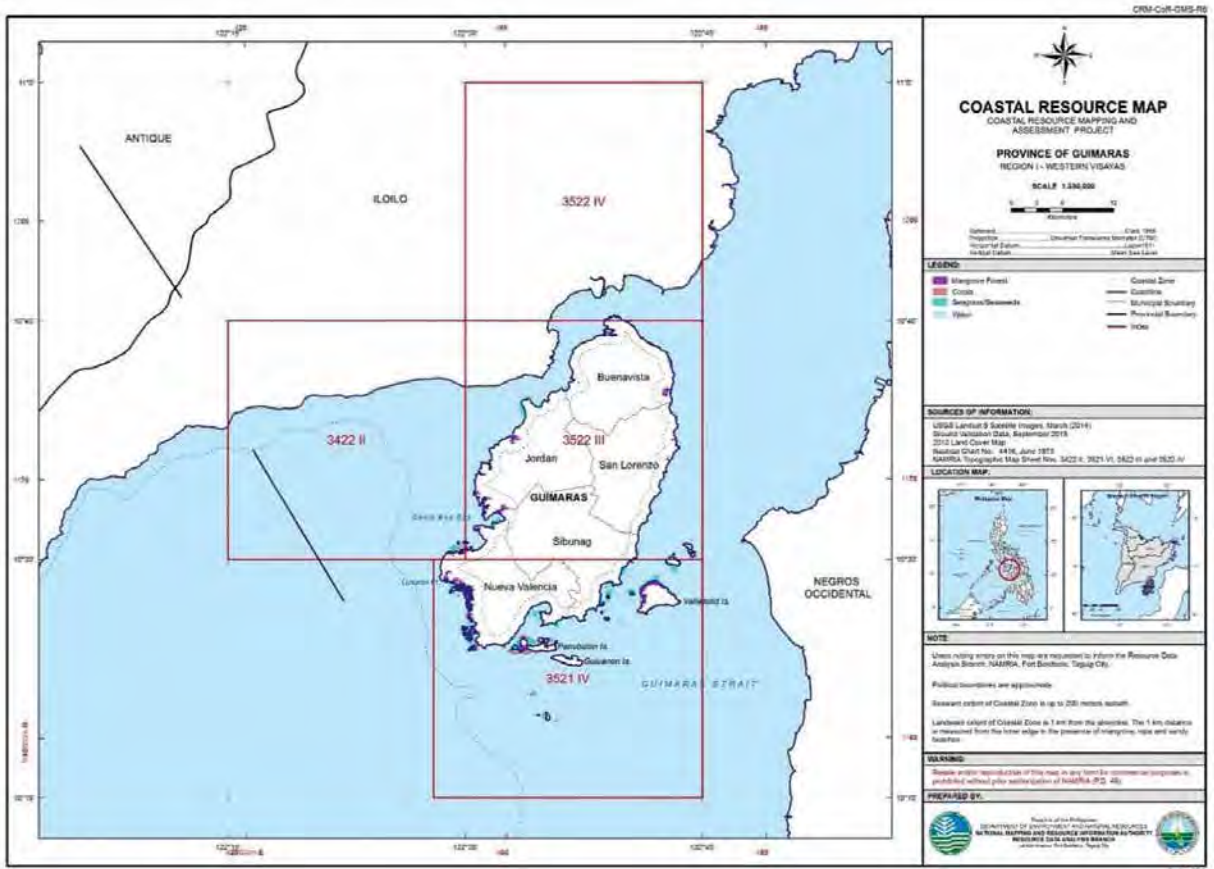


Figure 18. Coastal resource map of the Municipality of Nueva Valencia.

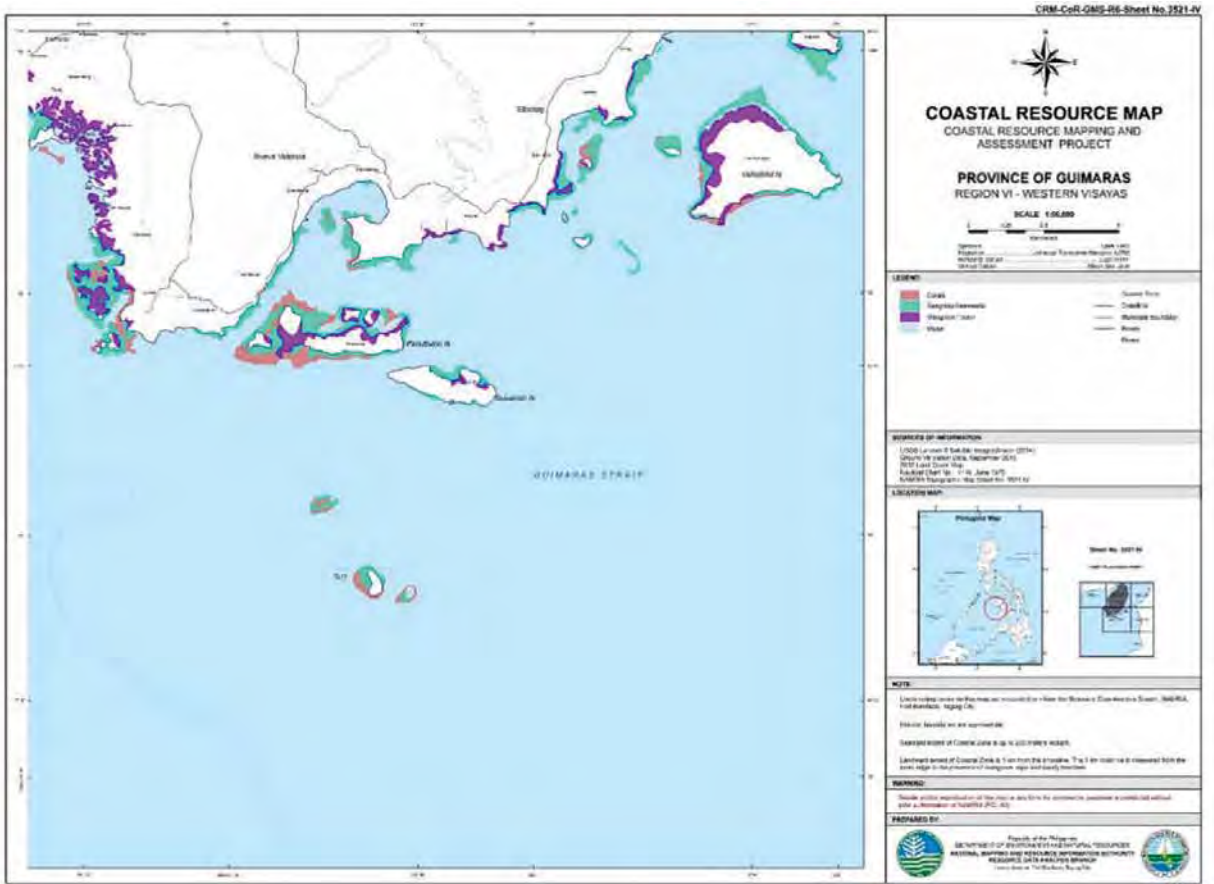


Figure 19. Fish density in selected marine protected areas in Guimaras Province.

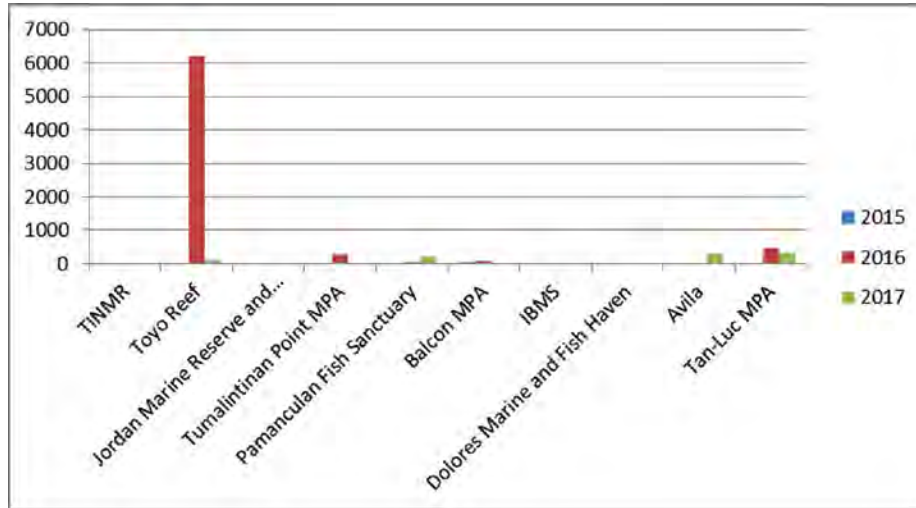


Figure 20. Coral cover in selected marine protected areas in Guimaras Province.

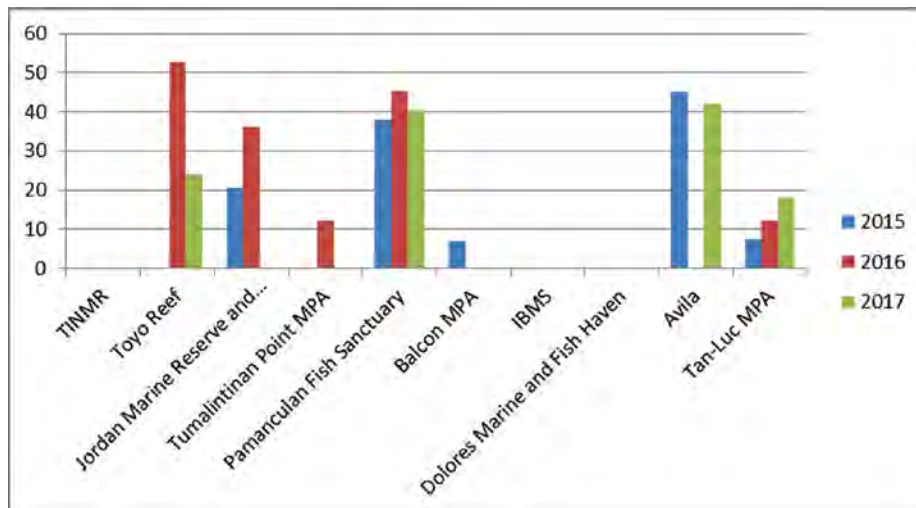


Figure 21. Seagrass cover in selected marine protected areas in Guimaras Province.

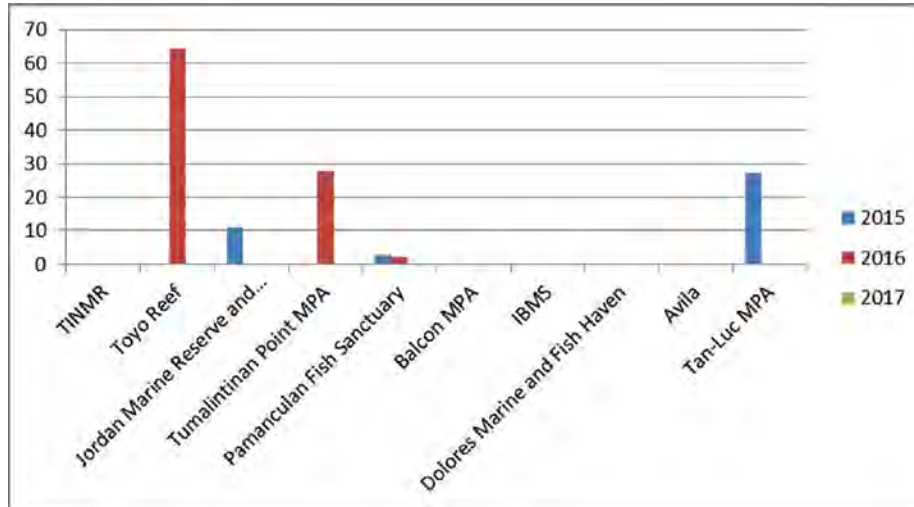


Figure 22. Mangrove cover in selected marine protected areas in Guimaras Province.

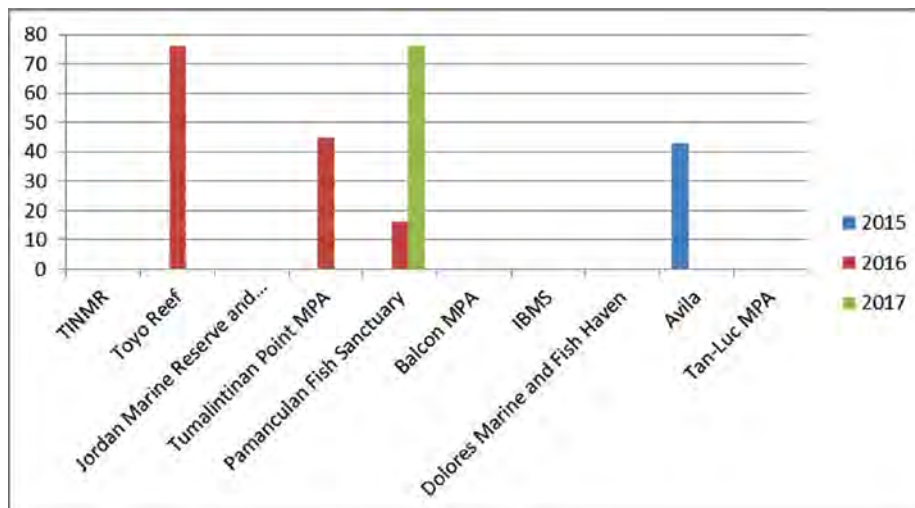


Table 36. Inventory of foreshore areas with applications (DENR-PENRO) (2016).

Number	Name of applicant	Foreshore lease application/ Miscellaneous lease application number	Area (has)	Location	Date of application	Within timberland/ Alienable and disposable	Remarks (stage of the application process)
1	Ma. Irene Joyce Poncy	PPA-063033-01	0.7300	Poblacion, Nueva Valencia, Guimaras	June 16, 2016	Adjoining A & D	For completion of supporting documents
2	Lourdes S. Rainey	PPA-063033-02	0.0400	Poblacion, Nueva Valencia, Guimaras	June 16, 2016	Adjoining A & D	For completion of supporting documents
3	Enrico D. Lim	PPA-063011-03	0.0500	Zaldivar, Buenavista, Guimaras	June 16, 2016	Adjoining A & D	For completion of supporting documents
4	Vicente J. Estaya	PPA-063033-04	0.1190	Poblacion, Nueva Valencia, Guimaras	June 16, 2016	Adjoining A & D	For completion of supporting documents
5	Domingo Vilches	PPA-063048-05	0.0979	San Enrique, San Lorenzo, Guimaras	June 16, 2016	Adjoining A & D	For completion of supporting documents
6	Jocelyn C. Mcdougal	PPA-063048-06	0.1660	San Enrique, San Lorenzo, Guimaras	August 15, 2016	Adjoining A & D	For completion of supporting documents
7	Venus Escañan	PPA-063049-07	0.0500	Sabang, Sibunag, Guimaras	September 2, 2016	Adjoining A & D	For completion of supporting documents
8	Ninfa G. Galan	PPA-063024-08	0.0053	Espinosa, Jordan, Guimaras	October 11, 2016	Adjoining A & D	For completion of supporting documents
9	Ninfa G. Galan	PPA-063024-09	0.0264	Espinosa, Jordan, Guimaras	October 11, 2016	Adjoining A & D	For completion of supporting documents
10	Jumbo Fishing Corporation	MLA-063024-02	0.8150	Rizal, Jordan, Guimaras	April 15, 2014	Adjoining A & D	For Bidding

Table 37. Foreshore areas with permits (DENR-PENRO) (2016).

Occupant/ Applicant	Location	Survey number	Area (sq.m.)	Classification	Lease/Permits titles	Application number	Use	Remarks
Teopisto Guingona, III	San Miguel, Buenavista	FLI No. 063011-000001-D	30,911	Foreshore	Lease Contract	FLA-063011-01	Commercial	Deliquent
La Filipina Uygongco Corporation	Rizal, Jordan	MLC-063024-000001	22,409	Foreshore	Lease Contract	MLA-063024-01	Industrial	Active
Guimaras Docks & Repair Services	Dagsaan, Buenavista	FLI-06-01-000023-A-D	6,536	Timberland	Lease Contract	FLA No. (V-I) 32-A	Wharf	For assessment, projection & conversion to FLAG



Table 38. Status of mangrove resources in the Municipality of Buenavista (2014).

Area/Location	Number of parameters rated as "excellent"	Description
Getulio	2	Good
Umilig- Area 1	2	Good
Umilig- Area 2	3	Excellent
Avila	1	Fair
East Valencia- Pagatpat	2	Good
East Valencia- Mampay	1	Fair
Taminla	2	Good
Montpillar	2	Good

Scale: Excellent - 3 and above parameters having conditions rated as "excellent";
 Good - 2 parameters having conditions rated as "excellent";
 Fair - 1 parameter having conditions rated as "excellent";
 Poor - no parameter having conditions rated as "excellent".



Tree planting activity at So. Kati-kati, San Miguel, Jordan, Guimaras during Arbor Day celebration.

Implications and Recommendations

Significant amount of data and information on the areal extent of coastal habitats and forest resources have been generated through the collective efforts of the province and municipalities and their various partners. The data generated are important in monitoring the improvements in areal extent as well as status and conditions of the critical habitats and their associated species as a result of management interventions.

It can be noted that the province and municipalities have better access to data and information on coastal and marine

resources. There is a need to consolidate these data and information and store them in a centralized database such as the IIMS to support the monitoring and reporting process of the local governments and more importantly, in planning and updating of management plans.

There is also a need to standardize the methodologies used in the mapping and assessments of habitats for purposes of comparability and consolidation. Training of concerned staff and local stakeholders on various tools for habitat assessment and monitoring is key.

References

- Coastal Resource Map, NAMRIA
 Forest Land-Use Plan, Province of Guimaras
 The Status of Mangroves among Coastal Barangays In Buenavista, Guimaras, Lilian Diana B. Parreno, Jo Ann T. Gerada, Ethel P. Junco, Nenita G. Morada, Reilyn Crispe (GSC), Juneline S. de la Cruz, Arlette T. Depamaylo (GENRO, Guimaras), Gerald Gamo (LGU-Buenavista), Tyler D. Hassig (Peace Corp Volunteer-Consultant)



Habitat protection, restoration and management

020 Protected areas for coastal habitats and heritage

Description

This indicator measures the area of coastal habitats and heritage effectively protected from degradation, as well as the extent of rehabilitation.

Rationale

The protection of coastal habitats and heritage reflects the commitment of local governments to prevent habitat loss and

degradation. The protection of these habitats helps sustain the environmental, social and economic benefits derived from them.

Data Requirements

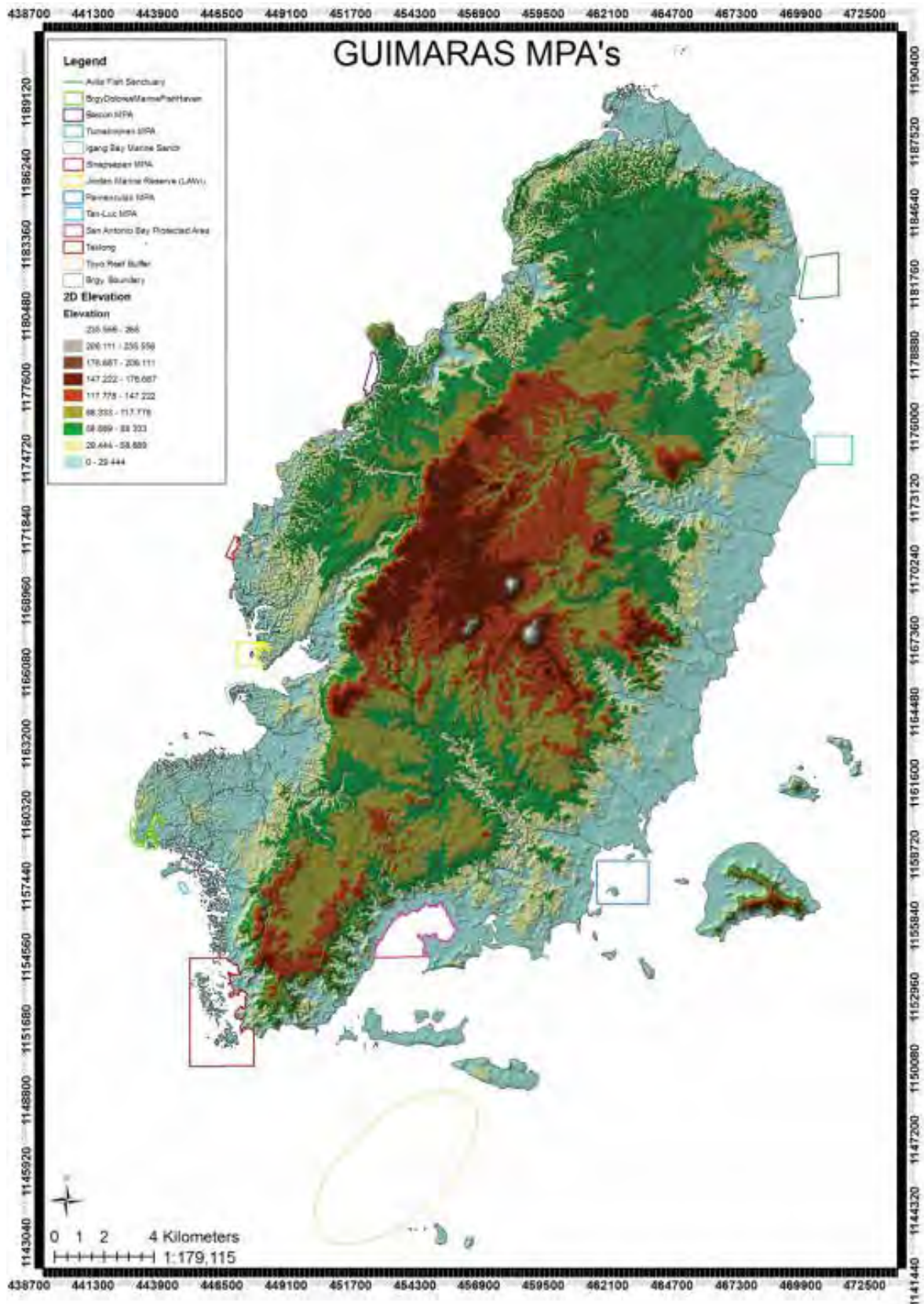
- Number and area of terrestrial, marine and coastal heritage areas protected by law
- Management effectiveness rating of terrestrial, marine and coastal heritage protected areas
- Natural areas rehabilitated (km²)

Results

As of 2017, there are eleven marine protected areas (MPAs) established in the five municipalities of Guimarães (Figure 23). Ten of the eleven MPAs have drafted their management plans, and all ten have been approved. The MPA

management plans covered the management, restoration, conservation, and protection of the habitats within the MPA boundaries. The eleven MPAs cover an estimated total area of 2,633.726 hectares (Table 39).

Figure 23. Marine protected areas in Guimaras Province.



Habitat Protection, Restoration and Management

Protected areas for coastal habitats and heritage



Table 39. Marine protected areas in Guimaras Province.

Name of MPA	Area (has.)	Location	Legal instrument
Taklong Island National Marine Reserve	1,143.45	Nueva Valencia	Presidential Proclamation No.525, 1990
Toyo Reef Marine Sanctuary	314.00	Nueva Valencia	Ordinance No. 03, 1994
Jordan Municipal Marine Reserve and Sanctuary for All Marine Life including Sea Turtles	84.90	Brgy. Lawi, Jordan	Ordinance No. 2016-006,2016
Balcon Marine Protected Area for Marine Life	16.25	Balcon, Jordan	Ordinance No. 2012-005, 2012
Tumalintinan Point MPA	303.49	San Lorezo	Ordinance No. 03, Ss.2015
Pamanculan Fish Sanctuary	362.73	Sibunag	Ordinance No. 52 Ss, 2014
Tan-Luc Marine Protected Area	100.00	Nueva Valencia	Ordinance 4, Ss.2012
Igang Bay Marine Sanctuary	38.136	Nueva Valencia	Ordinance No. 02, Ss. of 2016
Barangay Dolores Marine Fish Haven	56.51	Nueva Valencia	Ordinance No. 2, Ss. of 2014
Avila Marine Sanctuary	189.8	Buenavista	Ordinance No. 256, Ss. 2014
Barangay Sinapsapan Marine Protected Area	24.46	Jordan	Ordinance No. 2017-004, 2017
Proposed			
San Antonio Bay		Nueva Valencia	

The establishment of the Pamanculan Fish Sanctuary in Sibunag in 2014 and Tumalintinan Point in San Lorenzo in 2015 received technical and financial support from the Yeosu Project. PEMSEA is providing additional financial support for the continuation of habitat assessment and fish visual census at the two MPAs, including water quality monitoring.

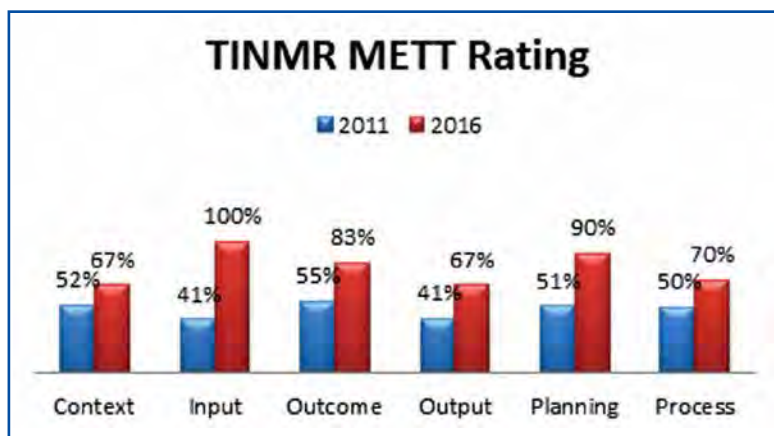
The establishment of the four MPAs including Balcon MPA, Tan-Luc MPA and Avila Marine Sanctuary and the

Sinapsapan MPA on the other hand were assisted by the US Peace Corps Volunteers and the Philippine Business for Social Progress (PBSP). The conduct of MEAT and METT in eight MPAs and assessments and monitoring of the coastal habitats within the MPAs were likewise assisted by the US-PCV, DENR PENRO, JBLFMU and UPV through PRDP. MEAT and METT assessments for five MPAs, including TINMAR yielded very good results. For TINMAR in particular, the METT ratings in 2016 showed improvements in all categories as compared to the 2011 ratings (Table 40 and Figure 24).

Table 40. Results of MPA management effectiveness assessments for selected MPAs in Guimaras Province.

Name of the MPA	Assessment result		Level attained	Remarks
	MEAT Score	METT Score		
IBMS		62 (2016: GIZ)	3	Management is 62% effective
Pamanculan Fish Sanctuary	56.52 (2017 ;DENR)		Established transitioning to Strengthened	Very Good
Tumalintinan Point MPA	61.53 (2017 ;DENR)		Strengthened transitioning to Sustained	Very Good
TINMR		79.5 (2016: GIZ)	3	The increase was observed across all the elements of the evaluation
Avila Marine Sanctuary	28.6 (2015; Hassig)		0-Initiated	Fair
Balcon MPA	28.6 (2015; T. Hassig)		0-Initiated	Fair
Tan-Luc MPA	39.3 (2015; T. Hassig) 69 (2017; DENR)		1-Established	Good Very good
Barangay Dolores Marine and Fish Haven	50 (2017 ;DENR)		0-Initiated	

Figure 24. Taklong Island National Marine Reserve METT rating.



There are also terrestrial protected areas located in the five municipalities of Guimaras covering an area of close to 800 hectares (Table 41).

The upland reforestation project, watershed and riverbank rehabilitation, coral gardening and mangrove plantation development all contributed to increasing the natural areas that are rehabilitated (Tables 42 and 43). The seedlings

planted under the National Greening Program, which covered an area of 570 hectares, ranged from 84 to 100 per cent.

Through the CMEM program of DENR, the Guimaras Alliance of Protected Areas and Sanctuaries (GAPAS) was formally established on 4 April 2017, where a Memorandum of Agreement was signed by the parties to the Alliance.

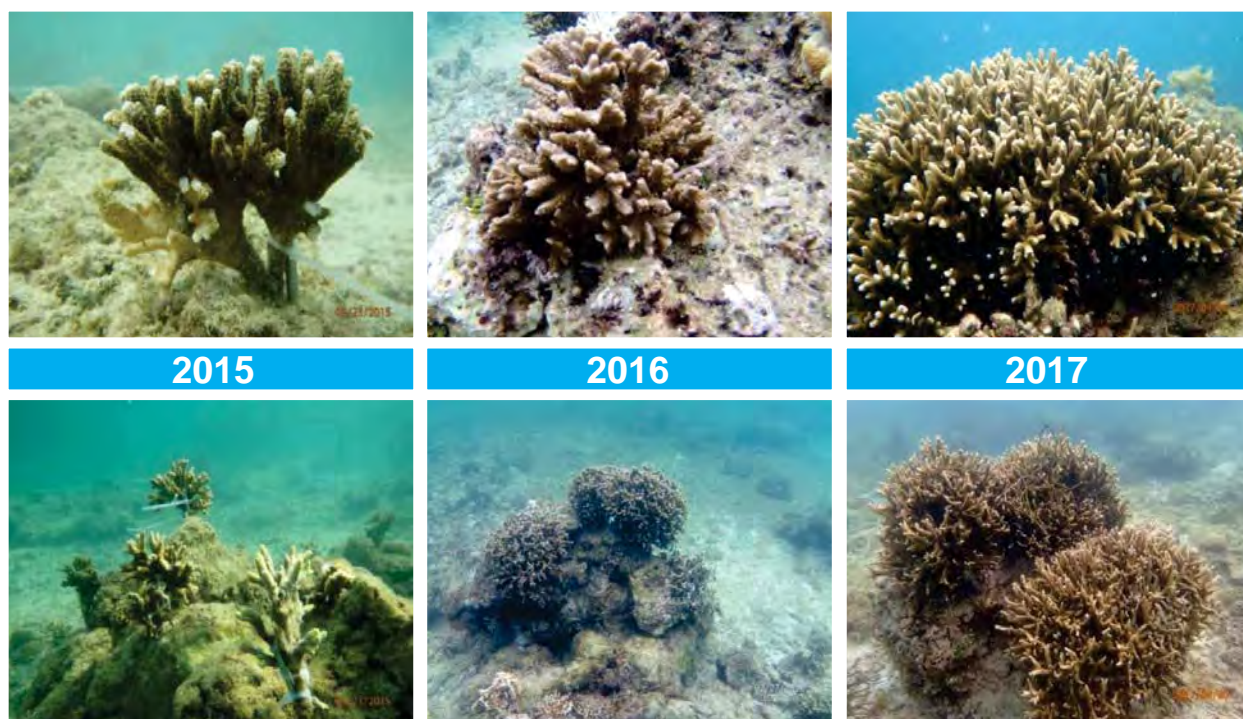
Table 41. Terrestrial protected areas in Guimaras Province.

Name	Location	Area (has.)	Legal instrument
Dagsaan Eco Park	Dagsaan, Buenavista	30	CBFM Agreement
Provincial Tree Park	San Miguel, Jordan	21	Ordinance No. 1, Series of 2002
Surarik Watershed (Municipal Forest Park)	Nueva Valencia		Ordinance No. 01, Series of 2002
Mangrove Plantation Development (DBP Mangrove Forest)	Brgy. Panobolon, Nueva Valencia	26.46	Mun. Resolution No. 115, 2005
Community-Based Forest Management	Hoskyn, Jordan	2.896	DAO No. CBFM Agreement/ E.O. 263, 1995
	Cabaling, Jordan	90	
	Constancia, San Lorenzo	66	
	Sapal, San Lorenzo	90.6	
	Taminla, Buenavista	240	
	Dagsaan, Buenavista	133.73	
	Alegria, Sibunag	11.54	
	So. Baybay, Brgy. Sabang, Sibunag	9.7	
	San Isidro, Sibunag	33.17	
	Sebaste, Sibunag	4.42	
	Dolores, Nueva Valencia	6.37	
	Tando, Nueva Valencia	19.04	
	So. Dungcan, Lucmayan, Nueva Valencia	10.52	
Igang, Nueva Valencia	4		





Nipa planting at Barangay Alegria for Sibunag Riverbank Stabilization Project (2015-2016).



Establishment and monitoring of Coral Gardening Demonstration Site at Tan-Luc MPA (2015-2017).

Table 42. Upland reforestation, watershed and riverbank rehabilitation projects in Guimaras Province.

Project/Activities	Location	Area rehabilitated (km ²)	Implementing agency
Support to Municipal Nurseries	Provincewide	2015 - 0.0326 2016 – 0.0394	MLGU/PLGU
Provincial Tree Park (Nursery Management)	Provincewide	0.5464	PLGU
<i>Kasadyahan sa Kabukiran/Arbor Day</i>	Provincewide	0.0967	PLGU
National Greening Program		5.038	DENR
Barangay Forestry Program		0.2	DENR
Riverbank Stabilization Project	Sibunag River	(100 percent survival rate;2016)	GENRO
Coral Gardening	Tan-Luc MPA, Nueva Valencia	0.0004 (52 per cent survival rate)	GENRO
Mangrove Plantation Development (DBP Mangrove Forest)	Brgy. Panobolon, Nueva Valencia	0.2646 (29.6 per cent survival rate)	DENR/GENRO/DBP

*survival rates as of 2017 except for Riverbank Stabilization Project



Pamanculan fish sanctuary guardhouse, San Isidro, Sibunag

Box 4. Para El Mar Award.



Taklong Island National Marine Reserve (TINMR) of Nueva Valencia, Guimaras won Para El Mar's most outstanding National Integrated Protected Area System (NIPAS) Marine Protected Area (MPA) Award. Para El Mar, which means "for the sea", is a National Award that highlights best practices in MPA management in the Philippines and recognizes outstanding local efforts in conserving and sustainably managing the country's coastal and marine resources.

The Para El Mar 2017 was conducted by the Marine Protected Areas Support Network (MSN), through its secretariat, the UP Marine Science Institute, in cooperation with the Department of Environment and Natural Resources (DENR)-Coastal and Marine Ecosystems Management Program to showcase the country's best performing MPAs and serve as model for existing and soon-to-be established MPAs.



Table 43. National Greening Program seedling survival rate.

Year	Municipality	Area (hectares)	Seedlings planted	Seedlings validated	Survival rate (percentage)	Expenditure (percentage)
2011	San Roque, NV	6.00	3,000	2,511	84	86
NGP	San Roque, NV	4.00	2,000	1,942	97	
2012	San Roque, NV	9.18	4,588	3,892	85	87
NGP	San Roque, NV	0.21	107	93	87	
	San Roque, NV	0.26	130	112	86	
	San Roque, NV	0.35	175	154	88	
	La Paz, NV	10.00	5,000	4,854	97	
2013	La Paz, NV	1.44	719	689	96	84
NGP	La Paz, NV	0.14	69	69	100	
	La Paz, NV	0.11	53	53	100	
	La Paz, NV	0.35	175	156	89	
	La Paz, NV	0.42	211	211	100	
	La Paz, NV	0.64	322	302	94	
	La Paz, NV	0.10	50	50	100	
	La Paz, NV	0.16	80	80	100	
	La Paz, NV	0.06	30	30	100	
	La Paz, NV	0.33	164	164	100	
	La Paz, NV	1.25	627	563	90	
	La Paz, NV	1.22	608	478	79	
	La Paz, NV	1.28	642	512	80	
	La Paz, NV	0.05	25	25	100 [^]	
	La Paz, NV	1.78	892	711	80	
	La Paz, NV	0.67	333	315	95	
2015	Lawi, Jordan	11.0			89	86
M&P	Alegria, Sibunag	51.0			87	
	San Isidro, Sibunag	23.0			85	
	Sabang, Sibunag	15.0			86	
	Sebaste, Sibunag	29.0			86	
	Bubog, Sibunag	15.0			89	
	MLGU Sibunag	82.0			85	
	San Antonio, NV	56.0			85	
	Igang, NV	4.0			88	
	Poblacion, NV	6.0			88	
	Pandaraonan, NV	2.0			88	
	Panobolon, NV	15.0			86	
	East Valencia, Buenavista	22.0			87	
	Avila, Buenavista	6.0			88	
	Rizal, Buenavista	2.0			90	
	Montpiller, Buenavista	6.0			87	
	San Enrique, SL	8.0			89	
2017	Tamnila, Buenavista	2.29	4,000	3,512	88	88
ENGP	Getulio, Buenavista	3.20	6,000	5,157	86	
	Tanag, Buenavista	10.31	20,000	18,196	91	
	La Paz, NV	1.34	2,000	1,712	86	
	La Paz, NV	0.71	2,000	1,718	86	
	San Isidro, Sibunag	6.17	12,000	10,662	89	

Year	Municipality	Area (hectares)	Seedlings planted	Seedlings validated	Survival rate (percentage)	Expenditure (percentage)
	San Isidro, Sibunag	10.44	20,000	17,792	89	87
	Lawi, Jordan	15.11	30,000	26,698	89	
	Lawi, Jordan	2.22	4,000	3,559	89	
	Lawi, Jordan	0.88	2,000	1,778	89	
	Getulio, Buenavista	5.08	10,000	8,684	87	
	Getulio, Buenavista	22.24	44,000	38,273	87	
	Lucmayan, NV	6.35	12,000	10,316	86	
	Sabang, Sibunag	11.40	22,000	18,813	86	
	Tacay, Buenavista	2.14	4,000	3,392	85	
	Getulio, Buenavista	4.63	10,000	8,593	86	
	Getulio, Buenavista	6.30	12,000	10,314	86	
	Buluangan, Jordan	3.26	6,000	5,153	86	
	Canhawan, NV	3.23	6,000	5,274	88	
	Canhawan, NV	2.10	4,000	3,518	88	
	Igdarapdap, NV	20.53	38,000	32,288	85	
	San Isidro, Sibunag	5.33	10,000	8,894	89	
	Igcawayan, SL	9.30	18,000	15,597	85	
	Igcawayan, SL	1.04	2,000	1,698	85	

Implications and Recommendations

The partnerships that have been created by the province and municipalities with academic institutions, national government agencies, international organizations, NGOs and the private sector have yielded positive results in terms of establishing protected areas and increasing their number to cover additional critical ecosystems that require protection.

Based on the NAMRIA coastal resources map, the municipal waters of Guimaras has a total area of 160,202.48 hectares, of which a total of 2, 633.726 hectares are under protection in the form of fish sanctuaries, marine reserves or marine protected area. This means that about 1.64 per cent of the municipal water of the province is protected.

Several models of MPA management in Guimaras is discernible, i.e., the 1,143-hectare TINMAR, the largest MPA managed by the national government; the Tando-Lucmayan MPA, which is managed by two barangays (Tando and Lucmayan); the Igang Bay Marine Sanctuary, which is co-managed by John B. Lacson Maritime Foundation University. Regardless of the management arrangements, the management effectiveness for these MPAs yielded very good results. MEAT and METT assessments should be conducted regularly to monitor the management effectiveness of the MPAs.

References

- Management Effectiveness Tracking Tool (METT) Analyses of the Management Effectiveness of the Igang Bay Marine Sanctuary (IBMS)
- Evaluating the Effectiveness of Community Managed MARine Protected Areas (MPAs) on Guimaras Island, Philippines, Hassig, Tyler, April 2016

Establishment of additional MPAs must be considered to increase the area of the municipal water under protected status to 10 per cent in line with the Philippines' international commitment to biodiversity conservation, particularly Aichi Biodiversity Target 11. It is recommended that Guimaras consider linking the MPAs and engaging its university partners in conducting connectivity studies to support the MPA network establishment.

Operationalizing the GAPAS to support the networking process is also recommended, in addition to updating the MPA management plans using the results of MEAT and METT assessments and monitoring data.

Box 5. Aichi Biodiversity Target 11.

By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.



Habitat protection, restoration and management

021 Reclamation and conversion

Description

This indicator measures the area of coastal habitat that has been converted for other uses (e.g., mangrove to fishpond).

This also includes the extent of reclamation in the coastal areas.

Rationale

The costs (limited access for some sectors, stability and safety of those using structures built on reclaimed land, destruction of mangrove nursery grounds of marine life, loss of fisheries fry gathering grounds, erosion, etc.), benefits

(ports that would benefit society, etc.) and the sectors that would be affected should be considered before reclamation or land conversion is authorized.

Data Requirements

- Total length of coastal area reclaimed
- Total coastal area converted to other uses (e.g. mangrove to fishpond)

Results

Reclamation activities in the five municipalities were undertaken for the purposes of building ports and wharves to support the economic development of the province. Areas reclaimed ranged from 400 m² to 2,100 m². In the Municipality of Jordan, the area reclaimed is intended for the construction of the tourism center (Table 44).

A study conducted by Dr. Fernando Siringan of UPMSI, indicated that more severe case of erosion in the province took place along the coasts of Barangay M. Chavez, where average land loss was estimated at 60 m and maximal erosion is as much as 120 m. (Figure 25). The coast was also lined with coastal defences, such as sea walls and groins, which may enhance erosion.

Table 44. Reclamation activities in the coastal areas of Guimaras Province.

Municipality	Establishment name	Area
Nueva Valencia	Cabalagnan Fish Landing	2, 903m ²
	Puyo Wharf	1,476 m ²
	Cabalagnan Wharf	400 m ²
Jordan	Lawi Fish Landing	
	Roro Wharf	
	Jordan Wharf	5,504 m ²
	Hoskyn Tourism Center	1 ha (2,100 m ²)
San Lorenzo	Suclaran Wharf	
	Private Peir Construction (FF Cruz)	
Sibunag	Sebaste Wharf	
Buenavista	Mc Arthur's Wharf	

Figure 25. Erosion along the coastal area of Barangay M. Chavez, Municipality of San Lorenzo.

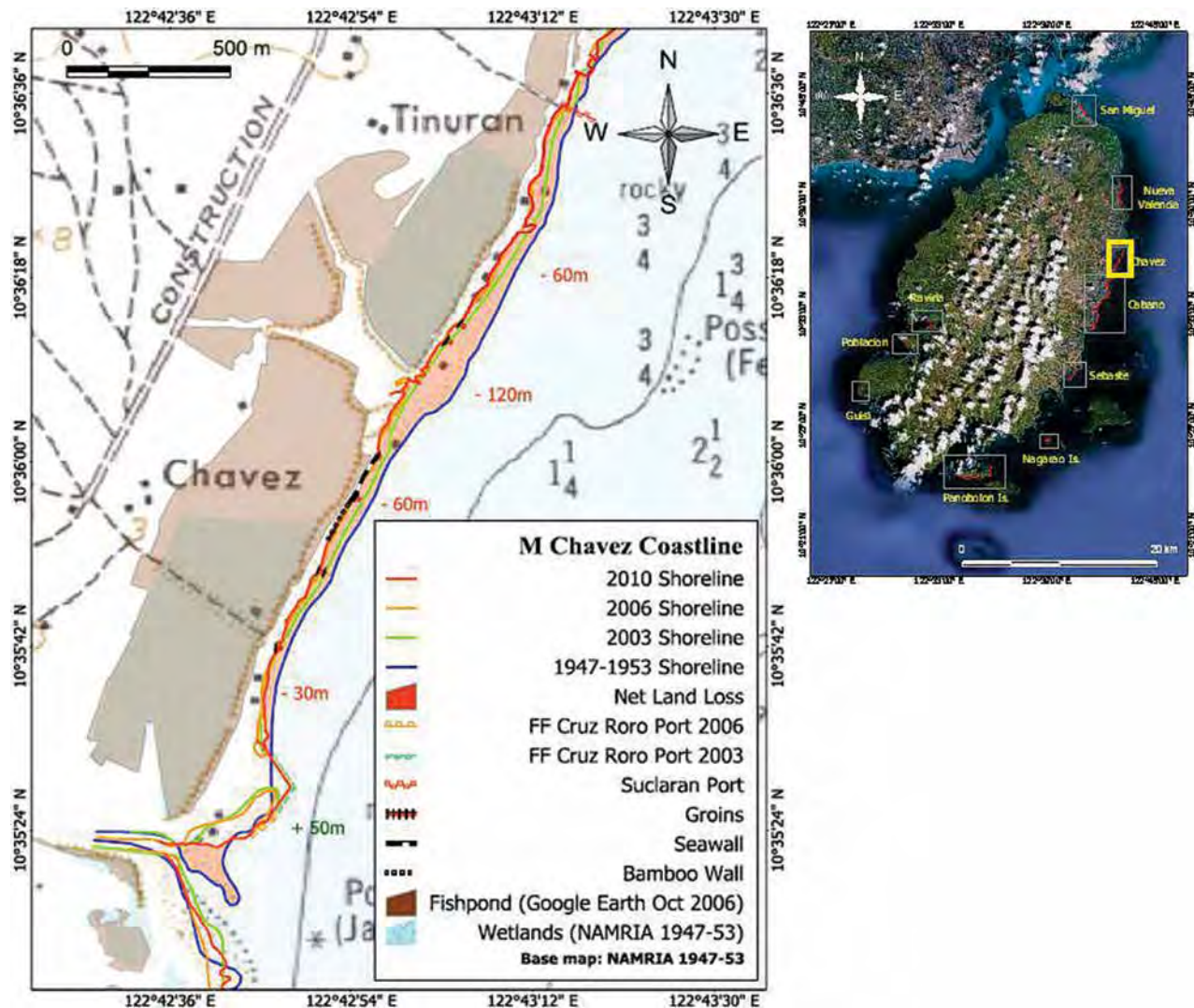
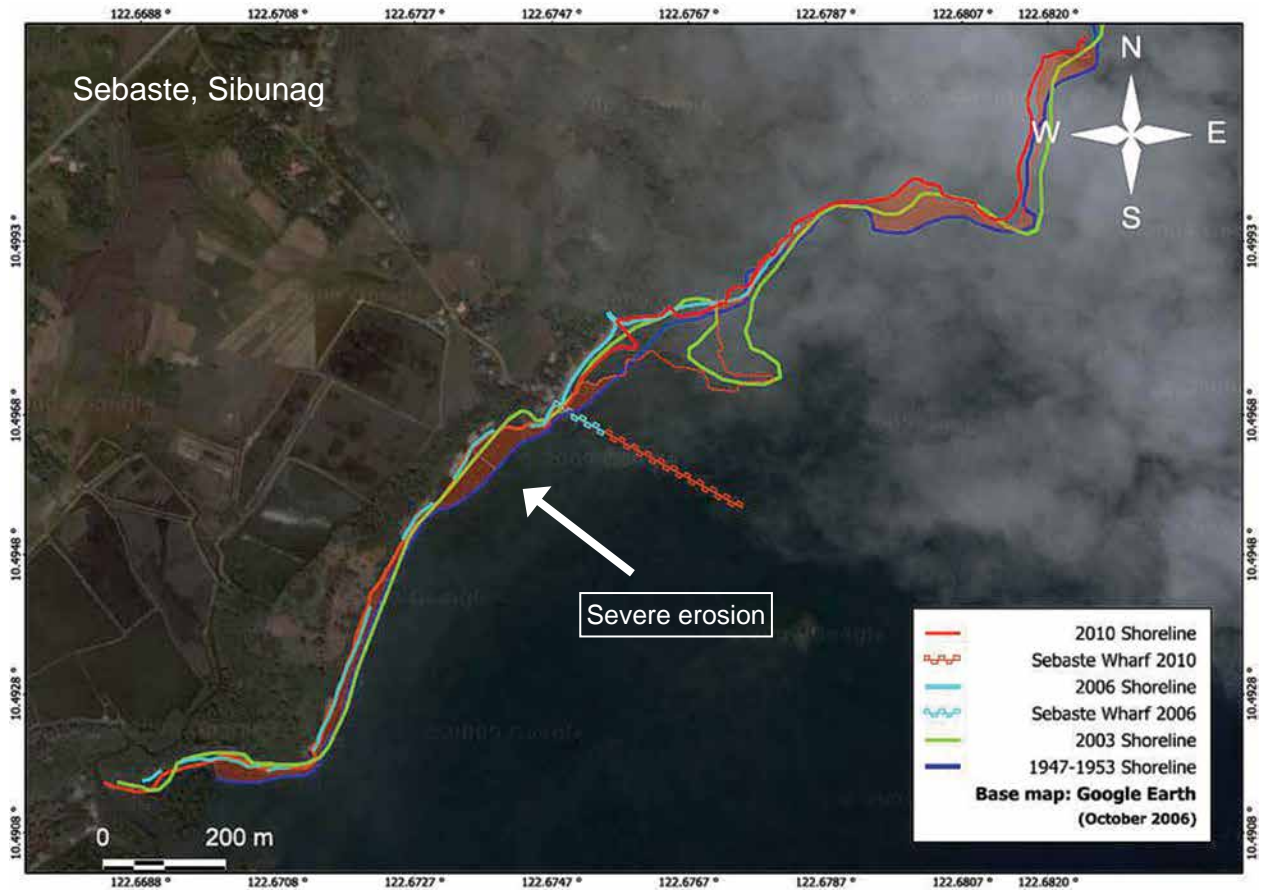


Figure 26. Erosion in the coastal area of Sebaste, Municipality of Sibunag.



Severe erosion has also been observed along the coast adjacent to the Sebaste Wharf (Figure 26). At this site, the wharf prevented the sediments from the north to be transported to the south. Hence, the coast south of the wharf is cut-off from its sediment supply, leading to erosion, while the north side of the wharf is experiencing accretion and shoaling.

The study concluded that erosion is prevalent in Guimaras and this can be due to the compounded effects of sea level rise and human activities e.g., placement of engineering structures, degradation of reef, removal of mangroves (Siringan, et al, 2011).



Suclaran Wharf, San Lorenzo, Guimaras



Buenavista Wharf, Guimaras

Implications and Recommendations

Coastal reclamation, which creates land to support economic activities, is often associated with erosion problems. Although the extent of reclamation activities in the province can be considered small scale, the study conducted by UP-MSI provides very useful inputs in formulating relevant mitigation and adaptation measures that can address the combined effects of sea level rise and human-induced impacts that can affect the coastal structures built along the reclaimed areas.

It is recommended that the provincial and municipal governments continue to conduct regular inventory of coastal

structures, including ports and wharves, to determine their integrity, as well as possible occurrences of coastal erosion. The results from the inventory should be made available to the local chief executives and regulatory agencies such as the Environmental Management Bureau of DENR for their reference in approving and monitoring coastal developments. Proper and advanced planning is the most cost-effective way to adapt to erosion. Recommended measures include restructuring of existing coastal structures, which should not interfere with the natural flow of sediments and maintaining or rehabilitating the mangroves, sea grass and coral reefs.

References

- Coastal Erosion in the Guimaras Province, Oil Spill Environmental Study Report, Siringan, Fernando et.al. 2011
(Touro External Drive-REPORTS Environmental Studies)
Municipal Assesor Tax Mapping Roll, Jordan/PEISS Inventory Form 2016
Municipal Assesor Tax Mapping Roll, Nueva Valencia
PEISS Inventory Report, GENRO Annual Performance Report 2016
Water Use and Supply Management



Water use and supply management

022 Water conservation and management

Description

This indicator measures the demand of the population for freshwater and accounts the intensity of freshwater management efforts through availability of water

management and conservation plans, strategies adopted, and staff and budget allocated.

Rationale

Freshwater is essential for life and effective management for its sustainable use is of utmost importance for a healthy community.

Data Requirements

- Availability of water management and conservation plan
- Mitigation and adaptation strategies identified
- Water use per capita
- Staff and budget for water management

Results

While a comprehensive water management and conservation plan for Guimaras Province is not yet in place, various initiatives have been implemented at the provincial and municipal levels to step up measures to conserve and sustainably manage the water resources of the province.

The development of the Buenavista Strategic Water Resources Plan was initiated in May 2017 with technical assistance from the University of the Philippines School of Urban and Regional Planning. The plan includes management measures for ensuring a sustainable water supply for Buenavista in the next 20 years.

Budget allocations for water management measures ranging from improvement of water facilities and distribution system, operation and maintenance of existing municipal water works system, conduct of water quality and bacteriological analysis and implementation of water and environmental sanitation

programs at the provincial and municipal levels for the period 2010-2017 are listed in **Table 45**.

In addition, below are important initiatives on water conservation and management that were implemented in the province:

- Watershed management
 - Declaration of Surarik Watershed Area as Municipal Forest Park of Nueva Valencia (Municipal Res. Ordinance No. 01, Ss. of 2002)
 - Conduct of stakeholder consultation on the establishment of watershed management area and profiling for the formulation of watershed management plan in Ravina, Norte, Sibunag, Buluangan and Santa Teresita in the Municipality of Jordan and Igang, Santo Domingo, Lanipe and Salvacion in the Municipality of Nueva Valencia
 - Tree planting in the watershed area

- Conduct of Water Summit in 2016 to raise awareness on the importance of water conservation
 - Distribution of IEC materials on water conservation tips
 - Conduct of initial inventory of wetland area and springs by DENR-PENRO
 - Approval and issuance of resolution by the Sub-committee on Water Use and Supply Management
 - Resolution No. 03, Series of 2016 Resolution Requesting the EMB through the PCC to conduct chemical analysis on the major water sources in the Province of Guimaras
 - Resolution No. 04, Series of 2017 Resolution Requesting the Municipal Local Chief Executives to
- Require the Water Refilling Stations to Install Cistern Tanks and Construct Rain Water Collector as One of the Requirements in Business Permits Application
- Resolution No. 05, Series of 2017 Resolution Requesting the Local Government Units to Reactivate the Local Quality Monitoring Team
 - Resolution No. 03, Series of 2018 Resolution Requesting Mines and Geosciences Bureau (MGB), Region VI to Conduct a Ground Penetrating Radar for the Purpose of Determination of Positive Drill Sites in the Province of Guimaras

Table 45. Budget allocation for water management in Guimaras Province (in Php).

Local government unit	Budget Allocation (Php)
Province	2014: 3,500,000 (Water Supply Sector Program) 2015: 5,248,000.00 (Rural Water Supply Sector Program); 300,000.00 (Improvement of Water Supply System-Capitol) 2016: 8,000,000.00 (Water Supply Program); 480,000.00 (Construction of SFRs)
Buenavista	2015: 500,000.00 (Salvacion-Dagsaan Expansion of Level II Water System); 500,000.00 (Construction of Level I Water System, SEAARC) 2016: 200,000.00 (Establishment of small farm reservoir); 300,000.00 (Improvement of Water Facilities); 500,000.00 (Improvement of Buenavista Drainage System)
Jordan	2010: 500,000 (20%DF: Water System Project) 2011: 8, 540, 000.00 (20% DF: Water System Project) 2012: 11, 000,000 (20%DF: Water System Project) 2014: 1,644, 266.00 (LBP Loan/20%DF:Expansion of Jordan Water System); 56,559.00 (Dug well Development); 30,394.00 (Construction of Deep Well at B. Maravilla) 2015: 500,000 (20%DF: Development of Manggacap Spring Level I); 1, 537, 271.00 (LBP Loan/20%DF: Expansion of Jordan Water District) 2016: 1.5 M (20%DF: Water Supply & Sanitation System Project); 1,425,000 (20%DF:Jordan Water System) 2017: 1, 167, 737.00 (LBP Loan/20%DF: Expansion of Jordan Water System); 1, 000, 000.00 (20%DF: Development of Potential Water Sources)
Nueva Valencia	2010: 50,000.00 (Drinking Water Sample Bacteriological Analysis); 250,000.00(Operation & Maintenance of Municipal-wide Water Works System) 2011: 250,000.00 (Operation & Maintenance of Municipal-wide Water Works System); 10,000.00 (Improve Safe Water Program) 2012: 100,000.00 (Operation & Maintenance of Municipal-wide Water Works System); 10,000.00 (Improve Safe Water Program) 2013: 100,000.00 (Operation & Maintenance of Municipal-wide Water Works System); 25,000.00 (Improve Safe Water Program) 2014: 100,000.00 (Operation & Maintenance of Municipal-wide Water Works System); 50,000.00 (Environmental Sanitation) 2015: 100,000.00 (Operation & Maintenance of Municipal-wide Water Works System) 2016: 100,000.00 (Operation & Maintenance of Municipal-wide Water Works System) 2017: 50,000.00 (Water Analysis/Bacteriology)
San Lorenzo	2011: 50,000.00 (WATSAN) 2012: 70,000.00 (Rehabilitation of Communal Irrigation System, So. Banaba); 70,000.00 (Improvement of Suclaran Water Impounding System) 2013: 2M (BUB: Salin Tubig, Pipe Water System Level II) 2014: 500,000.00 (BUB: Salin Tubig, Pipe Water System Level II) 2015: 1.6M (BUB: Salin Tubig, Pipe Water System Level II) 2016:1.3M (BUB: Salin Tubig, Pipe Water System Level II)
Sibunag	2010: 100,000.00 (Water & Sanitation Program) 2011: 150,000.00 (Water & Sanitation Program) 2012: 150,000.00 (Improvement of Water System); 100,000.00 (Water & Sanitation Project) 2013: 200,000.00 (Water & Sanitation Project) 2014: 50,000.00 (Water & Environmental Sanitation) 2015: 30,000.00 (Water & Environmental Sanitation) 2016: 30,000.00 (Water & Environmental Sanitation)

Box 5. Groundwater resource assessment in Guimaras Province.

Municipality	No. of wells assessed
Buenavista	63
Jordan	26
Nueva Valencia	45
San Lorenzo	52
Sibunag	26
Total	213

A groundwater resource assessment in Guimaras Province was conducted by the Mines and Geosciences Bureau of DENR in 2016 with the aim of determining the chemical and physical properties of the groundwater sample at source for purposes of establishing the baseline data.



Major Findings and Recommendations

1. Sixty out of the 213 wells and springs assessed revealed a low pH reading, which was attributed to the timing of sampling (i.e., there was heavy rain before and during the sampling).
2. Average total dissolved solids is 500mg/L, which does not pass the Philippine National Standards for Drinking Water of below 500mg/L. The results were attributed to the concentration of dissolved organic and inorganic chemicals in the water.
3. Most of the sampled wells along the coastal areas has high salinity readings, which indicate possible occurrence of salt intrusion.
4. Heavy withdrawal of water from wells must be regulated to prevent/minimize salt water intrusion.
5. Wells located in the ricefields have traces of insecticides and pesticides. Water contamination with these pollutants must be given attention.
6. Regular monitoring is encouraged to ensure potability of water from wells used for drinking purposes.
7. Bacteriological Test must be conducted for every source of drinking water before declaring it safe and potable.

The FLUP indicated that there are 21 and 13 sub watersheds in the Eastern and Western parts of the province, respectively. There are three major sub watersheds identified, the Sibunag River sub watershed with an area of 9,326.45 hectares; the Cabano River sub watershed with an area of 8,004.60 hectares and the Mantangingi River

sub watershed with an area of 5,140.31 hectares. There were reports that these rivers, having comparatively large catchments areas, dried-up during prolonged dry season, indicating limited aquifer storage to support the base flow. Out of these three major sub watersheds, only Mantangingi has no forest and forestland area.

Water use and supply management

023 Access to improved water source

Description

This indicator estimates the households with access to an improved water source, the amount delivered and the price paid by households for water supply.

Rationale

Freshwater resources, whether scarce or abundant, may not necessarily be accessible or equitably accessible. Difficulty of access including high prices disproportionately burdens those

with less resources, especially more vulnerable individuals and households within communities.

Data Requirements

- Households with access to improved water sources
- Volume produced from piped water sources
- Water pricing per cubic meter

Results

Households with access to safe water supply in the province have steadily increased from 70.42 per cent in 2012 to 95.11 per cent in 2017 (Figure 28 and Tables 46 to 49). In 2017, the Municipality of Buenavista has the highest number of households with Level III water system (i.e., a distribution network of piped water connecting individual households is existing) at 71.36 per cent. The Municipality of San Lorenzo recorded the lowest number of households with Level III water system at 2.67 per cent. Overall, 41,047 out of 43,155 households have access to safe water supply representing about 95.11 per cent of the total number of households. In relation to SDG 6 on Clean Water and Sanitation Target 6.4

(i.e., Increase in number of people with access to secure and safe potable water in accordance with national water quality criteria/standards), the five municipalities recorded an increase in the percentage of households with access to safe water served by Level III water system in 2014 to 2017. This is the result of the continuing Water and Sanitation (WATSAN) Project and DILG's SALINTUBIG Program to provide households with safe water served by Level III water system, particularly in 2016 to 2017. About 74 per cent of the households were seen converting from Level II water system to Level III water system.

Table 46. Access to improved water source for the year 2014.

Municipality	Household	Safe sources					
		Level I		Level II		Level III	
		HH served	Percentage	HH served	Percentage	HH served	Percentage
Buenavista	11,841	4,550	38.43	0	0	7291	61.57
Jordan	8,296	4,910	59.19	853	10.28	1623	19.56
Nueva Valencia	8,882	6,671	75.11	484	5.45	1597	17.98
San Lorenzo	5,973	4,684	78.42	0	0	303	5.07
Sibunag	4,897	3,581	73.13	313	6.39	338	6.90
Guimaras (Total)	39,889	24,396	61.16	1650	4.14	11152	27.96

Table 47. Access to improved water source for the year 2015.

Municipality	Household	Safe sources					
		Level I		Level II		Level III	
		HH served	Percentage	HH served	Percentage	HH served	Percentage
Buenavista	12,212	4,140	33.90	0	0	8062	66.02
Jordan	8,502	4,904	57.68	912	10.73	1962	23.08
Nueva Valencia	9,045	6,823	75.43	571	6.31	1597	17.66
San Lorenzo	6,239	5,043	80.83	0	0.00	176	2.82
Sibunag	4,982	3,825	76.78	137	2.75	338	6.78
Guimaras (Total)	40,980	24,735	60.36	1,620	3.95	12,135.00	29.61

Table 48. Access to improved water source for the year 2016.

Municipality	Household	Safe sources					
		Level I		Level II		Level III	
		HH served	Percentage	HH served	Percentage	HH served	Percentage
Buenavista	12,402	3,672	29.61	0	0	8284	66.80
Jordan	8,598	5,099	59.30	870	10.12	1728	20.10
Nueva Valencia	9,373	6,693	71.41	930	9.92	1729	18.45
San Lorenzo	6,383	5,400	84.60	0	0	121	1.90
Sibunag	5,194	4,237	81.57	130	2.50	284	5.47
Guimaras (Total)	41,950	25,101	59.84	1,930	4.60	12,146.00	28.95

Table 49. Access to improved water source for the year 2017.

Municipality	Household	Safe sources					
		Level I		Level II		Level III	
		HH served	Percentage	HH served	Percentage	HH served	Percentage
Buenavista	12,910	3,342	22.87	0	0	9,213	71.36
Jordan	8,848	4,929	55.71	1,133	12.81	2,211	24.99
Nueva Valencia	9,483	6,931	73.89	698	7.37	1,851	19.52
San Lorenzo	6,524	5,536	84.86	0	0	174	2.67
Sibunag	5,390	4,680	86.83	0	0	349	6.47
Guimaras (Total)	43,155	25,418	58.90	1,831	4.24	13,798	31.97



Figure 28. Proportion of households with access to safe water supply (2012-2017).



Table 50. Level III consumption rates for the Municipality of Jordan (2015).

a) Area I – Poblacion, Rizal and Hoskyn Area		
For Residential	For Semi-Commercial	For Commercial
1 – 10 consumption – P177.00/cu.m.	1 – 10 consumption – 265.50	1 – 10 consumption – P354.00
11 – 20 consumption – P22.50/cu.m.	11 – 20 consumption – 33.75/cu.m.	11 – 20 consumption – 45.00/cu.m.
21 – 30 consumption – P27.30/cu.m.	21 – 30 consumption – 40.95/cu.m.	21 – 30 consumption – 54.60/cu.m.
31 – 40 consumption – P32.75/cu.m.	31 – 40 consumption – 49.12 cu.m.	31 – 40 consumption – 65.50/cu.m.
41 up consumption – 38.25/cu.m.	41 – up consumption – 57.37/cu.m.	41 – up consumption – 76.50/cu.m.
b) Area 2 – San Miguel		
For Residential	For Semi-Commercial	For Commercial
1 – 10 consumption – P228.00	1 – 10 consumption – P342.00	1 – 10 consumption – P456.00
11 – 20 consumption – 32.80/cu.m.	11 – 20 consumption – 49.20/cu.m.	11 – 20 consumption – 45.60/cu.m.
21 – 30 consumption – 34.80/cu.m.	21 – 30 consumption – 52.20/cu.m.	21 – 30 consumption – 69.60/cu.m.
31 – 40 consumption – 36.80/cu.m.	31 – 40 consumption – 55.20/cu.m.	31 – 40 consumption – 73.60/cu.m.
41 up consumption – 38.80/cu.m.	41 up consumption – 58.20/cu.m.	41 up consumption – 77.60/cu.m.

Table 51. Water supply facilities in Guimaras Province.

Municipality	Dug well		Open springs		Artesian wells		Others	
	Number	HH Benefitted	Number	HH Benefitted	Number	HH Benefitted	Bottled water, drilled well, water tank, faucet, water district	
							Number	HH Benefitted
Buenavista	130	747	7	237	131	1177	40	99
Jordan	173	2581	244	984	512	288	621	1225
Nueva Valencia	738	2395	5	411	1012	1982	1	424
San Lorenzo	890	1183	10	64	531	815	1	130
Sibunag	599	1538	6	295	9	9	45	713
Guimaras (Total)	2530	8444	272	1991	1295	4271	708	2591

Source: Guimaras FLUP 2017-2026

Implications and Recommendations

Guimaras showed significant improvements in increasing the total number of households with access to safe water sources for the period 2012-2017. It is also notable that the previously reported 10 per cent of the households that were using unsafe sources has been eliminated. The province and the 5 municipalities must review the need for investments in infrastructure to convert the number of households with access to Level III water system. This is also in

consideration of the results of the groundwater assessment conducted by DENR MGB (cross reference to indicator 23) where dissolved solids, salt intrusion and traces of pesticides and insecticides in wells near the rice fields were observed. Continuous monitoring and testing for potability and safeness of the water drinking sources should be undertaken, including the conduct of awareness raising activities to instill to every Guimarasnon the need to conserve and use water wisely.

Reference

Environmental Profile 2014-2017, PHO
Guimaras FLUP 2017-2026

Water use and supply management

024 Incidences/deaths due to waterborne diseases

Description

This indicator measures the number of reported cases and number of deaths due to diarrhea and other waterborne diseases.

Rationale

Freshwater resources, whether scarce or abundant, may not necessarily be accessible or equitably accessible. Difficulty of access including high prices disproportionately burdens

those with less resources, especially more vulnerable individuals and households within communities.

Data Requirements

- Number of incidences of illness/infections and deaths due to waterborne diseases (e.g., diarrhea; typhoid fever; cholera; amoebiasis; schistosomiasis; giardiasis; etc.)

Results

Acute gastroenteritis, amoebiasis and diarrhea were the most prevalent water borne diseases recorded in the five municipalities. In the Municipality of Buenavista in particular, the incidences of acute gastroenteritis were relatively higher compared to the other municipalities.

In the Municipality of Nueva Valencia, cases of amoebiasis were high in 2015 while the Municipality of San Lorenzo recorded the highest incidence of diarrhea in 2012. Although deaths were significantly low compared to the number of cases, the occurrence of these diseases remains a cause of concern (Table 52).

Table 52. Number of incidence and death in the five municipalities due to water borne diseases (2012-2017).

Waterborne disease	2012		2014		2015		2016		2017	
	I	D	I	D	I	D	I	D	I	D
Buenavista										
Acute Gastroenteritis	53	-	36	-	-	-	49	-		
Gastroenteritis	-	-	-	-	37	1	-	-		
Amoebiasis	-	-	3	-	3	-	6	-		
Diarrhea	-	-	-	-	-	-	-	-		
Dysentery	-	-	-	-	-	-	-	-		
Parasitism	8	-	2	-	4	-	5	-		
Typhoid Fever	10	-	8	-	8	-	7	1		
Jordan										
Acute Gastroenteritis	-	-	5	5	-	-	5	-		
Gastroenteritis	4	-	-	-	3	-	-	-		
Amoebiasis	7	-	-	-	3	-	-	-		
Diarrhea	7	-	4	-	1	-	1	-		
Dysentery	-	-	-	-	-	-	-	-		
Parasitism	33	-	6	-	1	-	6	-		
Scabies	1	-	-	-	-	-	-	-		
Typhoid Fever	2	3	-	-	1	-	-	-		
Nueva Valencia										
Acute Gastroenteritis	32	-	16	-	-	-	54	-		
Gastroenteritis	-	-	2	-	35	-	-	-		
Amoebiasis	18	-	35	-	54	-	31	-		
Diarrhea	4	-	2	-	11	-	-	-		
LBM	-	-	-	-	-	-	1	-		
Dysentery	-	-	1	-	-	-	-	-		
Parasitism	5	-	-	-	7	-	4	-		
Scabies	11	-	2	-	3	-	1	-		
Typhoid Fever	1	-	-	-	-	-	-	-		



Table 52. Number of incidence and death in the 5 municipalities due to water borne diseases (2012-2017) (cont.).

Waterborne disease	2012		2014		2015		2016		2017	
	I	D	I	D	I	D	I	D	I	D
San Lorenzo										
Acute Gastroenteritis	4	-	24	1	47	-	34	-		
Gastroenteritis	-	-	-	-	-	-	-	-		
Amoebiasis	1	-	2	-	9	-	1	-		
Diarrhea	103	-	-	-	-	-	-	-		
LBM	5	-	-	-	-	-	-	-		
Dysentery	-	-	-	-	-	-	-	-		
Parasitism	-	-	-	-	-	-	1	-		
Scabies	-	-	-	-	-	-	-	-		
Typhoid Fever	-	-	-	-	-	1	-	-		
Sibunag										
Acute Gastroenteritis	64	-	-	-	5	-	15	-		
Gastroenteritis	-	-	-	-	-	-	-	-		
Amoebiasis	2	-	-	-	-	-	1	-		
Diarrhea	-	-	-	-	-	-	-	-		
Dysentery	-	-	-	-	-	-	-	-		
Parasitism	3	-	-	-	-	-	-	-		
Scabies	-	-	-	-	-	-	-	-		
Typhoid Fever	-	-	-	-	-	-	-	-		
TOTAL	378	3	148	6	232	2	222	1	0	0



Total Coliform and Fecal Coliform analysis at the EMB Laboratory.

Implications and Recommendations

In general, the data showed that there was a decline in the incidence of water borne diseases in the province as compared to previous data. However, the fact that there are still significant number of incidences reported, the recommendations provided in the first SOC report remain valid. These include, among others:

- Conduct of education and awareness program for food handlers, new mothers, teachers and school children;
- Strengthening the enforcement of ordinances concerning garbage handling and disposal, disposal of domestic wastes, and management of animal wastes;
- Eliminate access to areas identified as sources of water supply and/or groundwater regeneration areas;
- Pre-treating and disinfecting potable water prior to distribution and consumption by the public;
- Monitor the easement requirements by the Sanitation and Water Code in the identification of water sources, and
- Promoting and facilitating investments in pollution reduction and waste management facilities and services through public-private partnerships.

Reference

FHSIS Annual Morbidity and Mortality Report of RHU (2012-2017), PHO



Food security and livelihood management

025 Fishery management plan and implementation

Description

This indicator estimates the extent of fisheries management efforts through availability of fisheries management plans, staff and budget allocated.

Rationale

Fish is a direct product of the coastal zone, providing both food and livelihood to coastal dwellers, and to consumers far from the coast. Fisheries management is a challenging but necessary aspect of managing marine and coastal resources

in order to ensure the sustainability of this valuable natural asset. A management strategy, supported by adequate resources and equipment, are markers of local government towards managing this resource.

Data Requirements

- Fisheries Management Plan
- Staff and budget allocation for fishery management

Results

Fisheries management plans at the local level are usually mainstreamed into the CRM/CFRM plans of local governments, where majority of the programs and activities is focused on reducing fishing pressures, habitat rehabilitation and protection, through the establishment of marine protected areas, fish sanctuaries and reserves. The CRM/CFRM plans also included livelihood development for the fisher families and POs as well as training and capacity development. These

programs were simultaneously conducted each year with technical and funding assistance from various partners, such as BFAR, DENR, JBLFMU and PRDP.

Staff and budget allocations for fisheries management in the 5 municipalities are shown in Table 53. Budget allocations mainly supported the *Bantay Dagat* operations.

Table 53. Staff and budget allocation for fisheries management.

Municipality	Staff allocation (2017)	Budget allocation (Php)
Buenavista		2012: 500,000.00 (<i>Bantay Dagat</i> Operation) 2013: 470,000.00 (<i>Bantay Dagat</i> Operation) 2014: 100,000.00 (<i>Bantay Dagat</i> Program) 2015: 200,000.00 (<i>Bantay Dagat</i> Program) 2016: 400,000.00 (<i>Bantay Dagat</i> Program)
Jordan		2010: 150,000.00 (SPA: <i>Bantay Dagat</i> Operation); 250,000.00 (20%: <i>Bantay Dagat</i> Operation) 2011: 30,000.00 (SPA: <i>Bantay Dagat</i> Operation); 229,500 (20%: <i>Bantay Dagat</i> Operation) 2012: 250,000.00 (<i>Bantay Dagat</i> Operation) 2013: 95,000.00 (SPA: <i>Bantay Dagat</i> Operation) 2014: 75,000.00 (20% Agrifisheries Support Program) 2015: 265,000.00 (SPA: <i>Bantay Dagat</i> Operation) 2016: 250,000.00 (SPA: <i>Bantay Dagat</i> Operation)
Nueva Valencia	1 (AT-Coordinator) 1 (<i>Bantay Dagat</i> Action Officer) 3 (AEW) 1 (Encoder) 1 (US-PC Volunteer, CRM Program)	2010: 932,000.00 (OMAS/Operation of <i>Bantay Dagat</i>) 2011: 932,000.00 (OMAS/Fisheries and Aquatic Resource Management) 2012: 900,000.00 (OMAS/Fisheries and Aquatic Resource Management) 2013: 902,000.00 (OMAS/Fisheries and Aquatic Resource Management) 2014: 1,180,000.00 (OMAS/Fisheries and Aquatic Resource Management) 2015: 2,212,000.00 (OMAS/Fisheries & Aquatic Resource Management) 2016: 2,666,000.00 (OMAS/Fisheries & Aquatic Resource Management) 2017: 2,366,000.00 (OMAS/Fisheries & Aquatic Resource Management)
San Lorenzo	1 (AT-Coordinator) 1 (<i>Bantay Dagat</i> Action Officer) 1 (US-PC Volunteer, CRM Program) 2 MPA Managers (shifting) 4 Fish Wardens	2010: 100,000.00 (Operation of <i>Bantay Dagat</i>) 2011: 75,000.00 (Operation of <i>Bantay Dagat</i>); 260,000.00 (20% DF: Operation of <i>Bantay Dagat</i>) 2012: 75,000.00 (Operation of <i>Bantay Dagat</i>); 250,000.00 (20% DF: Operation of <i>Bantay Dagat</i>) 2013: 280,000.00 (Operation of <i>Bantay Dagat</i>) 130,000.00 (Fisheries) 2014: 750,000.00 (Operation of <i>Bantay Dagat</i>) 2015: 750,000.00 (Operation of <i>Bantay Dagat</i>) 2016: 750,000.00 (Operation of <i>Bantay Dagat</i>) 2017: 620,000.00 (Operation of <i>Bantay Dagat</i>)
Sibunag	1 Municipal Agriculturist 1 AT 1 BD Action Offices 6 BD Personnel 2 MPA Fish Wardens	2010: 1,186,025.97 (Operation of <i>Bantay Dagat</i>) 2011: 474,050.00 (Operation of <i>Bantay Dagat</i>) 2012: 800,000 (Integrated Coastal Resource Management) 2017: 398,000.00 (<i>Bantay Dagat</i> Task Force)



Box 6. Malinis at Masaganang Karagatan (MMK).



The Municipality of Nueva Valencia, Guimaras garnered First Place in the MMK 2017 regional search for most outstanding coastal community. The municipality received PhP 2 million to support livelihood projects and served as Western Visayas Region's entry for the national level search.

MMK is a national search for most outstanding coastal community. It aims to promote fisheries protection and conservation, which is centered on the significance of sustainable fisheries and aquatic resource management with active engagement of stakeholders.

The participating coastal communities were assessed based on five criteria: (1) No Illegal Fishing, (2) Observance of off-fishing season, (3) Declaration of marine protected areas, (4) Clean, coastal waters without any garbage or industrial effluence flowing to the sea, and (5) Effective mangrove protection and rehabilitation program.



Seaweed farming in Panobolon, Nueva Valencia (Photo credit: POAS).



Seaweed farming in Panobolon, Nueva Valencia (Photo credit: 2017 Manggahan Photo Contest, Luther Tamonan).

Implications and Recommendations

Fisheries is one of the major economic sectors in Guimaras and thus, a province-wide plan is necessary to mainstream and harmonize the individual CRM/CFRM plans and programs of the five municipalities. It is recommended that the Guimaras CS and CSIP, which can serve as the integrating framework for the individual CRM/CFRM plans be completed and adopted.

While the designation of additional staff and budget for fisheries management may pose as a challenge to local governments, it is important that the province and municipalities continue to strengthen linkages with existing partners and seek additional potential partner agencies for support in plan implementation.

References

BFAR: FADS
Boat R, Fish R – MAO/OMAS
CMEMP: BDFE, Seaweed farming
PRDP



Food security and livelihood management

026 Fisheries Production

Description

This indicator measures the trend in fisheries production and tries to estimate whether fisheries stocks are sustainable

(using changes in catch composition and/or the frequencies of various sizes per species).

Rationale

The increasing fish catch would mean either greater dependence of the population to fisheries' resources or improved condition of resources.

Data Requirements

- Municipal (small-scale), commercial (large-scale) and aquaculture fishery production
- Size and composition of fish catch

Results

The fishing industry is one of the major contributors to the provincial economy and is showing potential growth. Recent data obtained from BFAR's municipal fisherfolk registration program (FishR), showed that the municipal fisherfolk registry yielded a total record of 12,553 fisherfolks, which represented a 19 per cent increase in the total number of fishers from 2010 to 2017.

As the number of fishers increased, the total catch per unit effort also increased, as shown in Table 54 for the three municipalities.

Table 55 shows the fishing gears commonly used by the fisherfolks in the three municipalities and the catch composition.

Table 54. Total catch per unit effort in the Municipalities of Buenavista, Sibunag and Nueva Valencia (2014-2017).

Municipality	Total Catch per Unit Effort			
	2014	2015	2016	2017
Buenavista	160.97	331.90	275.37	367.51
Nueva Valencia	-	66.07	-	-
Sibunag	16.90	12.59	16.72	23.34

Source: BFAR PFO

Table 55. List of common fishing gears used in Guimaras Province.

Gear	Catch composition		
	Buenavista	Nueva Valencia	Sibunag
Bottomset Gillnets for Crabs	<i>Kasag, Banagan, Pagi Dahunan, Sunog, Alatan, Palad Bangkilan, Indong, Pagi Bulok, Kugaw, Maya-maya</i>	<i>Lupoy, Gurayan, Sap-sap, Lukos, Liwit, Hipon</i>	<i>Kasag, Pagi, Banagan green, Alimango, Alatan, Ngisi-ngisi, Palad, Bayang, Indong, Samaral</i>
Bottomset Gillnets for Fish	<i>Sapsap, Kugaw, Kasag, Abo, Bukabukaw, Putian, Sunog, Tabal, Palad bangkilan, Salmonite</i>	<i>Samaral, Balanak, Sap-sap, Kasag, Balanak, Tikiro, Lukos, Ngisi-ngisi, Kilawan, Lukos</i>	<i>Pagi, Kasag, Abo, Salmonete, Bayang, Indong, Samaral</i>
Bottomset Long Line	<i>Pagi, Kugaw, Alimusan, Nipa-nipa, Inid, Bansa, Ubod, Bilbigan</i>	<i>Kasag, Samaral, Moy-moy, Ngisi-ngisi, Kilawan, Balanak, Lison</i>	<i>Pagi/Bulok, Tabal, Bugaong, Ulibalay, Nipa-nipa, Inid, Ubod, Lison, Pagi/Manok</i>
Crab Lift Net	<i>Kasag, Dawat</i>	<i>Ngisi-Ngisi, Moy-moy, Samaral, Kasag, Salmonete, Latab, Sap-sap, Abo, Bulao, Kilawan</i>	-
Crab Pots	<i>Corusan, Pitik-pitik, Kasag, Dawat, Intsik-intsik, Kasway, Pugaro, Pugita, Alimango, Kumong</i>	<i>Kilawan, Ubod, Bisugo, Ulibalay, Nipa-nipa, Putian, Pagi, Maya-maya, Inid, Putian</i>	<i>Kasag, Intsik-intsik</i>
Drift Gillnet	<i>Tabagak, Tuloy, Ilak, Balantiyong, Sap-sap, Kasag, Kugaw, Talang-talang, Lison</i>	-	<i>Lali, Kugaw, Ulibalay, Kasag, Bayang, Pagi, Lison, Bukan, Palad</i>
Encircling Gillnet	<i>Tabagak, Balantiyong, Sap-sap, Liwit, Balila, Dalinuan, Bansa</i>	<i>Alimango, Kasag</i>	<i>Lison, Ulibalay, Sap-sap, Abo, Lali, Kasag, Kugaw, Maya-Maya, Alatan</i>
Fish Corral	<i>Lison, Dalinuan, Lukos, Sap-sap, Ito, Abo, Bukan, Ngisi-ngisi, Bansa</i>	<i>Tabagak, Balantiyong, Tuloy, Salmonete, Sap-sap, Abo, Gurayan Lali, Sap-sap, Salmonete, Bisugo</i>	<i>Ito, Bukan, Lison, Soreb/Dalaan Bukid, Pagi, Ngisi-ngisi, Lukos, Dalinuan, Lali</i>
Fish Trap	<i>Kasag, Inid, Pugaro, Latab, Lison, Kugaw, Sunog</i>	<i>Sap-sap, Tambilawan, Tabal, Abo, Lison, Lali, Balila, Kasag, Ilak, Tabal</i>	<i>Inid, Alatan, Pagi, Maya-maya, Bayang, Talakuagan</i>
Hook & Line	<i>Kilawan, Pugaro, Asohos, Pakol, Pagi, Bugaong, Maya-maya, Sunog, Putian</i>	<i>Tabagak, Balantiyong, Gurayan</i>	<i>Lison, Aluman, Pugaro, Alatan, Kilawan, Salmonete</i>
Multiple Hook & Line	<i>Sunog, Latab</i>	<i>Lupoy, Gong-gong, Gurayan, Pasayan, Indangan, Ngisi-ngisi Samaral, Bansa, Dalinuan</i>	
Pushnet Motorized	<i>Hipon, Ngisi-ngisi, Pasayan, Kasag</i>	<i>Alimusan</i>	
Scoopnet with Lights	<i>Lukos</i>	<i>Bisugo, Maya-maya, Gurayan, Sap-sap,</i>	
Shrimp Pot	<i>Pasayan</i>	<i>Kilawan, Salmonete, Buga-ong, Bukan, Inid, Putian</i>	
Drive In Net	-	<i>Pasayan, Kasag, Hipon, Gong-gong</i>	<i>Balitos, Aluman, Pagi, Alatan, Kilawan</i>
Drive In Trammel Net	-	<i>Kasag, Alimango, Lukos</i>	<i>Ngisi-ngisi, Samaral, Moymoy, Kilawan, Bukaw-Bukaw, Kasag, Pagi, Indangan</i>
		<i>Pasayan, Lukon</i>	
		<i>Ngisi-Ngisi, Moy-moy, Samaral, Indangan, Dalagang bukid, Inid Baka-baka, Indong, Kilawan, Pakol</i>	



Table 56 shows the list of species commonly caught in Guimaras municipal waters.

Table 56. List of fish species commonly caught in Guimaras Province municipal waters.

Local name	Scientific name	Local name	Scientific name
Abo	<i>Pennahia anea</i>	Lison	<i>Carangoides</i> sp.
Alatan	<i>Diagramma pictum</i>	Liwit	<i>Caranx</i> sp.
	<i>Plectorhinchus lineatus</i>		<i>Trichiurus lepturus</i>
Alimango	<i>Scylla serrata</i>	Lukos	<i>Photololigo edulis</i>
Aluman	<i>Tylosurus crocodilus</i>		<i>Photololigo</i> sp.
Asohos	<i>Sillago sihama</i>	Maya-maya	<i>Lutjanus boutton</i>
Badlon	<i>Gnathanodon speciosus</i>		<i>Lutjanus johnii</i>
Bagudlung	<i>Atule mate</i>	Moy-moy	<i>Scarus ghobban</i>
Balanak	<i>Crenimugil crenalabis</i>		<i>Xiphocheilus typus</i>
		<i>Mugil cephalus</i>	<i>Siganus canaliculatus</i>
Balantiyong	<i>Dussumieria acuta</i>	Ngisi-Ngisi	<i>Siganus javus</i>
	<i>Dussumieria elopsoides</i>		<i>Siganus virgatus</i>
Balila	<i>Chiracentrus nudus</i>	Nipa-nipa	<i>Muraenichthys gymnopterus</i>
	<i>Chirocentrus dorab</i>		<i>Dasyatis annotata</i>
Balitos	<i>Hyporhamphus qouyi</i>	Pagi	<i>Dasyatis sephen</i>
Banagan Green	<i>Panulirus ornatus</i>		<i>Dasyatis</i> sp.
Bangrus	<i>Chanos chanos</i>		<i>Neotrygon kuhlii</i>
Bansa	<i>Sphyraena barracuda</i>	Pagi Dahunan	<i>Pastinachus sephen</i>
	<i>Sphyraena obtusata</i>		<i>Taeniura lymma</i>
	<i>Sphyraena putname</i>		<i>Aetobatus narinari</i>
Bayang	<i>Drepane punctata</i>	Pahi/Bulok	<i>Himantura uarnak</i>
Bilbigan	<i>Lutjanus gibbosus</i>	Pakol	<i>Abalistes</i> sp.
Bisugo	<i>Nemipterus virgatus</i>		<i>Abalistes stellaris</i>
Buga-ong	<i>Terapon jarbua</i>		<i>Abalistes stellatus</i>
	<i>Terapon quadrilineatus</i>	Palad	<i>Cynoglossus robustos</i>
Bukan	<i>Alectis indicus</i>		<i>Platycephalus endrachtensis</i>
Bukaw-bukaw	<i>Priacanthus macracanthus</i>	Palad bangkilan	<i>Pseudorhombus arius</i>
	<i>Sargocentron rubrum</i>	Palata	<i>Chromis atripectoralis</i>
	<i>Corusan</i>	Pasayan	<i>Metapenaeus</i> sp.
Dalinuan	<i>Selaroides leptolepis</i>		<i>Penaeus indicus</i>
Dawat	<i>Thalamita crenata</i>	Pitik-Pitik	<i>Orato scyllanipa</i>
Hipon	<i>Acetes</i> sp.	Pugaro	<i>Epinephelus suillus</i>
Ilak	<i>Monodactylus argenteus</i>	Pugita	<i>Octopus aegina</i>
Indangan	<i>Acanthurus</i> sp.		<i>Octopus macropus</i>
Indong	<i>Echidna nebulosa</i>	Putian	<i>Carangoides coeruleopinnatus</i>
	<i>Pisodonophis cancrivorous</i>		<i>Ulua mentalis</i>
Inid	<i>Epinephelus</i> sp.	Salmonete	<i>Uraspis uraspis</i>
	<i>Epinephelus tauvina</i>		<i>Upeneus moluccensis</i>
Inid/Pugaro	<i>Epinephelus coioides</i>	Samaral	<i>Upeneus vittatus</i>
Intsik-intsik	<i>Portunus sanguinolentos</i>		<i>Siganus guttatus</i>

Local name	Scientific name	Local name	Scientific name
<i>Ito</i>	<i>Arius sp.</i>	<i>Sap-sap</i>	<i>Gazza minuta</i>
	<i>Paraplotosus albilabris</i>		<i>Leiognathus equulus</i>
	<i>Plotosus lineatus</i>		<i>Leiognathus fasciatus</i>
<i>Kasag</i>	<i>Portunus pelagicus</i>		<i>Leiognathus sp.</i>
<i>Kasway</i>	<i>Podophthalmus vigil</i>		<i>Leiognathus splendens</i>
<i>Kilawan</i>	<i>Gymnocranius griseus</i>	<i>Soreb/Dalagang Bukid</i>	<i>Caesio cuning</i>
	<i>Lethrinus atkinsoni</i>	<i>Sunog</i>	<i>Onegocia sp.</i>
	<i>Lethrinus lentjan</i>	<i>Tabagak</i>	<i>Amblygaster leiogaster</i>
<i>Kugaw</i>	<i>Eleutheronema tetradactylum</i>		<i>Sardinella fimbriata</i>
<i>Kumong</i>	<i>Calappa sp.</i>		<i>Sardinella gibbosa</i>
<i>Lali</i>	<i>Scomberoides lysan</i>	<i>Tabal</i>	<i>Pomadasys kaakan</i>
	<i>Scomberoides tol</i>	<i>Talakitok</i>	<i>Caranx sexfasciatus</i>
<i>Latab</i>	<i>Gerres erythrourus</i>	<i>Talakugan</i>	<i>Platax orbicularis</i>
	<i>Gerres filamentosus</i>	<i>Talang-talang</i>	<i>Alepes djedaba</i>
	<i>Gerres oyena</i>	<i>Tamodios</i>	<i>Decapterus kurroides</i>
<i>Lison</i>	<i>Carangoides ferdau</i>	<i>Tangigue</i>	<i>Scomber australasicus</i>
	<i>Carangoides fulvuguttatus</i>	<i>Tuloy</i>	<i>Sardinella lemuru</i>
	<i>Carangoides Gymnusthetus</i>	<i>Ubod</i>	<i>Conger sp.</i>
	<i>Carangoides ignobilis</i>	<i>Ulibalay</i>	<i>Pomadasys maculatum</i>
	<i>Carangoides malabaricus</i>		

BFAR NSAP-PFO Guimaras Data 2014-2017



Special Project on Assessment of Municipal Fisheries in Guimaras Province

No production for commercial fisheries is available since the province is located between the Islands of Panay and Negros and thus, the fishing ground is limited to municipal fisheries. Table 57 shows the volume of production by species of

municipal fisheries for 2010-2017. Although the volume of production varied per species per year, in general, the volume of production has been increasing, which may be attributed to increase in effort and efficiency of the gears used by fishers.

Table 57. Guimaras municipal fisheries: Volume of production by species in metric tons (2010-2017).

Species	Annual							
	2010	2011	2012	2013	2014	2015	2016	2017
Acetes (<i>Alamang</i>)	104.21	121.69	40.24	15.62	15.88	18.50	15.07	24.15
Anchovies (<i>Dilis</i>)	220.27	388.50	367.48	202.67	182.57	273.15	546.72	489.37
Big-eyed scad (<i>Matangbaka</i>)	123.05	81.55	80.15	136.99	107.75	28.40	41.17	57.66
Bigeye tuna (<i>Tambakol/ Bariles</i>)	1.61	1.40	1.13	3.25	3.45	4.40	1.04	1.30
Blue crab (<i>Alimasag</i>)	250.47	219.15	129.58	110.16	115.86	168.85	161.58	132.70
Caesio (<i>Dalagang-bukid</i>)	65.45	39.96	56.91	135.57	95.97	123.81	140.42	83.13
Cavalla (<i>Talakitok</i>)	225.16	116.56	132.16	373.02	395.37	708.63	853.37	504.03
Crevalle (<i>Salay-salay</i>)	25.53	216.24	124.20	53.26	35.42	9.15	24.75	49.10
Eastern little tuna (<i>Bonito</i>)	9.89	10.20	8.83	17.00	7.30	3.00	2.89	3.02
Fimbriated sardines (<i>Tunsoy</i>)	416.64	573.28	592.68	524.54	616.47	732.88	548.85	552.28
Flying fish (<i>Bolador</i>)	24.28	26.50	7.90	12.40	18.81	21.55	37.14	25.58
Frigate tuna (<i>Tulingan</i>)	24.59	13.30	26.52	40.79	25.18	11.70	18.58	8.52
Goatfish (<i>Saramulyete</i>)	162.96	149.86	156.75	252.65	210.44	192.06	215.01	164.07
Grouper (<i>Lapu-lapu</i>)	198.75	145.12	128.90	198.49	159.08	131.82	171.04	150.31
Hairtail (<i>Espada</i>)	50.43	45.98	65.96	128.46	156.05	248.93	204.41	189.16
Indian mackerel (<i>Alumahan</i>)	64.86	42.61	70.04	185.56	148.74	61.36	77.64	108.81
Indian sardines (<i>Tamban</i>)	111.12	59.89	75.08	95.00	123.11	232.77	124.65	389.81
Indo-pacific mackerel (<i>Hasa-hasa</i>)	20.52	14.29	37.38	91.96	56.13	27.52	13.91	20.20
Mullet (<i>Kapak</i>)	209.53	166.38	175.44	202.80	147.55	130.32	161.13	93.47
Parrot fish (<i>Loro</i>)	224.69	155.93	176.43	167.11	144.22	87.77	138.63	87.42
Porgies (<i>Pargo</i>)	193.36	124.22	190.32	299.60	209.53	215.17	214.99	161.00
Round herring (<i>Tulis</i>)	160.68	86.29	153.58	185.58	192.51	331.76	246.00	113.10
Roundscad (<i>Galunggong</i>)	26.30	21.84	15.82	2.58	2.03	1.47	44.90	37.53
Siganid (<i>Samaral</i>)	216.72	123.26	193.08	348.58	341.32	338.16	325.87	252.73
Skipjack (<i>Gulyasan</i>)	14.69	7.74	7.06	2.73	1.55	2.30	1.41	5.83
Slipmouth (<i>Sapsap</i>)	159.53	248.74	200.59	161.45	129.29	142.66	140.52	124.40
Snapper (<i>Maya-maya</i>)	152.04	135.38	113.51	158.08	143.12	169.17	228.82	222.14
Spanish mackerel (<i>Tanigue</i>)	27.82	27.96	33.25	105.16	59.90	87.69	241.64	242.16
Squid (<i>Pusit</i>)	152.69	276.29	162.12	64.35	49.28	29.94	64.27	70.73
Threadfin bream (<i>Bisugo</i>)	151.05	121.47	145.64	199.72	229.56	260.69	238.43	138.07
Yellowfin tuna (<i>Tambakol/Bariles</i>)	10.13	..	..	..	..	..	..	..
Others	677.82	683.12	770.49	824.71	1,087.23	1,188.32	1,223.15	1,049.12
Total	4476.84	4444.7	4439.22	5299.84	5210.67	5983.9	6468	5550.9

For aquaculture production, the volume was maintained at 3,000 MT except for the years 2014 to 2016 where the production dropped to an average of 2,500 MT (Table 58). The fluctuation during this period may be accounted

to the weather disturbances experienced by Guimaras, particularly typhoons and the El Niño phenomenon in 2015. Milkfish and seaweed top the aquaculture species produced in 2010-2017.

Table 58. Guimaras Aquaculture: Volume of production by species in metric tons (2010-2017).

Species	Annual							
	2010	2011	2012	2013	2014	2015	2016	2017
Brackishwater fishpond								
Milkfish	1,811.07	1,614.08	1,724.17	1,573.03	1,769.81	1,749.22	1,527.54	1,880.39
Tilapia	16.74	12.12	19.97	13.59	16.63	13.80	8.96	11.36
Mudcrab	10.36	7.85	12.86	13.08	8.31	6.57	3.94	6.74
Endeavor prawn	8.23	6.42	8.89	7.29	8.33	4.80	1.66	2.27
White shrimp	12.71	9.62	10.53	6.99	4.64	4.31	2.00	2.96
Others	..	..	..	..	..	..	0.12	0.01
Freshwater fishpond								
Tilapia	18.37	13.09	9.30	5.37	5.66	4.88	5.64	9.57
Catfish	6.92	4.42	2.97	1.35	2.19	1.75	2.62	5.43
Marine pen								
Milkfish	2.25	1.50						
Marine cage								
Milkfish	36.29	76.30	91.56	56.44	51.00	88.00	203.00	302.00
Grouper	..	..	..	..	..	..	0.09	..
Spiny lobster	..	..	..	..	..	..	0.18	0.16
Others	..	..	..	..	..	..	0.27	0.26
Oster	3.04	2.13	4.89	2.05	1.30	1.08	1.62	2.74
Seaweed	1,140.58	1,355.10	1,552.88	1,518.44	748.93	530.75	685.76	803.30
Small farm reservoir								
Tilapia	3.04	2.03	1.05	0.19	..	..	..	..
Catfish	1.31	1.01	0.54	0.04	..	..	..	..
Total	3,070.91	3,105.67	3,439.61	3,197.86	2,616.80	2,405.16	2,443.40	3,027.19



Fishery Law Enforcement and Enhancement Training (FLEET) for MPA wardens and Managers on June 14-16, 2017





Crab pots fabrication in Sibunag (Photo credit: 2017 Manggahan Photo Contest, Stephen Gagatan).

In terms of self sufficiency, based on the recent PSA data, Guimaras has the least deficit. The current total population of the province of Guimaras can consume a total of at least 1,900 MT of milkfish per year based

on its per capita consumption as shown in Table 59. With the increasing trend of milkfish production in the province, especially in the marine cage culture, Guimaras is expected to be self sufficient in the future.

Table 59. Annual per capita consumption of fishery products in Guimaras Province.

Water district locations	2012 All barangays (in kilograms)
Guimaras	
Milkfish	11.505
Tilapia	1.240
Roundscad	5.386
Dalagang bukid	1.431
Tuna (all species)	2.364
Shrimp	0.922
Mussels	0.108
Other Fish Species	..
Crustaceans	..
Mollusks	..
Other Fishery and Aquatic Products	..
Dried Fish	..



Fishing village in Sibunag (Photo credit: 2017 Manggahan Photo Contest, Stephen Gagatan).

Implications and Recommendations

A significant amount of fishery data and information, both for municipal and aquaculture fishery) is available which allows better interpretation of the status of fisheries production in the province. The demand for fish and fishery products has been increasing, which is proportional to the population increase. It can be noted that various types of fishing gears were utilized to supply the demand. Aquaculture production, particularly for milkfish has also been increasing. An increase in the number of fisherfolks registered in the FishR program of BFAR was also noted.

In order to maintain the productivity of the Guimaras waters, a combination of management measures is necessary. These include efficient enforcement of fishery ordinances, strengthening the management of MPAs, enhancing

awareness raising activities on sustainable fisheries and aquaculture and close coordination with BFAR to identify concrete programs to enhance livelihood support for fisherfolks as part of the FishR program, including access to basic government services, such as health care and insurance.

While the PSA data showed that aquaculture production in the province is sufficient to supply the demands of the Guimaras people, with the anticipated increase in aquaculture activities, there is also a need to monitor the impacts of this activity to the environment. The necessary regulatory measures should be considered.

References

NSAP, BFAR RFO Region 6
Philippine Statistics Authority



Food security and livelihood management

027 Malnutrition rate

Description

This indicator measures the proportion of population with access to sufficient daily dietary requirements.

Rationale

Nutrition status is an indicator that integrates availability and equitability of access to food and livelihood. While other factors (such as agriculture and trade) may affect these

figures, nutrition status is also affected by the availability of seafood.

Data Requirements

- Number of undernourished males (all ages)
- Number of undernourished females (all ages)
- Number of undernourished males (less than 5 years old)
- Number of undernourished females (less than 5 years old)

Results

The number of malnourished children below five years old, as recorded in the Community-Based Monitoring System, has been continuously decreasing. In particular, the total number has decreased from 488 children to 363 children during the period 2011-2012 and 2016-2017, respectively (Table 60). The number of stunted and severely stunted children has also consistently decreased from 2013 to 2016, i.e, from 11.16 per cent to 7.02 per cent (Figure 29).

Around 2.2 percent or 363 children zero to five years old were classified as moderately or severely underweight. In

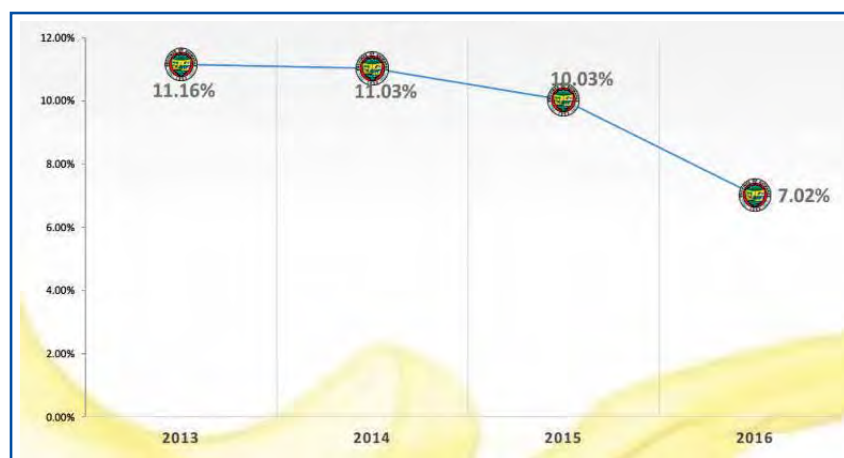
particular, 167 boys and 196 girls zero to five years old were considered malnourished. Malnutrition prevalence among girls was higher than boys, at 2.4 percent and 1.4 percent, respectively. The highest prevalence of malnutrition was observed in San Lorenzo at 6.1 percent, followed by Nueva Valencia at 1.9 percent.

Over the years, policy and programs regarding malnutrition have improved, which showed a 3.01 per cent decrease between 2015 and 2016.

Table 60. Number of malnourished children 0-5 years old.

Municipality	2011-2012		2016-2017	
	Magnitude	Proportion	Magnitude	Proportion
Buenavista	154	2.2	72	1.7
Jordan	108	2.8	40	1.7
Nueva Valencia	58	1.3	72	1.8
San Lorenzo	49	2.2	160	6.1
Sibunag	119	4.0	19	0.8
Total	488	12.5	363	12.1

Figure 29. Prevalence of stunted and severely stunted children (2013-2016)



Source: PHO, MHO data

Implications and Recommendations

In the Philippines, poverty is prevalent in the coastal areas where malnutrition is one of the manifestations. Guimaras has implemented programs and projects to improve the nutritional status of its constituents. These included *Gulayan sa Paaralan*, *Busog Lusog Talino* program, supplementary feeding, deworming, orientation on good grooming and personal hygiene and integration of essential health care program and productivity.

While malnutrition has been reduced, the province and the five municipalities should strive to further reduce the malnutrition rate by implementing programs to alleviate malnutrition through better access to food and proper nutrition and educating parents and communities on the proper care for the children.

References

- Draft CBMS Report -2016-2017
 PHO
 The Many Faces of Poverty Vol. 9 (Draft) Community-Based Monitoring System Poverty Maps 2016-2017
 The Many Faces of Poverty Vol. 6, Community-Based Monitoring System Poverty Maps 2011-2012

Food security and livelihood management

028 Poverty, education and employment

Description

This indicator estimates the degree of poverty, employment and the potential for employment.

Rationale

The degree of poverty reflects an area's degree of social development. Productive employment is a foundational element needed to provide households with goods and

services in their struggle against poverty, while education is a key to productive employment.

Data Requirements

- Poverty threshold
- Poverty incidence
- Income per capita (male/female)
- Total employment (male/female)
- Education; proportion of population (male/female; primary/secondary/tertiary)
- Budget allocation for livelihood programs

Results

Guimaras has the lowest poverty incidence in the Western Visayas Region. The overall poverty incidence in the province decreased from 20.7 per cent in 2009 to 25.2 per cent in 2012 and 5.2 per cent in 2015. The income per capita

of the province fell above poverty threshold which indicated that most of the populace earned more than the amount needed to spend to satisfy nutritional requirements and other basic needs (Tables 61 and 62).

Table 61. Guimaras per capita income (in Php).

Year	Amount
2006	32, 182
2009	36, 588
2012	54, 096

Table 62 Poverty Incidence among families in Guimaras Province.

Year	Poverty threshold (PhP)	Poverty incidence	Magnitude of poor families
2009	16, 204	13.4	4, 665
2012	18, 926	16.9	6, 345
2015	23, 136	4.8	1, 594

Table 63. Municipal level poverty estimates (2012).

Municipality	Poverty incidence	Standard error	Coefficient of variation	90% Confidence interval	
				Lower limit	Upper limit
Buenavista	16.3	2.2	13.6	12.6	19.9
Jordan	17.5	3.0	17.3	12.5	22.5
Nueva Valencia	19.0	2.8	14.4	14.5	23.6
San Lorenzo	28.7	4.8	16.7	20.8	36.6
Sibunag	28.4	3.5	12.5	22.6	34.2

At the municipality level, San Lorenzo and Sibunag have recorded the highest poverty incidence, i.e., 28.7 per cent and 28.4 per cent, respectively, which may be attributed to insufficient access to nutrition, health, education, housing and leisure (Table 63).

The unemployment rate for 15 years old and above showed a decrease in the Municipalities of Buenavista, Jordan and Sibunag for the period 2011-2012 and 2016-2017. The Municipalities of Nueva Valencia and San Lorenzo exhibited declining rates (Table 64).

Table 64. Unemployment rate (15 years and above).

Municipality	2011-2012		2016-2017	
	Magnitude	Proportion	Magnitude	Proportion
Buenavista	1,295	9.3	657	4.6
Jordan	741	6.4	694	6.0
Nueva Valencia	348	4.3	788	7.1
San Lorenzo	413	7.7	697	8.5
Sibunag	645	9.6	426	6.3

Source: CBMS data 2011-2012 & 2016-2017.



Table 65. Tourists arrivals and receipts in Guimaras Province (2010-2017).

	2010	2011	2012	2013	2014	2015	2016	2017
Visitor arrival	252,349	297,375	319,547	333,243	347,148	402,185	510,665	571,694
Tourism receipt	231.1M	285.2 M	304.4 M	292.7 M	263.9 M	309.4 M	420.4 M	474.9M

Guimaras aims to become the agri-eco-tourism capital of the Western Visayas Region. The tourism industry in the province showed significant growth, as evidenced by the increasing tourist arrivals and tourist receipts from 2010 to 2017. Annual average tourist receipts have more than doubled, i.e., PhP 231.1 M in 2010 to PhP 474.9 M in 2017 (Table 65).

The increasing tourist arrivals have resulted to increased generation of tourism receipts, which were derived from the transportation services, accommodation and other tourism-related facilities and activities, such as local product sales receipts, etc.

To further develop the agri-eco-tourism circuit, the provincial government is implementing the Agro-Forestry Project under the ICM Program. This project aims to improve the socio-economic condition of the marginal farmers, and increase the forest cover in the area. There are five established and maintained agro-forestry sites in the five municipalities which will soon be included in the agri-eco-tourism circuits.

Table 66 shows the areas covered and budgetary allocations for the agroforestry project in the five municipalities.

Table 66. Agroforestry sites in Guimaras Province.

Municipality	Area (has.)	Budget allocated	Source of fund
Buenavista	1.0	340,000	ICM-2017DF
Jordan	1.0	187,193	ICM-2015DF
Nueva Valencia	5.4	250,000	ICM-2014DF
San Lorenzo	3.0	79,397	ICM-2016DF
Sibunag	1.0	250,000	ICM-2014DF
Total	11.4		

Box 7. Guimaras wins DOT-ATOP Pearl Award.



In partnership with the Department of Tourism (DOT), the Association of Tourism Officers of the Philippines (ATOP) launched the Pearl Award in 2005 as an annual system of recognition for best tourism practices, products and services.

Guimaras Province bagged the 1st runner-up award in the 17th National ATOP-DOT Pearl Awards 2015 in the Best Tourism Event - Adventure Category for the Guimaras Bike Paradise of the Philippines Project in collaboration with John B. Lacson Foundation Maritime University and Barangay San Roque Suba Malawig Eco Tour for the Best Community-Based Responsible Tourism – Enterprise Category in collaboration with the Lopez Family.



Salt farming in San Lorenzo (Photo credit: 2017 Manggahan Photo Contest, Alex Villanueva).

Implications and Recommendations

Guimaras has made significant strides in alleviating poverty and increasing employment potential over the past eight years. The implementation of the socioeconomic development plans, i.e., CDPs, CLUPs, and Investment Plans, is anticipated to further contribute to reducing the poverty incidence and improving the social and economic well being of the Guimarasnons.

As the province continue its bid towards transforming into the agri-eco-tourism capital of Western Visayas, improving the tourism infrastructure and facilities and support services is necessary. This requires increased investments in accommodation facilities, product packaging and promotion, guest assistance and information centers, ports and access roads, transportation and communication services.

A possible shift in employment from agriculture and fisheries to services is anticipated in view of the changing

development directions of the province as a result of the current administration's Build, Build, Build Program and the increasing popularity of Guimaras as the emerging destination for coastal tourism. Continuing promotion of its cultural and historical heritage and environmental attraction, including the annual Manggahan Festival Celebration to showcase what Guimaras is known for will draw more tourists, which will translate into increased employment opportunities for the Guimarasnon.

Socioeconomic monitoring should be sustained to serve as input in strengthening the socioeconomic development plans of the province and municipalities. Monitoring of the environmental impacts of the various agri-ecotourism undertakings in the province should also be undertaken.

References

Approved Annual Budget Nueva Valencia (2010-2017)
M/PSWDO
PPDO
Regional Social and Economic Trends Western Visayas 2016



Food security and livelihood management

029 Livelihood programs

Description

This indicator measures the availability of programs, people, and budget to help enhance coastal livelihoods. It also looks

into the sectors benefited and the impacts of these livelihood programs.

Rationale

Livelihood programs help optimize productivity of coastal areas and help households maximize their potential for income.

Data Requirements

- Existing livelihood programs
- Staff and budget allocation for livelihood programs
- Accessibility and budgets
- Sectors covered
- Impacts of livelihood programs

Results

Table 67 shows the various livelihood programs implemented in the five municipalities, including those implemented by relevant provincial agencies with the corresponding budget allocations. Financial allocation varied annually in each of

the municipalities, including the types of livelihood programs implemented. The beneficiaries of the livelihood programs included women, fishers, famers and other organized groups.

Table 67. Staff and budget allocation for livelihood programs in Guimaras Province.

Local government unit	Budget allocation (PhP)
Buenavista	2015: 300,000.00 (Livelihood Assistance); 850,000.00 (Provision of motorized fishing boat w/ fishing net) 2016: 400,000.00 (Livelihood Assistance); 900,000.00 (Procurement of Fishing Gears & Paraphernalias)
Nueva Valencia	2011: 200, 000.00 (Community Base Rural Tourism Support, Blue Crab Sanctuary and Production) 2013: 50, 000.00 (Blue Crab Propagation & Conservation) 2014: 450, 000.00 (Post Harvest Facilities: seaweed dryer)
San Lorenzo	2011: 40,000.00 (Agriculture & Fisheries Development Program) 2013: 200,203.00 (Distribution of Complete set of Fishing nets-DA-RFO 6) 645,000.00 (Kasagan Center-DA-RFO 6) 2014: 120,000.00 (MLGU), 135, 000.00 (Provision of Fishing Gear), 327,500.00 (Provision of plastic Sheets to Salt Producers-DA-RFO 6) 150,000.00 (MLGU) 2015: 150,000.00 (MLGU), (Inputs for the Fish Stall Cladding and Stand Alone - BFAR) 2016: 400,000.00 (MLGU), 2.4M (Deployment of Fish Enhancing Device/Payaw-BFAR-BUB), 300,000.00 (National Rice Program organic Rice Production) 2017: 400,000.00 (MLGU), 20,000.00 (Tilapia Fingerlings dispersal) (Catfish Culture Project-Provisions of fingerlings and feeds-BFAR)50 units Fiberglass boats-Bangka ko Gawa ko Project (BFAR), 72,000.00 (Organic Vegetable Production Material Input-DA-RFO 6), 46,000.00 (vermi-composting)
Sibunag	2010: 30,000.00 (Development of Abalone Culture & Management) 2011: 50,000.00 (Seaweed Production) 2012: 100,000.00 (Support to Salt Production) 2013: 20,000.00 (Support to Gravid Blue Crab Preservation Project)
Province	2014: 300, 000 (ICM 20% DF: Livelihood Support for Women) 2015: 200,000.00 (PSWDO: Livelihood Support for Women) 2016: 210,000.00 (PSWDO: Livelihood Support for Women) 2017: 200,000.00 (PSWDO: Livelihood Support for Women)

In addition to the livelihood programs of the provincial and municipal governments, the DENR-PENRO Guimaras through the Coastal and Marine Ecosystem Management Program has provided biodiversity-friendly enterprises (BDFE) as part of the livelihood support to local governments/ POs/CSOs working at the 10 MPAs (Table 68). BDFEs cover economic activities and practices of micro, small and

medium enterprises that create wealth and value and open opportunities for the equitable sharing of benefits among stakeholders. The development of BDFEs in Guimaras Province included the local government units and people's organizations, especially those involved in the management and operation of MPAs. Total budget allocation for the 22 BDFEs is PhP 5.5. M.



Table 68. List of biodiversity-friendly enterprises provided by DENR-PENRO to Guimaras Province.

Municipality	Name of MPA		BDFE	Location	Beneficiary/ Contact person	Total cost (PhP)
Buenavista	Avila Marine Sanctuary	1	Multi-Commodity solar Tunnel Drying Facility	Brgy. Avila	AVILA FISHERFOLK ASSOCIATION, INC. (AFAI)/ MR. RESTITUTO DIAMANTE	250,000.00
		2	Catering Start Up materials			250,000.00
Jordan	Sitio Singcalang Brgy. Balcon Melliza and Sitio Timbad, Brgy. Balcon Maravilla (Balcon MPA)	1	Display center for souvenirs, traditional fishing supplies,snorkelling materials	Sitio Singcalang, Brgy. Balcon Melliza	SINGCALANG FISHERFOLK ASSOCIATION (SIFA)/ MR. ULYSES ERPELUA	250,000.00
		2	Locally-managed fishing gear and sari-sari store	Sitio Timbad, Brgy. Balcon Maravilla	CAPITUGUAN-TIMBAD FISHERFOLK ASSOCIATION (CAPTIM FA)/ MR. MARIO MARAVILLA	250,000.00
	Sitio Lusay and AveMariaslet Marine Reserve and Sanctuary (Lawi MPA)	1	Paddle boat w/complete snorkelling set and fishing supply store	Sitio Baybay, Brgy. Lawi	BRGY.LAWI FISHERFOLK ASSOCIATION (BLFA)/MR. ROGER GRANADA	250,000.00
		2	Floating cottage/restaurant	Sitio Baybay, Brgy. Lawi	BRGY.LAWI FISHERFOLK ASSOCIATION (BLFA)/MR. ROGER GRANADA	250,000.00
	Sinapsapan Marine Protected Area	1	Floating Cottage with snorkelling set			250,000.00
Nueva Valencia	Igang Bay Marine Reserve andSnactuary (IBMS)	1	Bicycle rental	John B. Lason Maritime University Ecopark, Brgy. Igang	Poblacion, Nueva Valencia MultiPurpose Cooperative (PNVMPC)/MR. JOHNNY GALVE	250,000.00
		2	Catering Services	John B. Lason Maritime University Ecopark, Brgy. Igang	Poblacion, Nueva Valencia MultiPurpose Cooperative (PNVMPC)/MR. JOHNNY GALVE	250,000.00
	Brgy. Dolores Marine and Fish Haven (BDMFH)	1	Catering	Brgy. Dolores	Katilingban Sang Magagmay nga Mangingisda sang Dolores (KAMAMADO)/ MR.MARTE GALVEZ	250,000.00
		2	Paddle boat w/complete snorkelling set	Basyaw Cove, Brgy. Dolores	Katilingban Sang Magagmay nga Mangingisda sang Dolores (KAMAMADO)/ MR.MARTE GALVEZ	250,000.00
	Tando-Lucmayan Marine Sanctuary (Tanluc)	1	Paddleboat with complete snorkelling set	Brgy. Tando	Tando-Lucmayan Marine protected Area Fisherfolk Association (TanLuc MPA FA)/ MR. BILSY GANDECILA	250,000.00
		2	Concreting of footbridge to guard house	Brgy. Tando	Tando-Lucmayan Marine protected Area Fisherfolk Association (TanLuc MPA FA)/ MR. BILSY GANDECILA	250,000.00

Table 68. List of biodiversity-friendly enterprises provided by DENR-PENRO to Guimaras Province (cont.).

Municipality	Name of MPA		BDFE	Location	Beneficiary/ Contact person	Total cost (PhP)
Nueva Valencia (cont.)	Taklong Island National Marine Reserve (TINMR)	1	Floating cottage/restaurant (Catering materials and snorkelling set rentals)			250,000.00
		2	Souvenir materials	Sitio Comian, Brgy. San Roque	San Roque Coastal Environment Program Association (SARCEPA)/MR. ERNIE CABRILLOS	250,000.00
		3	Fishing Supplies store and Salt Production	Sitio Alman, Brgy. Lapaz	Lapaz Fisherfolk Aquatic Reources Mangrove Management Association, Inc. (LAFARMA)/MR. NELSON CELIZ	250,000.00
	Toyo Reef Fish Sanctuary (TRFS)	1	Seaweed farming UNISAN	Unisan Island, Brgy. Guiwanon	UNISAN SMALL FISHERFOLK ASSOCIATION (UNISFA)/ ROSA LEE GANDECILA	250,000.00
		2	Fishing Supplies Store	Sitio Proper, Guiwanon	BRGY. COUNCIL, GUIWANON/ BRGY. KAGAWAD ZOSIE GALVE	250,000.00
Sibunag	Pamanculan Fish Sanctuary (PFS)	1	Floating cottage/restaurant (Sabang)	Sitio Baybay, Brgy. Sabang	Samahan sa Sabang ng Mangingisda (SASAMA)/ NESTOR GONZALES	250,000.00
		2	Seaweed processing (San Isidro)	Sitio Lamnig, Brgy. San Isidro	San Isidro Residence Fisherfolk Association (SIRFA)/ MRS. IMELDA GOMIA	250,000.00
San Lorenzo	Tumalintinan Point Marine Protected Area (TPMPA)	1	Floating cottage/restaurant (Suclaran)	Sitio Baybay, Brgy. Suclaran	Ang Magagmay nga Mangingisda sang Suclaran (AMMS)/ MR. ROGER TIBERIO	250,000.00
		2	Crab Processing (Lebas)	Sitio Baybay, Brgy. San Enrique (Lebas)	Lebas Fisherfolk Association (LEFA)/ MRS. NELITA BITALAC	250,000.00
GRAND TOTAL (PhP)						5,500,000.00





Community fish landing center at Barangay Alegria, Sibunag.

The Bureau of Fisheries and Aquatic Resources has established community fish landing centers (CFLC) at Sebario, San Lorenzo; Cabalagnan, Nueva Valencia and Alegria, Sibunag under its national program. The project aims to spur growth in coastal areas with high poverty incidence and large population of registered fisherfolk under BFAR's Targeted Actions to Reduce Poverty and Generate Economic Transformation (Target) program. The facility will serve as hub for fisheries' harvests and economic activities like fish trade. It will also serve as venue for skills training of fisherfolks in the community. The distribution of

fiberglass fishing boats was made possible through the "F/B *Pagbabago*" Livelihood Development Program, a livelihood intervention of BFAR in partnership with DA to ensure resiliency and safety of fishermen at sea.

As livelihood support to its constituents, the Municipality of San Lorenzo has provided appropriate fishing gears, conducted/facilitated training on salt farming for 178 farmers. conducted training/programs on value adding, provision of tilapia and milkfish fingerlings for land aquaculture and goat and swine raising.

Turned over livelihood support through the Coastal and Marine Ecosystem Management Program
(Photo credits: DENR PENRO)



Snorkelling sets, Tan-Luc MPA, Nueva Valencia, June 29, 2017



BDFE materials, Unisan Small Fisherfolk Association of Toyo Reef Fish Sanctuary



Display Center, Balcon MPA, September 13, 2017



Catering materials for (1) Avila Marine Sanctuary, Buenavista, June 30, 2017; (2) Dolores Marine and Fish Haven, Nueva Valencia, July 1, 2017; (3) Pamanculan Fish Sanctuary, Sibunag, August 11, 2017; (4) Tumulintinan Point Marine Protected Area, San Lorenzo, September 8, 2017.

Implications and Recommendations

The province and municipal governments have collaborated with various partners and other stakeholders to implement various livelihood programs under the auspices of the ICM program. These projects benefited various sectors, particularly the communities at the five municipalities.

It is recommended that the provincial and municipal governments monitor the implementation and impacts of these livelihood programs, most especially their sustainability. For the BDFEs, staff of DENR PENRO is monitoring their implementation.

References

Records of the Provincial Economic Development Office
Records of Office of the Municipal Agriculturist (OMA) and Department of Social Welfare Development (DSWD),
Municipality of San Lorenzo

Food Security and Livelihood Management
Livelihood programs

Pollution reduction and waste management

030 Pollution management plan and implementation

Description

This indicator accounts the presence of specific policies, plans and programs for pollution reduction and waste management. It further looks into the commitment of local

government to implement the plans through allocation of human and financial resources.

Rationale

Specific strategies and action plans are essential to address issues on pollution and waste management. These action plans must be implemented through the commitment of

facilities and equipment, as well as financial and human resources.

Data Requirements

- Availability of pollution management plans and their scope (water, air, land)
- Monitoring programs
- Budget for pollution and waste management
- Staff allocation for pollution and waste management
- Adequacy of equipment/facilities

Results

In 2017, the National Economic Development Authority facilitated the formulation of the Provincial Water Supply, Sewerage and Sanitation Sector Plan in line with Philippine Water Supply and Sanitation Master Plan.

For solid waste management, **Table 69** shows that only the Municipality of Jordan has a Ten-Year Solid Waste

Management Plan approved by the National Solid Waste Management Commission (NSWMC). The province and the remaining municipalities, except for the Municipality of Buenavista, have conditional approval from the NSWMC subject to submission of additional requirements, including compliance to Section 37 of the Solid Waste Management Act (RA 9003), which requires the formulation of Safe

Closure and Rehabilitation Plan (SCRP) to regulate closure of open dumpsites. Out of the five municipalities, the Municipalities of Jordan, Buenavista, and Nueva Valencia have SCRPs while the other two municipalities, San Lorenzo and Sibunag, are still on the process of drafting their

SCRPs. Although only the Municipality of Jordan has an approved Ten-Year SWM Plan, the province and other four municipalities are implementing various programs on solid waste management in line with their conditionally approved Ten-Year SWM Plans.

Table 69. Pollution and waste management plans of the province and the five municipalities.

Local government unit	Pollution and waste management plans	Remarks
Province	Provincial Water Supply, Sewerage & Sanitation Sector Plan for the Province of Guimaras (2005)	
	Provincial Ten-Year Solid Waste Management Plan (2015-2024)	Approved & adopted by Sangguniang Panlalawigan (SP Res. No. 155, Ss. of 2015) Conditional Approval (NSWMC Res. No. 576, Ss. of 2016) - on the process of updating the plan as advised by the NSWMC last August 2017.
	DCGNPH Health Care Waste Management Plan	
Buenavista	Safe Closure and Rehabilitation Plan (SCRP) for Open Dumpsite - Land, Air, and Water	On-going implementation
	Municipal Ten-Year Solid Waste Management Plan (2015-2024)	On the process of updating the plan as advised by the NSWMC last August 2017.
Jordan	Safe Closure and Rehabilitation Plan (SCRP) for Open Dumpsite (2013-2022) - Land, Air, and Water	
	Municipal Ten-Year Solid Waste Management Plan (2015-2024)	NSWMC Approved (NSWMC Res. No. 55, Ss. of 2013)
Nueva Valencia	Safe Closure and Rehabilitation Plan (SCRP) for Open Dumpsite - Land, Air, and Water	
	Municipal Ten-Year Solid Waste Management Plan (2015-2024)	Conditional Approval (NSWMC Res. No. 510, Ss. of 2016) - on the process of updating the plan as advised by the NSWMC last August 2017.
San Lorenzo	Municipal Ten-Year Solid Waste Management Plan (2015-2024)	Conditional Approval (NSWMC Res. No.377, Series of 2016) - on the process of updating the plan as advised by the NSWMC last August 2017.
Sibunag	Municipal Ten-Year Solid Waste Management Plan (2015-2024)	Conditional Approval (NSWMC Res. No.378, Series of 2016) - on the process of updating the plan as advised by the NSWMC last August 2017.

The province through GENRO has conducted quarterly coastal water quality monitoring, including the inventory of coastal establishments that have been issued an ECC or CNC by DENR-BMB for the calendar year. The RHUs of the municipalities regularly conduct the monitoring of households with sanitary toilets, the household's mode of garbage disposal/waste management, list of water facilities and number of households with access to safe water (Table 70).

Staff and budget allocation of the province and the five municipalities covered the various programs and projects for pollution and waste management, such as clean-ups in upland and coastal areas, establishment of MRFs and composting facilities, procurement of equipment for solid waste management (i.e., bio/plastic shredder, garbage trucks, etc.). The budget for the operation of the Provincial Solid Waste Management Board is taken from the contingency fund of GENRO (Table 71).

Table 70. Monitoring programs for pollution and waste management in Guimaras Province.

Local government unit	Monitoring programs/Activities	Remarks	Implementing office
Province	Coastal Water Quality Monitoring	Quarterly	GENRO
	Monitoring of Waste within Provincial Capitol Area - Compliance with segregation at source and volume of waste generated	Monthly	GENRO
	Inventory of Coastal Establishments	Yearly	GENRO
	Provincewide monitoring on the compliance on Anti-Plastic Ordinance	As scheduled	PLEPS Task Force
Buenavista	Environmental Sanitation - Monitoring on no. of households with access to potable water & sanitary toilet		MHO/RHU
Jordan	Environmental Health Sanitation Program - Monitoring of toilet facilities, garbage disposal, & water facilities	Quarterly	MHO/RHU
Nueva Valencia	Improve safe water program - Bacteriological Analysis of water sources (wells) Improve toilet & sanitation practices program - Monitoring on the installation and proper use of sanitary toilets	Twice a week	MHO/RHU
San Lorenzo	Environmental Health Survey - Monitoring of toilet facilities, garbage disposal, & water facilities Water and Sanitation - Chlorination and water sampling	3-6 months	MHO/RHU
Sibunag	Environmental and Occupational Health Survey - Monitoring of toilet facilities, garbage disposal, & water facilities Bacteriological analysis of water sources	Quarterly	MHO/RHU

Table 71. Staff and budget allocation for pollution and waste management in Guimaras Province.

Local government unit	Staff allocation (2017)	Budget allocation (Php)
Province	GENRO-SWM Office Staff: 1 Supervising EMS 1 Sr. EMS 1 Job Hire PGSO-Support Staff (Waste Collection & Transfer): 1 Driver 1 Collector PLEPS Task Force (Anti-Plastic Ordinance): 6 Environmental Task Force PHO-Pollution Management: 1 Provincial Health Officer 1 Job Hire GENRO-Pollution Management: 1 EMS I 2 Job Hires	2015: 106,000 (Coastal Clean-Up); 150,000 (Coastal Water Quality Monitoring); 180,000 (Improvement of Provincial MRF); 1,200,000 (Procurement of Garbage Truck) 2016: 150,000 (Coastal Clean-Up); 50,000 (Earth Day Celebration: Clean-up of Provincial Tree Park & Surrounding Communities); 200,000 (Coastal Water Quality Monitoring); 950,000 (Procurement of Toilet Bowls & Construction Materials) 2017: 640,000 (Procurement of Plastic Shredder); 100,000 (Financial Assistance for MRF Establishment: Sibunag)
Buenavista	SWM Office Staff: 2 Permanent 1 Job Hire Support Staff (Collection & Transfer): 1 Driver 4 Collectors Pollution Management: 1 Municipal Health Officer 1 Sanitary Inspector II	2012: 800,000 (SWM Program); 1,500,000 (Construction of MRF); 35,000 (Environmental Sanitation) 2013: 500,000 (SWM Program); 35,000 (Environmental Sanitation); 200,000 (20% DF: Gawad Pangulo sa Kapaligiran); 50,000 (20% DF: Community-Based Organic Fertilizer Production); 80,000 (20% DF: Rehabilitation & Closure of CDF/Development of Mun. Eco-Park) 2014: 400,000 (SWM Program) 2015: 200,000 (SWM Program); 25,000 (Environmental Sanitation); 233,000 (Gawad Pangulo sa Kapaligiran); 58,000 (Community-Based Organic Fertilizer Production) 2016: 700,000 (Solid Waste Management Program); 250,000 (Gawad Pangulo sa Kapaligiran); 58,000 (Community-Based Organic Fertilizer Production) 2017: 500,000 (SWM Program)
Jordan	SWM Office Staff: 2 Permanent 4 Job Hire Support Staff (Collection & Transfer): 1 Driver 4 Garbage Collector 1 Bulldozer Operator Pollution Management: 1 Municipal Health Officer 1 Sanitary Inspector	2010: 16,000 (ESWM Program); 200,000 (Clean & Program); 27,436 (Coastal Clean-Up) 2011: 400,000 (ESWM Program); 200,000 (Clean & Program); 35,000 (Coastal Clean-Up) 2013: 350,000 (ESWM Program); 650,000 (20 DF: Closure/ Rehabilitation of Controlled Dumpsite Facilities); 350,000 (Development of Eco-Center); 2014: 650,000 (ESWM Program); 100,000 (Clean & Green) 2015: 750,000 (ESWM Program) 2016: 1,110,525 (ESWM Program); 270,000 (Clean & Green) 2017: 1,020,000 (ESWM Program); 100,000 (Clean & Green); 20,000 (Environment & Sanitation)



Table 71. Staff and budget allocation for pollution and waste management in Guimaras Province. (cont.)

Lcal government unit	Staff allocation (2017)	Budget allocation (PhP)
Nueva Valencia	<p>SWM Office Staff: 1 (Permanent) Support Staff (Collection & Transfer): 2 (Garbage Collector) 2 (Garbage Segregator) Pollution Management: 1 Rural Health Physician/ Acting Municipal Health Officer 1 Sanitary Inspector I</p>	<p>2010: 150,000 (Clean & Green Program) 2011: 150,000 (Clean & Green Program); 3,000 (Improve toilet and sanitation practices) 2012: 150,000 (Clean & Green Program); 3,000 (Improve toilet and sanitation practices) 2013: 150,000 (Clean & Green Program); 25,000 (Improve toilet and sanitation practices) 2014: 100,000 (Solid Waste Management Program); 200,000 (Drainage and Sewerage construction); 300,000 (Clean & Green Program); 2015: 100,000 (Solid Waste Management Program); 300,000 (Clean & Green Program) 2016: 100,000 (Solid Waste Management Program); 400,000 (Clean & Green Program) 2017: 200,000 (Solid Waste Management Program)</p>
Sibunag	<p>SWM Office Staff: 1 (Permanent) 1 (Job Hire) Support Staff (Collection & Transfer): 1 (Driver) 6 (Collector) Pollution Management: 1 Municipal Health Officer 1 Sanitary Inspector I</p>	<p>2010: 50,000 (SWM Program); 100,000 (Clean & Green Program) 2011: 150,000 (SWM Program); 150,000 (Clean & Green Program); 75,000 (Establishment of MRF); 150,000 (Provision of Toilet Bowls & Accessories) 2012: 100,000 (SWM Program); 200,000 (Clean & Green Program) 2013: 80,000 (SWM Program); 200,000 (Clean & Green Program) 2014: 707,968 (Clean & Green Program) 2015: 100,000 (SWM Program); 70,000 (Clean & Green Program)</p>
San Lorenzo	<p>SWM Support Staff: 1 (Driver) 10 Job-Hire (Cleanliness) Pollution Management: 1 Municipal Health Officer 1 Sanitary Inspector</p>	<p>2010: 488,042.50 (Clean & Green) 2011: 200,000 (Integrated Solid Waste Management Program); 366,000 (Clean & Green); 50,000 (Environmental Protection & Rehab Program) 2012: 220,000 (Integrated SWM Program); 300,000 (Clean & Green) 2013: 280,000 (Clean & Green) 2014: 280,000 (Clean & Green) 2015: 300,000 (Clean & Green) 2016: 350,000 (Clean & Green); 10,000 (Chlorination & Water Sampling) 2017: 1,000,000 (Construction of MRF); 350,000 (Clean & Green)</p>

A Potable Water Testing Facility is available at the Province and the Municipality of Buenavista but were not operational due to lack of technician to operate the said facility. The materials recovery facility (MRF) on the other hand, that were established by the barangays were also not properly utilized. There are Eco Solid Waste Management Centers and Residual Containment Areas (RCAs) that served as disposal facilities for municipal solid wastes (Tables 72 and 73). The province and the five municipalities are planning to establish a common

sanitary landfill (SLF). Although the municipalities plan to put-up Category 1 SLFs, there is still a need to establish a common SLF to cater to the expected increase in solid waste generation as the population increases. In 2017, GENRO conducted an initial assessment of possible sites, in preparation for the lot acquisition, for the establishment of the SLF. The draft Memorandum of Agreement between the province and five municipalities is undergoing review by the Local Chief Executives.

Table 72. List of facilities for pollution and waste management in Guimaras Province.

Local government unit	Site/Location	Type	Status (Operational, closed, undergoing rehabilitation in complete compliance with Authority to Close - with dates)
Province	Provincial Capitol Grounds, San Miguel, Jordan	Potable Water Testing Facility	Not operational due to unavailability of skilled technician
		MRF & Composting Facility	Not operational; To be transferred and improved
Buenavista	So. Kalalan, Brgy. Piña	Residual Containment Area	Safe Closure Rehabilitation Plan (SCRP) submitted and issued with Authority to Close 02-0606 (June 20, 2006); Ongoing rehabilitation and conversion into SWM Ecology Park
	Municipal Health Center Compound, New Poblacion, Buenavista	Potable Water Testing Facility	Not operational due to unavailability of skilled technician
Jordan	So. Tanod, Brgy. Bugnay	Eco-SWM Center with Municipal Materials Recovery Facility (MRF) and Composting Facility	Operational - SCRП submitted and issued with Authority to Close 46-1212-08 (December 12, 2008); Ongoing construction of proposed Cat 1 SLF
	Espinosa, Sta. Teresa, Hoskyn	Brgy. MRFs	Operational; 2 Non-functional (Lawi, Buluangan) 2 MRF used as RCA (Alaguisoc, Poblacion)
Nueva Valencia	So. Bunlaw, Brgy. Sto. Domingo	Municipal Materials Recovery Facility	Operational; Proposed Category 1 SLF: - Clearing/Levelling done - Undergone assessment with MGB
	Brgy. Poblacion	Composting Facility	Operational
San Lorenzo	Cabano	Municipal MRF	Operational; All barangays have MRFs
	Cabungahan	Municipal MRF	Under construction
		Composting Facility	
Sibunag	Brgy. Dasal	Residual Containment Area	Operational; ongoing formulation of SCRП
	Municipal Center, Brgy. Dasal	Municipal MRF	Operational; managed by Municipal SWM Staff
		Vermi Composting Facility	Operational; managed by Municipal Agriculture Office

Table 73. Inventory of equipment for pollution and waste management in Guimaras Province.

Lcal government unit	Equipment	Number of units	Remarks
Province	Plastic Shredder Machine	1	
	Bio Shredder Machine	1	
	Garbage Compactor Truck (5-6 cu.m.)	1	used as collection service for waste of offices within Provincial Capitol Grounds
Buenavista	Garbage Compactor Truck (4-6 cu.m. capacity)	1	
	Dump Truck	2	
	Backhoe Loader	2	
	Road Roller	1	
	Road Grader	1	
	Shredder Machine	3	
	Vibrating Screen	1	
Jordan	Garbage Truck (4 cu.m. capacity)	1	
	Backhoe Loader	1	
	Bulldozer (D5)	1	
	Bio Shredder Machine	1	
Nueva Valencia	Dump Truck	2	
	Road Grader	1	
	Backhoe	1	
	Bulldozer	1	
	Elf	1	
	Rotary Composter	1	Provided by BSWM
San Lorenzo	Bio Shredder Machine	2	Provided by DA for Igawayan Rice Cluster & Suclaran Rice Cluster for vermicomposting
	Garbage/Dump Truck	1	
Sibunag	Dump Truck (4 cu.m.)	2	
	Garbage truck (4 cu.m.)	1	
	Backhoe Loader (1 cu.m.)	1	
	Grader	1	
	Road Roller	1	



Collection of water samples in one of the sampling stations.



On-site analysis of DO, pH and temperature.

Implications and Recommendations

Supporting legislations have been formulated and enacted to regulate solid waste management. While significant efforts have been made by the province and the municipalities to address solid waste management, there is a need to address this problem in greater detail in view of the expected increase in solid waste generation from increasing population and tourist arrivals. It is recommended that the formulation and updating of the Local Development Plans of the province and the five municipalities should consider this matter. It is also recommended that the five municipalities strengthen the monitoring of compliance to environmental-related laws before issuing necessary permits, including the conduct of multisectoral monitoring of establishments, especially in the coastal areas.

The operation of the Water Testing Facility of the province and the Municipality of Buenavista is anticipated to improve water quality monitoring and reduce the cost of water testing since the local government will no longer need to send water samples to Iloilo City for chemical and bacteriological analyses. The proposed Water Testing

Facility can also be a potential source of revenue for the local government since upon accreditation from EMB and the Department of Health, they can cater to private establishments that are required to undergo chemical and bacteriological analyses. The issue of inadequate staffing and frequent movement of staff that are not regular employees must be addressed in order to properly operationalize the facility. The Municipality of Buenavista and PHO have taken positive actions by employing regular staffs and are waiting to be trained by the DOH and operate their respective Water Testing Facilities.

The amendment of the Guimaras Environment Code and the implementation of environmental user fee system will help regulate the aquaculture and tourism activities and oblige LGUs to fund programs and projects to address pollution concerns in the province. The Guimaras Foreshore Development and Management Plan developed by DENR-PENRO could serve as guide for the local government units in implementing strategies to address pollution.

References

Provincial and Municipal Ten-Year Solid Waste Management Plan (2015-2024)
Regional State of the Brown Environment Report (RSOBER) (2015), DENR-EMB Region 6
Safe Closure and Rehabilitation Plan of Jordan, Buenavista and Nueva Valencia

Pollution reduction and waste management

031 Water quality

Description

This indicator measures the level to which coastal waters and river waters that discharge into the coastal area are within the

water quality standards prescribed for the specific water use (e.g., drinking, swimming, boating, fishing, aquaculture, etc.).

Rationale

Criteria and standards for water quality are based on scientific information related to water use and potential risks to human health (e.g., transmit waterborne diseases), productivity (e.g., decrease fisheries productivity) and/or

the ecosystem health (e.g., destruction and degradation of habitats). Different parameters provide indications of ecosystem health and potential threats to water use.

Data Requirements

Priority parameters

- Changes (temporal/spatial) in water transparency (secchi depth/total suspended solids) (marine/river/beach)
- Changes (temporal/spatial) in dissolved oxygen (DO) concentrations (marine/river/beach)
- Changes (temporal/spatial) in total/fecal coliform counts (marine/river/beach)

Secondary parameters

- Changes (temporal/spatial) in chlorophyll concentrations (marine/river/beach)
- Changes (temporal/spatial) in nutrient (nitrates, phosphates) concentrations (marine/river/beach)
- Changes (temporal/spatial) in biochemical oxygen demand (BOD) concentrations (marine/river/beach)
- Groundwater quality (nitrates and heavy metals)

Results

The DENR-EMB through a Memorandum of Agreement with the Provincial Government of Guimaras conducts province-wide coastal water quality monitoring at twelve (12) sampling stations located along the coastal areas of the province. Two (2) sampling stations were added, as recommended after the conduct of a series of public consultations and technical conferences. One of the identified additional sampling stations is the mouth of Cabano River, one of the major rivers in the province, which is receiving wastes from non-point sources in the upland areas. The other one is located within the vicinity of Pamanculan Fish Sanctuary, a marine protected area located at Brgy. San Isidro, Sibunag. Six (6) sampling sta-

tions are located in Iloilo Strait while 8 sampling stations are located in the Guimaras Strait (Figure 30 and Table 74).

The monitoring activities are conducted on a quarterly basis. The physico-chemical parameters measured included dissolved oxygen, pH and temperature. In 2016, a new Water Quality Guidelines and General Effluent Standards (DAO 2016-08) was released by DENR (Table 75). Total Coliform was removed from the primary parameter and thus in 2017, Total Coliform was not monitored. Oil and grease is also one of the parameters monitored.

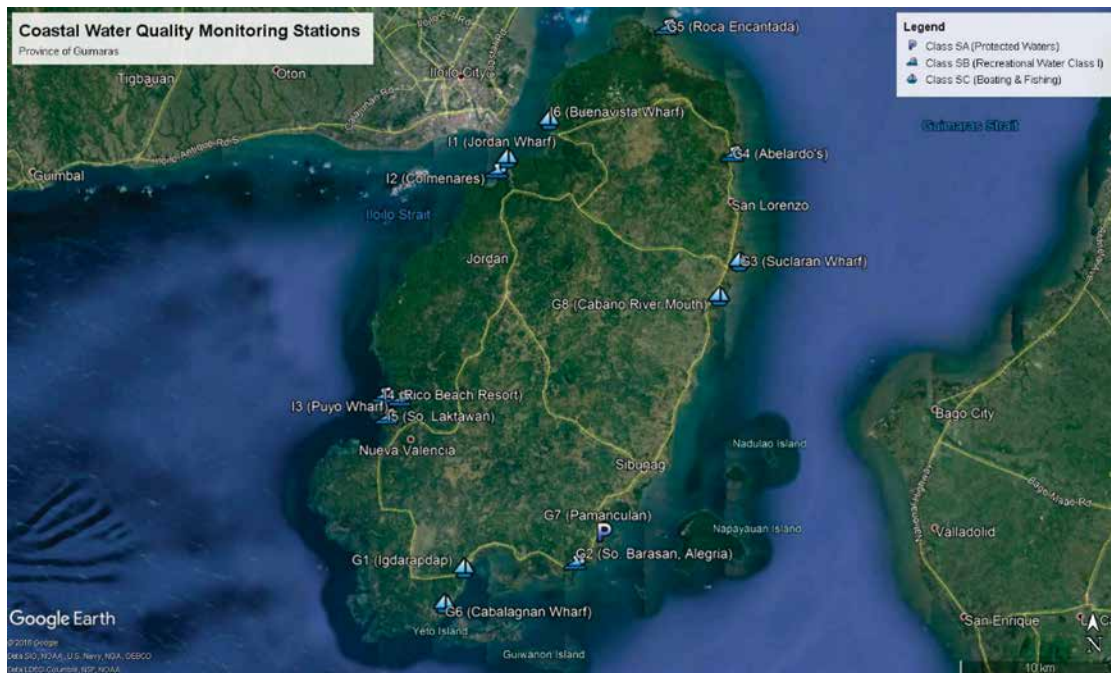


Pamanculan Fish Sanctuary



Cabano River (Mouth)

Figure 30. Guimaras Province coastal water quality monitoring stations.



Pollution Reduction and Waste Management

Water quality



Table 74. Guimaras coastal water sampling stations and water classification.

Iloilo Strait Monitoring Stations				
Station number	Location	Current classification	Beneficial usage	Recommended classification
1	Jordan Wharf, Brgy. Rizal, Jordan	Class SC	Boating and Fishing	Class SC
2	Colmenares Beach Resort, Brgy. Hoskyn, Jordan	Class SB	Recreational water Class I	Class SB
3	Between Puyo Wharf, Nueva Valencia and Lawi, Jordan	Class SB	Boating and Fishing	Class SB
4	Rico Beach Resort, Brgy. Poblacion, Nueva Valencia	Class SB	Recreational water Class I	Class SB
5	So. Laktawan, Brgy. Poblacion, Nueva Valencia	Class SB	Boating and Fishing	Class SB
6	Buenavista Wharf, Brgy. Sto. Rosario, Buenavista	Class SC	Boating and Fishing	Class SC
Guimaras Strait Monitoring Stations				
Station number	Location	Current classification	Beneficial usage	Recommended classification
1	Brgy. Igdarapdap, Nueva Valencia	Class SB	Fishery Water Class III	Class SC
2	So. Barasan, Alegria, Sibunag	Class SB	Boating and Fishing	Class SB
3	Suclaran Wharf, Brgy. Suclaran, San Lorenzo	Class SC	Boating and Fishing	Class SC
4	Abelardo's Beach Resort, Brgy. East Valencia, Buenavista	Class SB	Recreational water Class I	Class SB
5	Roca Encanatada, Brgy. San Miguel, Buenavista	Class SB	Fishery Water Class I	Class SB
6	Cabalagnan Wharf, Brgy. Cabalagnan, Nueva Valencia	Class SC	Boating and Fishing	Class SC
7	Pamanculan Fish Sanctuary, So. Gumawod, Brgy. San Isidro, Sibunag	New Station	Protected waters	Class SA
8	Brgy. Cabano, San Lorenzo	New Station	Boating and Fishing	Class SC

Table 75. DENR water quality standards of 1990 and 2016.

DAO 1900-34 and DAO 2016-08									
Parameters	Unit	Class SA		Class SB		Class SC		Class SD	
		1990	2016	1990	2016	1990	2016	1990	2016
Temperature	°C	3 °C rise	26-30	3 °C rise	26 – 30	3 °C rise	25 - 31	3 °C rise	25-32
pH		6.5-8.5	7.0-8.5	6.0-8.5	7.0 – 8.5	6.0-8.5	6.5 – 8.5	6.0-9.0	6.0-9.0
Dissolved Oxygen	mg/L	5.0	6	5.0	6	5.0	5	2.0	5
Oil and Grease	mg/L	1	1	2	2	3	3	5	5
Total Coliform	MPN/100 mL	70	-	1,000	-	5,000	-	-	-
Fecal Coliform	MPN/100 mL	nil	<1.1	200	100	-	200	-	400

Figures 31 and 32 present the results of the total coliform and fecal coliform analysis in the sampling stations in Iloilo and Guimaras Strait from 2010-2017. The two Straits exceeded the 200 MPN/100 mL fecal coliform standard for Class SC, particularly in 2016 where the highest fecal

coliform concentration was recorded. This result was partly attributed to the El Niño Phenomenon that occurred during the period December 2015 to March 2016 where there have been water shortages and mainly on the lack of proper septic tank system and sewage treatment facilities.

Figure 31. 2010-2016 Iloilo and Guimaras Strait annual comparative results for total coliform.

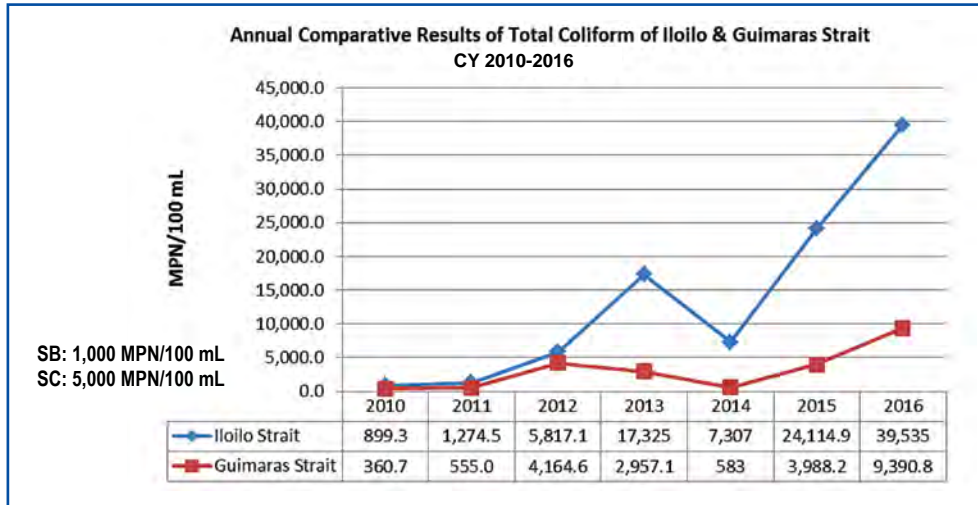
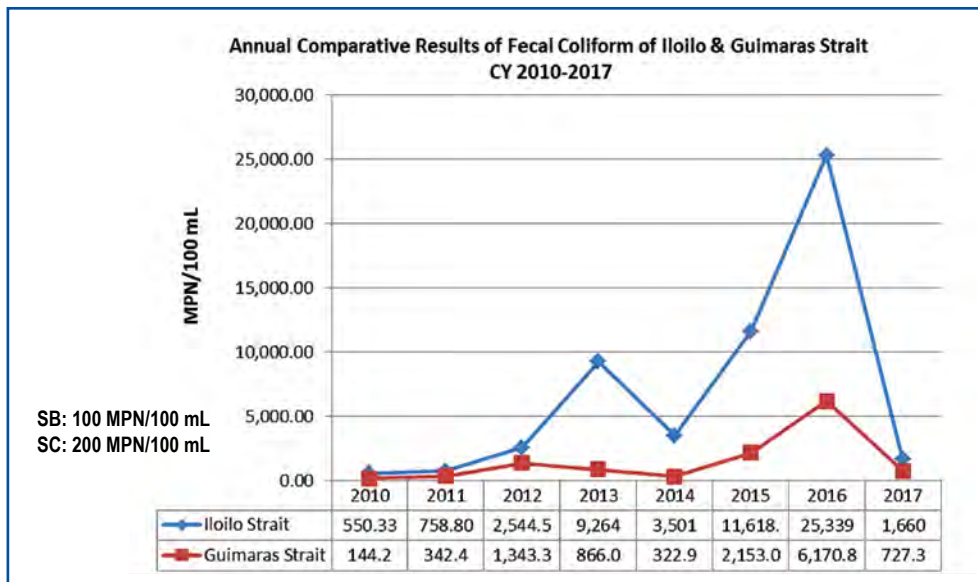


Figure 32. 2010-2017 Iloilo and Guimaras Strait annual comparative results for fecal coliform.



Pollution Reduction and Waste Management

Water quality



Figures 33 to 36 show the annual comparative results for oil and grease, temperature, pH and dissolved oxygen. The dissolved oxygen concentration and pH showed no significant change for the past eight years and the results are within the water quality standards. Temperature in

Iloilo and Guimaras Strait showed no significant deviation from previous readings that were reported in the first SOC Report. However, oil and grease concentration in Iloilo and Guimaras Strait mostly exceeded the standard for Class SB and SC.

Figure 33. 2010-2017 Iloilo and Guimaras Strait annual comparative results for oil and grease.

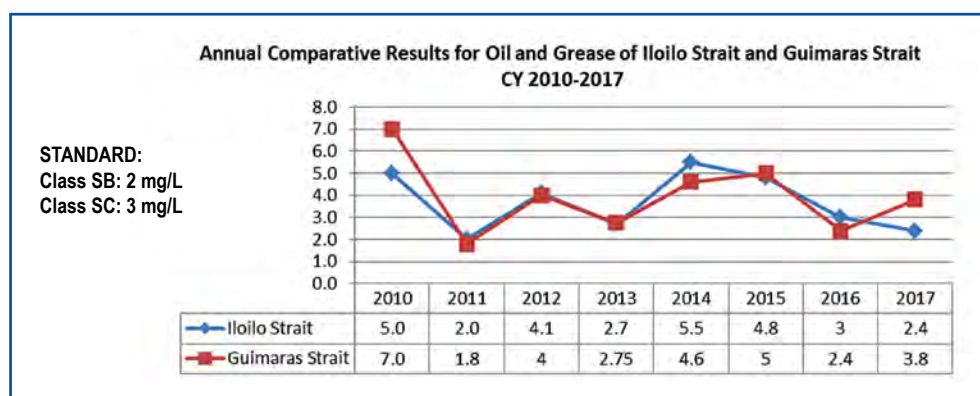


Figure 34. 2010-2017 Iloilo and Guimaras Strait annual comparative results for dissolved oxygen.

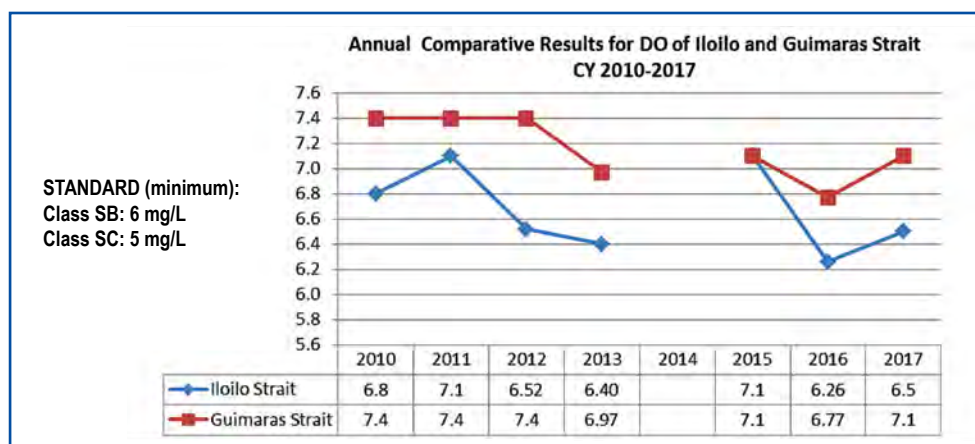
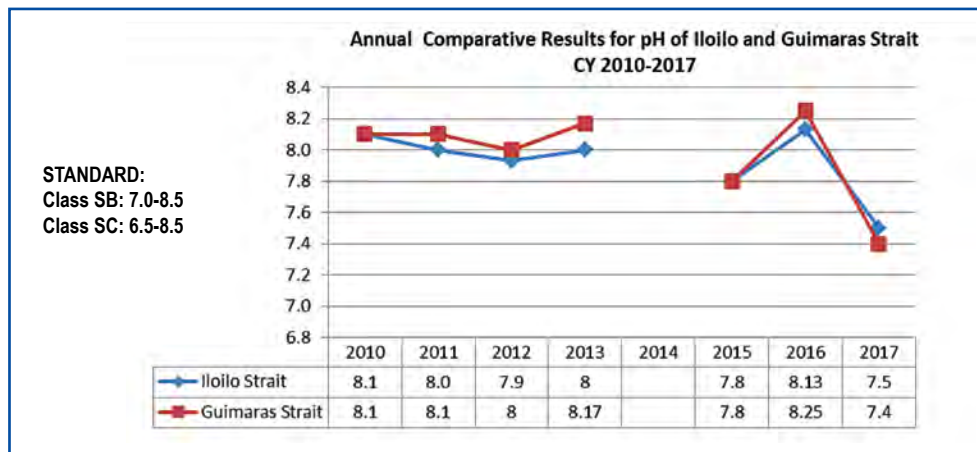


Figure 35. 2010-2017 Iloilo and Guimaras Strait annual comparative results for pH.

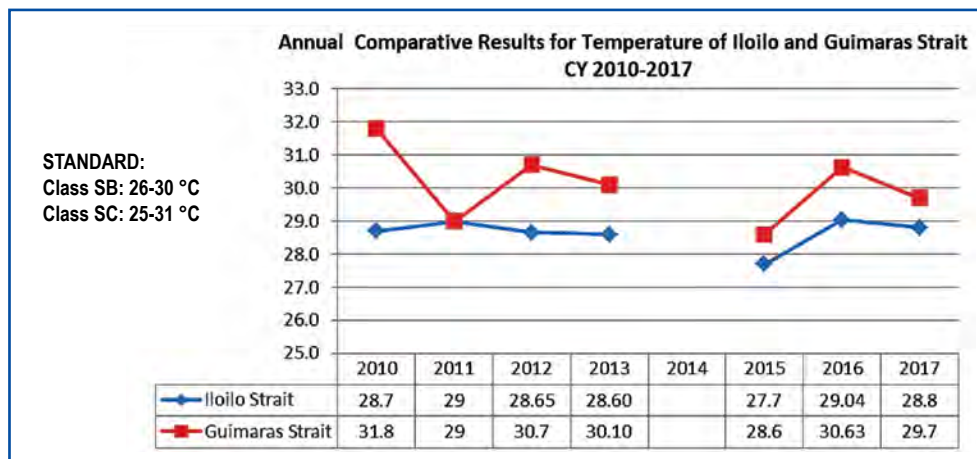


Pollution Reduction and Waste Management

Water quality



Figure 36. 2010-2017 Iloilo and Guimaras Strait annual comparative results for temperature.



*DO, pH, and temperature for 2014 lacks the 1st quarter result.

Pursuant to DENR Administrative Order (DAO) No. 34 Series of 1990, the DENR-EMB had conducted regular monitoring of the Guimaras coastal water since the MT Solar 1 Oil Spill incident (Table 76). Monitoring results as of October 2011 showed that the twenty-four (24) monitoring stations are now compliant to DENR Water Quality

Criteria for oil and grease parameter for Class SB and SC. A separate study conducted by the University of the Philippines Visayas to determine the aquaculture response and recovery from the effects of the oil spill indicated that after 2.6 years from the date of the oil spill incident, aquaculture farmers did not find any problem with water quality (Box 8)

Table 76. Sampling stations monitored after the MT Solar 1 oil spill incident.

Sampling station	Location	Classification
1. Dolores	Brgy. Dolores, Nueva Valencia	SB
2. Tando	Brgy. Tando, Nueva Valencia	SB
3. Lucmayan	Brgy. Lucmayan, Nueva Valencia	SC
4. San Roque	Brgy. San Roque, Nueva Valencia	SB
5. Lapaz	Brgy. Lapaz, Nueva Valencia	SC
6. Lapaz, near Taklong Island (offshore)	Brgy. Lapaz, Nueva Valencia	SB
7. Cabalagnan	Brgy. Cabalagnan	SC
8. Canhawan	Brgy. Canhawan, Nueva Valencia	SC
9. Igdarapdap	Brgy. Igdarapdap, Nueva Valencia	SB
10. San Antonio	Brgy. San Antonio, Nueva Valencia	SB
11. Alegria	Brgy. Alegria, Sibunag	SB
12. San Isidro	Brgy. San Isidro, Sibunag	SB
13. Sabang	Brgy. Sabang, Sibunag	SB
14. Sebaste	Brgy. Sebaste, Sibunag	SC
15. Sebario	Brgy. Sebario, Sibunag	SB
16. Igcawayan	Brgy. Igcawayan, San Lorenzo	SB
17. Cabano	Brgy. Cabano, San Lorenzo	SB
18. M. Chavez	Brgy. M. Chavez, San Lorenzo	SC
19. San Enrique	Brgy. San Enrique, San Lorenzo	SB
20. Balcon Melliza	Brgy. Balcon Melliza, Jordan	SB
21. Morobuan	Brgy. Morobuan, Jordan	SB
22. Espinosa	Brgy. Espinosa, Jordan	SB
23. Sinapsapan	Brgy. Sinapsapan, Jordan	SB
24. Lawi	Brgy. Puyo and Lawi	SB

The presence of oil and grease in the sampling stations in Iloilo and Guimaras Strait may be attributed to several sources, including domestic wastes and run-offs from surrounding areas, fishing boats/vessels, and passenger boats plying the area and cannot be attributed to the 2006 Guimaras Oil Spill. A Clean Bill of Health, however, can only be issued if other concerned agencies comprising the Committee of Clean Bill of Health will submit their respective reports clearing the Guimaras Island as already safe from the effects of the 2006 Guimaras Oil Spill.

In addition to the conduct of the quarterly monitoring by GENRO with the assistance of DENR-EMB, the Rural

Health Units of the five municipalities with the assistance of the Provincial Health Office also monitor the water quality of potable water (i.e., groundwater) for bacteriological characteristics using Colilert Test Kit.

No monitoring of surface water (i.e. rivers) have been conducted except for the baseline monitoring of Sibunag River that was conducted in 2005-2006 where the said river has been officially classified through DENR Memorandum Circular No. 2007-10. In the AIP of GENRO, baseline monitoring and classification of Cabano River is targeted for 2019.



Technical Conference on the results of the quarterly water quality monitoring conducted in 2017.



Oil and grease analysis at EMB laboratory.

Implications and Recommendations

The coastal water quality monitoring program has generated time series data that would be useful in determining spatial and temporal changes in priority parameters. Additional data has also been generated by the monitoring activities conducted by DENR-EMB and UP Visayas on oil and grease and effects of the oil spill on aquaculture systems. These data should be consolidated and encoded into the Guimaras IIMS so that interpretation of the results can be done in an integrated manner.

The increasing trend in total and fecal coliform levels was also noted in the first SOC Report. Various programs and activities that have been implemented included distribution of materials for the construction of sanitary toilets and inventory of coastal structures. The Provincial Government also tapped DENR-EMB to strictly monitor compliance of coastal structures for tourism in accordance with PD 1586 (Environmental Impact Statement System). Despite these measures, the level of

the coliform is still increasing. It was noted during the inventory that septage of most of the structures do not conform with the standards.

The increase in the number of coastal establishments and tourist arrivals in the Province also contributed to the increase in the coliform level of the province's coastal waters where most of the coastal establishments, especially beach resorts, do not comply with the easement requirements as prescribed in PD 1076 (Water Code) and provisions of RA 9275 (Clean Water Act) and other pertinent laws.

It is recommended that the province and the five municipalities implement measures to address the sanitation problem, particularly instituting an effective septage and sewerage management programs with technical support from partner national agencies, as well as tapping potential public and private partnerships.

References

- 2010-2017 Technical Conference on the Results of Coastal Water Quality of Iloilo and Guimaras Strait
Andalecio, M., Napata, R and Garibay, S. 2014. Aquaculture response and recovery from the effects of M/T Solar 1 oil spill. *Journal of Aquaculture and Marine Biology*. 1(2):00008.
- DENR Administrative Order No. 34, 1990. Revised Water Usage and Classification (Water Quality Criteria Amending Section Nos. 68 and 69, Chapter III of the 1978 NPCC Rules and Regulations). Environmental Management Bureau, Department of Environment and Natural Resources, Quezon City, Philippines.
- DENR Administrative Order No. 08, 2016. Water Quality Guidelines and General Effluent Standards of 2016.
- DENR Memorandum Circular No. 10-2007. List of Classified Water Bodies in 2006.
- DENR Memorandum Circular No. 2012-01. Guimaras Coastal Water as of CY 2011 Water Quality Monitoring Results in relation to Guimaras oil spill incident is now within the standard for Class SB and Class SC Water of DAO 34, Series of 1990.



Pollution reduction and waste management

032 Air quality

Description

This indicator reports on the quality of air in terms of total suspended particulates, sulfur oxide, nitrogen oxide, carbon oxide and volatile organic carbon.

Rationale

Air pollution is harmful to human health and the quality of the environment.

Data Requirements

- Changes in concentration of total suspended particulates (TSP)
- Changes in concentration of other air pollutants (particulate matter, sulfur oxide, nitrogen oxide, carbon oxide, volatile organic carbon)

Results

Data on air quality was taken from the Regional State of the Brown Environment Report (RSOBER) of DENR-EMB. EMB has implemented *Bantay Tsimney*, a program, as mandated under the Philippine Clean Air Act, in order to monitor the stationary sources of air pollution.

Source Sampling Test (SST) is also being conducted by DENR's accredited party to validate compliance of firms and establishments to the National Emission Standards for Source Specific Air Pollutants (NESSAP). It included regular inspections of establishments to validate the accuracy of Self Monitoring Reports or other documents submitted by the Pollution Control Officers.

Based on the Emissions Inventory of CY 2015 conducted for stationary sources in the six provinces in Western Visayas Region, Guimaras Province recorded air emissions of 5 per cent, which is relatively low compared to the Province of Negros (50 per cent) and Province of Iloilo and Metro Iloilo Airshed (41 per cent). The Provinces of Aklan and Antique recorded air emissions of 2 per cent and 1 per cent, respectively (Table 77). The computed annual emissions were based on the submitted data taken from Self Monitoring Reports (SMRs) and inventory forms during Source Stack Sampling Test (SST).

Pollution sources included in this inventory are emissions from fuel burning equipment such as boilers, gasoline, diesel engines and other stationary sources of air pollutants. The Emissions Inventory for Stationary Sources included four (4) criteria of air pollutants: Particulate Matter (PM), Sulfur Oxide (SO_x), Nitrogen Oxides (NO_x), Carbon Monoxide (CO), Total Organic Gases (TOG) and Volatile Organic Compounds (VOC).

Although Guimaras is the smallest province in the region, the pollutant concentrations from stationary sources were high compared to the other provinces.

Major stationary sources of air pollutants in the Western Visayas Region include diesel and coal-fired power plants, mills (i.e., sugar, flour, feeds, rice and corn, coconut oil, etc.), manufacturing (i.e., beverages, distilleries and ethanol plants), smelting plants and fabricated metal products, mineral processing (i.e., clay, lime SAG), food, batching plants, processing plants and standby generator sets.

For Guimaras Province, although there are few large stationary sources of air pollutants (i.e., power plants, manufacturing and food processing plants), there are other potential sources such as rice mills, standby generator sets and mineral processing (i.e., clay, lime, sand & gravel), and if taken collectively could contribute to the emissions of these pollutants.

As for mobile sources of air pollution, the average number of land-vehicles, both privately-owned and for public conveyance purposes that are plying the roads of the Western Visayas Region on a daily basis is estimated at 345,215 units. About 3,500 units are plying the national roads based on DPWH Annual Average Daily Traffic (AADT).

Based on the recorded motor vehicle registration of the Land Transportation Office (LTO) in the Western Visayas Region, an average increase of 2.59 per cent, as compared to CY 2014 has been recorded. As shown in Table 78, the most common and accessible mode of public transportation in Guimaras Province are the tricycles.

Table 77. Emissions inventory for stationary sources of air pollutants, CY 2015.

Province	Pollutant concentrations (tons/year)				
	PM	NOX	SOX	CO	VOC
Guimaras	5.67	125.62	128.3	32.15	3.6
Capiz	21.77	0.19	9.13	1.92	0.28
Aklan	3.12	2.14	76.64	19.42	3.11
Negros	1,623.15	1,112.08	303.91	28.86	7.71
Antique	9.73	0.58	8.69	30.11	0.15
Iloilo	4.77	6.69	90.1	21.47	5.07
Airshed					
Oton	0.03	0.03	0.41	0.09	0.03
Pavia	3.66	9.63	51.36	11.02	4.02
Leganes	0.22	13.94	1.23	0.11	0.03
Iloilo City	171.22	922.49	926.38	225.78	23.33
San Miguel	3.41	3.19	48.55	10.46	3.85
Total	1,846.75	2,196.56	1,644.70	381.39	51.19



Table 78. Number of public transportation vehicles in Guimaras Province.

Type of vehicle	Buenavista	Jordan	Nueva Valencia	San Lorenzo	Sibunag	Total
Bus	1	2	-	-	-	3
Van	2	30	8	22	10	72
Jeepney	22	105	50	28	4	209
Tricycle	600	1,053	50	53	-	1,756
Taxi	-	-	-	-	-	-
Motorized Vehicle	5	-	-	-	34	39
Passenger Banca	52	55	1	3	-	111

Source: CMCI 2015

Implications and Recommendations

There are no designated airsheds in the province in view of the very few numbers of air pollutive establishments.

In order to mitigate the emissions from mobile sources, particularly public transport vehicles that are economically hindered from reverting to more efficient engines that could meet the clean air standards, establishment of an Anti-Smoke Belching Unit (ASBU) with multi-sectoral participation is necessary, including intensifying campaigns against smoke belching.

To efficiently monitor and manage the air quality of the province, it is recommended that acquisition of an air quality monitoring equipment with capacity to process multiple parameters and provide accurate real-time data be made. As indicated in the Annual Investment Plan of GENRO, baseline monitoring of air quality will be initiated in 2019 with assistance from DENR-EMB.

Box 9. Guimaras Wind Farm

The 54MW San Lorenzo Wind Farm built by PHINMA Energy Corporation, the first wind farm in the Visayas is expected to generate total energy of around 120,000 Megawatt hours annually. It is also expected to contribute to the global effort of reducing greenhouse gas emissions in the atmosphere by displacing an estimated amount of Carbon Dioxide of 65,000 tons per annum or a total of 1.3 Million tonnes of CO₂ during its 20-year project life. <http://www.phinmaenergy.com/ta/trans-asia-renamed-to-phinma-energy-corporation/>

References

Number of Public Transportation Vehicles 2015, Cities and Municipalities Competitiveness Index (CMCI)
Regional State of the Brown Environment Report (RSOBER) 2015, DENR-EMB



San Lorenzo wind mills.

Pollution Reduction and Waste Management

Air quality



Pollution reduction and waste management

033 Sanitation and domestic sewerage

Description

This indicator reports the proportion of the population with access to sanitation and sewerage systems.

Rationale

The lack of sanitation facilities can affect human well-being and have negative impacts on the quality of the environment especially when disposed untreated to the coastal and

marine environment. Moreover, data on access to sanitation also monitors progress in meeting one of the UN Sustainable Development Goals (Un SDGs).

Data Requirements

- Population with access to improved sanitation
- Households connected to septic tanks
- Volume of septage collected/treated
- Population served by public sewerage system (collection)
- Location of sewage treatment plants and discharge pipes
- Level of treatment and volume of sewage treated
- Volume of domestic wastewater generated, treated, recycled or reused

Results

Table 79 shows that the proportion of households with sanitary toilet facilities for 2014 to 2016. It can be noted that the number of households with access to sanitary toilets has increased gradually over the past 3 years. As of 2016, about 90.91 per cent of the households in Guimaras Province have access to sanitary toilets comprising of flush toilets, water sealed and pit with cover. Figure 37 shows an increase of 1.37 per cent of households with access to sanitary toilets

was further noted between 2016 and 2017. However, the proportion of households with complete sanitation facilities is lower by more than 2 per cent in 2016 for the entire province (Table 80). In 2017, the highest number of households with sanitary toilet facility was recorded in the Municipality of Buenavista (i.e., 97.40 per cent) while the Municipality of Sibunag recorded the least number of households with sanitary toilet facility (i.e., 88.59 per cent) (Figure 38)

In 2016 and 2017, in line with the National Government Agenda of Zero Open Defecation (ZOD), the Provincial Government through the Provincial Health Office purchased and distributed toilet construction materials, such as toilet bowls, cement and reinforced steel bars to households without toilet facilities. The recipient households were responsible in building the structure, including acquiring other materials and labor as their part of their counterpart contribution.

To date, there is no existing sewerage system in the province. Since the province under Section 17 of R.A. 7160 (Local Government Code) is mandated to provide basic services and facilities to adopt measures and safeguards against pollution and for the preservation of the natural ecosystem, conduct of consultations for the establishment of a wastewater treatment facility is planned for 2018 and the cost will be drawn from the 5 per cent LDRRM Fund.

Table 79. Proportion of households with access to sanitary toilets (2014-2016).

Municipality	Total number of households			Households with sanitary toilets			Percentage		
	2014	2015	2016	2014	2015	2016	2014	2015	2016
Buenavista	11,841	12,212	12,402	11,445	11,810	12,043	96.66	96.71	97.11
Jordan	8,296	8,502	8,598	7,138	7,428	7,567	86.04	87.37	88.01
Nueva Valencia	8,882	9,045	9,373	7,890	8,064	8,394	88.83	89.15	89.56
San Lorenzo	5,973	6,239	6,383	4,906	5,215	5,617	82.14	83.59	88.00
Sibunag	4,897	4,982	5,194	4,329	4,424	4,515	88.40	88.80	86.93
Guimaras (Total)	39,889	40,980	41,950	35,708	36,941	38,136	89.52	90.14	90.91

Figure 37. Proportion of households with sanitary toilet facility (2012-2017).



Figure 38. Proportion of households with sanitary toilet facility (2017).

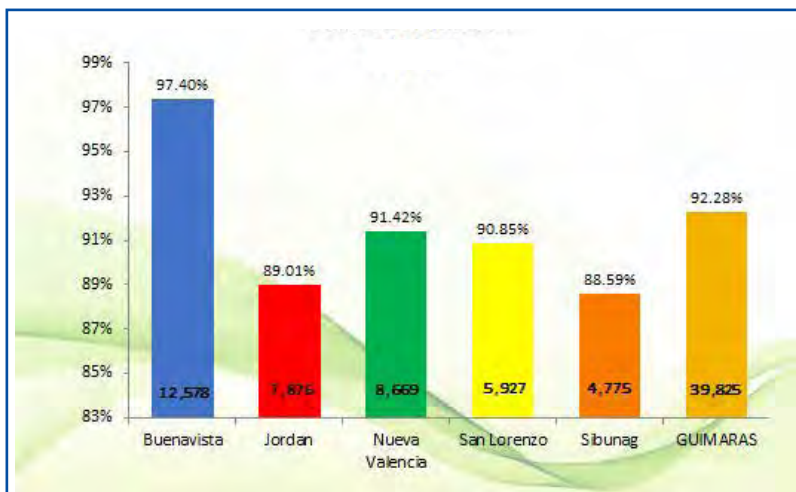


Table 80. Proportion of households with complete basic sanitation facilities.

Municipality	Total number of households		Households with complete basic sanitation facilities		Percentage	
	2015	2016	2015	2016	2015	2016
Buenavista	12,212	12,402	11,301	11,511	92.54	92.82
Jordan	8,502	8,598	7,428	7,567	87.37	88.01
Nueva Valencia	9,045	9,373	7,114	8,394	78.65	89.56
San Lorenzo	6,239	6,383	5,215	5,521	83.59	86.50
Sibunag	4,982	5,194	3,786	4,179	75.99	80.46
Guimaras (Total)	40,980	41,950	34,844	37,172	85.03	88.61



Brgy. Sto. Domingo, Nueva Valencia, Winner of DOH 2017 Regional Search for Barangay with Best Sanitation Practices.



Distribution of toilet bowls to residents of Sibunag.



Ceremonial launching of mass deworming at Inday Leah Child Development Center at Brgy. San Miguel, Jordan in 2016 with Governor Samuel Gumarin (left) and Dr. Vicente Belizario Jr. (right), former DOH undersecretary.

Implications and Recommendations

There has been a steady increase in the number of households in the province with access to sanitary toilet facilities. The enthusiasm of the province and the five municipalities in providing this basic service to the Guimarasnons is commendable.

For the short term, it is recommended that the local governments target 100 per cent coverage of households with complete sanitation facilities in view of the high level of total and fecal coliform counts that have been consistently recorded since 2000. Continuing advocacy and awareness raising to help the households understand the health risk of open defecation is also necessary.

For the long term, it is recommended that the province and the five municipalities consider accessing funds from the National Sewerage and Septage Management Program of DPWH to establish the necessary septage and sewerage treatment facilities, in view of the anticipated increase in population, tourism activity and increasing economic growth. This is in line with SDG 6 on Clean Water and Sanitation, where one of the targets is to reduce the proportion of untreated wastewater being discharged into drainage systems, rivers and coastal waters.

References

PHO Environmental Profile 2015-2017
 PHO Program Implementation Review Accomplishment Report 2017
<http://guimarasnews.blogspot.com/2016/07/guimaras-doh-launch-learning-center.html?m=1>



Pollution reduction and waste management

034 Municipal solid waste

Description

This indicator measures the tonnage of solid waste generated, the proportion being recycled or reused, and volume received in dumpsites or sanitary landfills.

Rationale

Improper waste management have negative impact on human and ecological health as well as the aesthetic and recreational values of coastal areas.

Data Requirements

- Volume of solid waste generated
- Volume of solid waste received in landfills/dumpsites
- Volume of solid waste received at material recovery facilities

Results

Biodegradable wastes consistently topped the bulk of waste generated by the province in 2014-2016 comprising 60 per cent of the total volume, followed by recyclables at 28 per cent, residuals at 11 per cent and and special waste at 1 per cent (Table 81).

Households served as the main sources of wastes generated in the province (i.e., 56 per cent), followed by the public market (i.e., 20 per cent) and commercial establishments (i.e., 15 per cent). Institutions generated the least amount of waste (i.e., 9 per cent) (Table 82).

The disposal facility (Eco SWM Center) of the Municipality of Jordan located at Barangay Bugnay can accommodate an estimated waste volume of 5 tons per day that are collected from the municipal public markets, government

buildings, commercial establishments and residential houses. Half of the collected wastes were residuals. To decrease the volume of residual wastes, these were utilized together with the recyclables (pet bottles) for the “Trash in a Bottle” technology. This technology promoted the use of combined residuals and recyclable as alternate source of construction materials. The Trash in a Bottle has been used in the construction of guardhouse, field office and storage facility. Biodegradable wastes collected from the market on the other hand, were processed in the Central MRF of Eco-SWM Center thru vermi and windrow composting, which has been progressing well.

In the Municipality of Buenavista, garbage collected from March to October 2015 was estimated at 1,700 tons and waste recovery through waste picking was around 3.7 tons.

Recovered wastes included cartons, glass bottles, plastics, sacks, among others.

The only available market for recovered recyclable materials is the junkshops/consolidators operation. Recyclable wastes were collected and sold to the nearest junkshops in the locality or the residents wait for the available mobile junkshops and sell their recyclables. There are, however, no good market for recyclable products in the province, which can provide livelihood support for marginal communities that are engaged in waste recycling.

There is a need to improve the recording and documentation of wastes delivered at the Eco SWM Centers in the Municipality of Jordan, while establishment of waste disposal facilities is needed in the Municipalities of San Lorenzo and Sibunag. There is also a need to conduct regular monitoring on the operationalization of established MRFs in the

province, particularly the MRFs established at the different barangays.

The Provincial Government has enacted the Anti-Plastic Ordinance (Ordinance No. 5, 2014) for the purpose of minimizing or reducing the generation of residual wastes, particularly the use of low-density plastics.

Awareness raising activities were also continuously conducted. IEC materials focusing on RA 9003 (Solid Waste Management Act), waste segregation and composting in the form of leaflets and flyers were made available to the communities and households. Trainings and consultations were also conducted where the communities were apprised of the status of waste generation in the province, including the various programs on solid waste management that the local governments were implementing.

Table 81. Waste characteristics in Guimaras Province (2014-2016).

Type of waste	2014		2015		2016	
	Tons/year	Percentage	Tons/year	Percentage	Tons/year	Percentage
Biodegradable	1,315.42	60	16,372.88	60	31,430.34	60
Recyclable	613.86	28	7,640.68	28	14,667.49	28
Residual	241.16	11	3,001.70	11	5,762.22	11
Special	21.92	1	272.88	1	523.84	1
TOTAL	2,192.37	100	27,288.14	100	52,383.90	100

Table 82. Sources of wastes in Guimaras Province (2014-2016).

Source of waste	2014		2015		2016	
	Tons	Percentage	Tons	Percentage	Tons	Percentage
Households	12,772.00	56.00	15,281.36	56.00	29,334.98	56.00
Institutions	197.31	9.00	2,455.93	9.00	4,714.55	9.00
Commercial	328.86	15.00	4,093.22	15.00	7,857.59	15.00
Public Market	438.48	20.00	5,457.63	20.00	10,476.78	20.00
Total	13,736.65	100.00	27,288.14	100.00	52,383.90	100.00



Process of Trash in a Bottle Technology



2016 Province-wide coastal clean-up at East Valencia, Buenavista.



2016 Bayan Ko, Linis Ko Program spearheaded by DENR-EMB at Barangay San Miguel, Jordan.



YES-O students participated in the Pinta Basurahan Contest to increase awareness among young leaders on the importance of waste segregation at source.



Group photo of YES-O students who participated in the Pinta Basurahan Contest, one of the activities during the Agri-Eco Day of the 2016 Manggahan Festival.



Implications and Recommendations

Waste recovery through recycling and composting have huge potential since biodegradable wastes and recyclables comprised more than half (i.e., 60 per cent) and one third (i.e., 28 per cent) of the wastes generated in the province, respectively.

Proper waste management would entail the following:

- Implementation of livelihood program to increase community participation in the recovery of recyclable materials.
- Segregation at Source or "No Segregation, No Collection" policy must be strictly implemented, particularly for households since they are the highest generators of wastes in the province.
- Proper utilization of existing MRFs at the barangays or cluster of barangays.
- As identified in the Ten-Year SWM Plans of the local governments, organize the junk buyers/dealers to determine the impact of junkshop operations on the recycling/waste diversion programs and monitor their compliance to RA 9003.
- Conduct regular monitoring and proper recording of volume of wastes received at disposal facilities.
- Strict enforcement of existing ordinances on solid waste management.
- Conduct feasibility study to determine available technical options and financing and investments for solid waste management.

References

Provincial and Municipal Ten-Year Solid Waste Management Plan (2015-2014)
RSOBER 2016
Safe Closure and Rehabilitation Plan of Jordan and Buenavista

Pollution reduction and waste management

035 Industrial, agricultural and hazardous waste

Description

This indicator measures the quantity of agricultural, industrial and hazardous wastes being generated and properly managed within the local government's jurisdiction.

Rationale

Agricultural, commercial, institutional and industrial sectors generate income and employment but they also generate wastes that may affect human health and livelihoods in communities. Hazardous and toxic wastes (e.g., oily waste, pesticide residues; cleaning compounds; hospital wastes;

etc.) are byproducts of various goods, services, processes and systems that customers/citizens demand. The proper management of these wastes is a major challenge to local governments and to sustainable development.

Data Requirements

- Volume of industrial and agricultural wastes generated, handled, treated and disposed
- Volume of hazardous and toxic waste generated, handled, treated and disposed

Results

Table 83 shows the types and volume of wastes generated by the Dr. Catalino Gallego Nava Provincial Hospital (DCGNPH) from January - November 2017. Infectious wastes comprised about 46 per cent of the total health care waste generated for 11 months.

The health care wastes were sorted and treated at the Materials Recovery Facility of DCGNPH. Treatment was done with disinfectant or bleaching agent (sodium hypochlorite) before the wastes were transported to the disposal facility at Barangay Bugnay in the Municipality of

Table 83. DCGNPH's health care waste from January 2017-November 2017.

Types of waste	Volume (kgs)
Non-infectious biodegradable waste	5,590
Residuals	3,177
Infectious waste	9,501
Sharps	2,528
Total	20,796

Jordan. Infectious wastes and sharps in particular, were disposed in a septic vault.

The proposed common sanitary landfill in the province will have a designated area for the construction of Healthcare Waste Treatment Facility. The DCGNPH has plans to construct an additional facility for the hospital's infectious wastes. The Provincial Hospital does not generate radioactive wastes.

Health care wastes of the five municipalities are managed by the Municipal Health Center for treatment and disposal in their respective concrete vaults.

The five (5) municipalities are practicing temporary storage of their toxic and hazardous waste collected from waste generators to their septic vaults and special storage area at their respective MRFs and Eco-SWM Centers.

For pest control in mango orchards, the Bureau of Plant Industry – Guimaras National Crop Research Development and Production Support Center (BPI-GNCRDPSC)

implemented the Organic Farming Program, which is focused on the production and distribution of bio-control agents such as *Beauveria bassiana*, *Metarhizium anisopliae* and *Chilochorus nigrita* to address the pest problems in mango without the use of synthetic pesticides. The program also promoted the production of vermicast as soil conditioner and fermented plant/fruit juice as growth hormone and established partnership with stakeholders to implement a protocol on organic mango production at pre-bearing and bearing stages of mango.

In the Municipality of Buenavista where rice, livestock and poultry production abound, forty-eight famers completed a 16-week training in 2015 on PalayCheckSystem conducted by local farmer technicians and agricultural extension workers in coordination with the Department of Agriculture Region 6 and Guimaras Provincial Office for Agricultural Services. The PalayCheck System allows farmers to review every step of farming practice from seed selection, land preparation, water and fertilizer management, pest and diseases up to post harvest practices to ensure increase production.





DCGNPH's Materials Recovery Facility.



BPI-GNCRDPSC Distribution of biocontrol agents traps to beneficiaries.



BPI-GNCRDPSC Promotion and dissemination of good agricultural practice (GAP) on mango through seminars, techno-forum, exhibits and media interviews.

Implications and Recommendations

Proper handling and disposal of hazardous wastes is critical. Interventions can include the following:

- Conduct of orientation of staff (e.g., nurses) in the Provincial Hospital on proper waste segregation to avoid contamination of non-infectious waste with the infectious wastes.
- Continuing IEC for communities, including those who are involved in agricultural activities on proper handling and disposal of hazardous wastes.
- Promote and document Good Agricultural Practices and increase the number of GAP-compliant farms.
- Initiate the conduct of a total pollutant loading study for selected watersheds to determine the loadings from major point (i.e., domestic, industrial, commercial) and non-point (e.g., agriculture; aquaculture; runoff) sources for the development of pollutant reduction management plan.

Box 10. Geographical indication for Guimaras mangoes.



(Tara Yap, Manila Bulletin, May 21, 2017)

The Guimaras mango producers and processors worked on the code of practice to define the rules and procedures for using the Geographical Indication (GI). The GI scheme is a type of intellectual property right used to identify a product originating in the territory of a particular country or region or locally where its quality, reputation or other characteristic is linked to its geographical origin. In order to function as a GI, a sign must identify a product as originating in a given place.

The GI serves as a label that characterizes the mangoes as both originating in Guimaras as well as reputedly fresh and sweet. They can create value for local communities through products that are deeply rooted in tradition, culture and geography. They support rural development and promote new job opportunities in production, processing and other related services. GI is expected to benefit the Guimaras mango sector from increased marketability and improved access to international markets.

When consumers see the GI sticker in their mangoes, they are assured that the fruit is indeed from Guimaras, and has undergone good agricultural practices (GAP). The GAP certification on the other hand addresses the safety and health concerns of consumers. It focuses on the reduction of risks from pathogens, heavy metals and pesticide contamination and the protection of workers and the environment. The GI tag also certifies that the mangoes are grown and produced by members of Guimaras Mango Growers and Producers Development Cooperative. The launch of the GI tag highlighted the 2017 Manggahan Festival.

<https://www.panaynews.net/guimaras-mango-growers-eyeing-spike-in-demand-with-geographical-indication/>
<https://www.philstar.com/business/agriculture/2016/04/16/1573629/guimaras-mangoes-ripe-exports-eu>

References

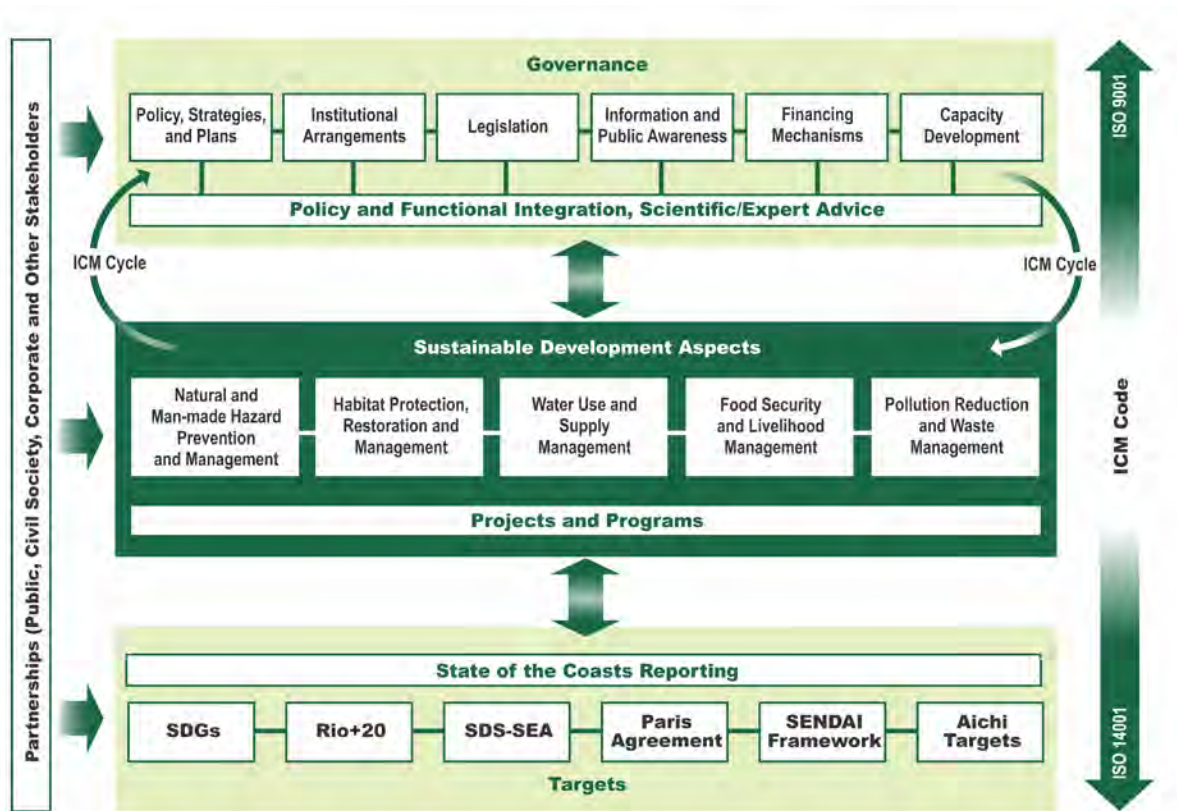
DCGNPH
 DCGNPH Health Care Waste Management Plan, DCGNPH
 Hospital Waste Record Book, DCGNPH Supply Office
 BPI-GNCRDPSC
<http://www.iloilometropolitantimes.com/48-farmers-from-guimaras-town-complete-training-on-palaycheck-system/>





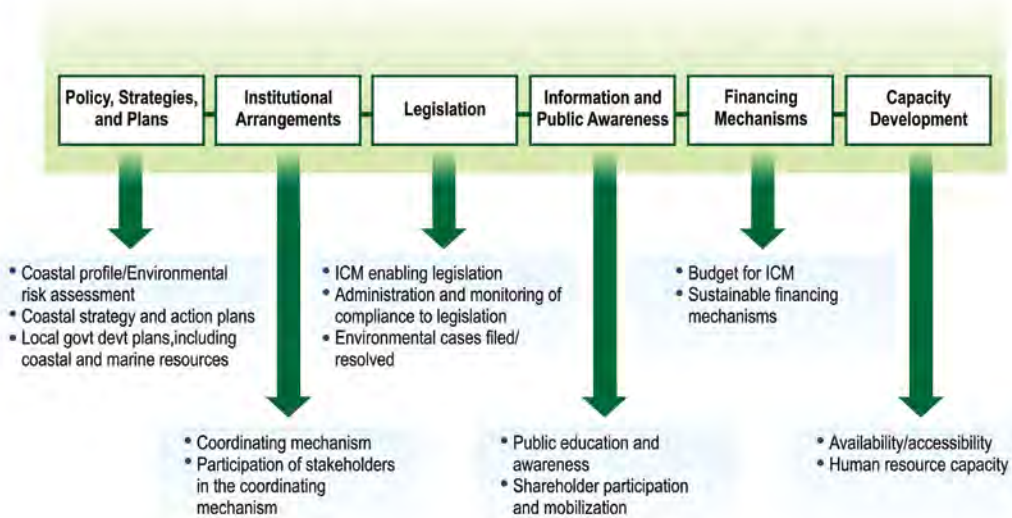
Annex 1. Framework for the Sustainable Development of Coastal Areas thru ICM.*

Process-oriented Common Framework for Sustainable Development of Coastal Areas through ICM Implementation.



* This section is taken from PEMSEA. 2007. *Partnerships in Environmental Management for the Seas of East Asia (1994-2010): A Regional Mechanism Facilitating Sustainable Environmental Benefits in River Basins, Coasts, Islands and Seas*. PEMSEA IEC Material 2. 80p. Global Environment Facility/United Nations Development Programme/International Maritime Organization Regional Programme on Building Partnerships for the Seas of East Asia (PEMSEA), Quezon City, Philippines.

Core indicators for the governance elements.



Core indicators for the sustainable development aspects.

