



USAID'S Growth with Equity in Mindanao Program

Final Report Watershed Management Mobilization

*Follow-on activity to the Climate Change Vulnerability Rapid Assessment of
the eight municipalities most severely affected by
Typhoon Pablo in the provinces of Compostela Valley and Davao Oriental*

Volume I: Compostela Valley



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ACRONYMS

AIP	Annual Investment Plans
ARSuW	Agusan River Sub Watershed
CSIRO	Commonwealth Scientific & Industrial Research Organization
DA	Department of Agriculture
DENR	Department of Environment and Natural Resources
Dep Ed	Department of Education
DOH	Department of Health
DPWH	Department of Public Works and Highways
DRR-CCA	Disaster Risk Reduction and Climate Change Adaptation
ENRO	Environment Natural Resources Officer
FAO	Food and Agriculture Organization
FECS	Final Ecosystem Goods and Services
FGD	Focus Group Discussion
GEM	Growth with Equity in Mindanao Program
IDS	Information Dissemination Section
IP	Indigenous People
IRA	Internal Revenue Allocation
LBGi	Louis Berger Group Inc.
LCE	Local Chief Executives
LGU	Local Government Unit
MDP	Municipal Development Plans
MEA	Millennium Ecosystem Assessment
MENRO	Municipal Environment and Natural Resources Officer
MLGOO	Municipal Local Government Operations Officer
NGA	National Government Agency
NIA	National Irrigation Administration
NIPAS	National Integrated Protected Area System
NRM	Natural Resource Management
PAGRO	Provincial Agriculture Office
PDP	Provincial Development Plans
PDRMO	Provincial Disaster and Risk Reduction Management Office
PENRO	Provincial Environment and Natural Resources Officer
PLGOO	Provincial Local Government Operations Officer
PPDO	Provincial Planning and Development Office
P-TWG	Provincial Technical Working Group
RA	Republic Act
SEP	Socio Economic Profile
TNA	Training Needs Assessment
TWG	Technical Working Group
USAID	United States Agency for International Development
WMC	Watershed Management Council
W-TWG	Watershed - Technical Working Group

EXECUTIVE SUMMARY

This pilot study on watershed management mobilization in the Agusan River Sub-Watershed within the Province of Compostela Valley, is one of the recommendations of an earlier Climate Change Vulnerability Assessment study commissioned by the United States Agency for International Development (USAID). Through this capacity building activity, a training needs assessment for watershed management was conducted and an Action Plan for watershed management mobilization was developed with the study's participants on how to improve the structure and functioning of watershed management in the demonstration area.

The conceptual framework of the study highlights the relationship between the local government unit (LGU) and the well-being of its citizens.

Based on this framework, the study investigated the presence of issues in watershed services through several focus group discussions (FGDs) and supporting secondary data. The FGDs were conducted among groups of farmers, women, Indigenous People (IP), civil service organizations (CSOs), teachers, church representatives and local traders. Another FGD was held among department representatives at the provincial LGU to assess watershed management practices based on the new generation of watershed management recommended by the Food and Agricultural Organization (FAO).

The Agusan River Sub-Watershed crosses the municipalities of Monkayo, Compostela and New Bataan. It has a watershed area of 64,197 ha and a population estimated at 90,918. Given the guidance and leadership of the provincial LGU, residents of this watershed could work together to optimally utilize their natural assets to create a safer place, increase their productivity, conserve their natural resources, and improve their resilience to natural disasters such as Typhoon Pablo.

The FGDs highlighted the issues raised by the participants. Discussions revolved around the seven *watershed services*. The inextricable relationship of water quality and water quantity / availability was well-illustrated in the sharing of the participants. Particular problems reported in the area include water sources contaminated by agricultural chemicals and/or mining wastes. During the FGDs, the discussion of *cultural adaptation* centered on the practices of IP, who reportedly apply stricter watershed management practices.

Based on the study team's assessment, while the province's existing watershed management structure is small in terms of composition, it is multi-functional. It has legal basis, its decision-making pattern is hierarchical, and its vertical linkage to national government agencies is active. It also has a vibrant partnership with communities though the incentive is non-monetary. The structure's orientation tends to be non-participatory. Stakeholders do not participate except in implementing projects in the upland areas, focusing on lower-middle class participants.

As to the functionality of the watershed management, the planning process is project-based with a short lifespan and a limited budget. Resource mobilization is not based on the watershed unit and conflict management is not held as a priority. Enhancing watershed services must be ingrained in the consciousness of the LGU. Many participants expressed that it was only during the FGDs that they were made aware of watershed services or ecosystem services. This new found awareness could usher in a change in paradigm for managing watershed and further propelled by the Action Plan developed by the province.

The findings of the FGDs are summarized as follows:

- (1) Economic activities are not linked with watershed services and watershed health;
- (2) A disconnect exists between authority, responsibility, and accountability in enhancing watershed services;
- (3) The longer timeframe required for some aspects of proper watershed management has not been fully considered;
- (4) Existence of top-down projects is the regular mode of operation;
- (5) The linkage between upstream and downstream communities is not recognized;
- (6) Conflicts in land use persist;
- (7) There is no mechanism available to level off stakeholders' contrasting interests and to decide on mitigating measures; and
- (8) Implication of land use on water is not adequately understood.

Key study recommendations include:

- The integration of watershed services into the disaster risk reduction and management (DRRM) and climate change adaptation (CCA) plans should support the broad socio-economic development plan of the province;
- The creation of a multi-sector, multi-stakeholder, multi-interest body that will serve as a platform for discussing issues in the watershed;
- Embedding watershed management into the socio-economic development process of the local government;
- The formation of alliances to protect the watershed, supported by a sustained public education program, since watersheds cross political boundaries of barangay and municipal LGUs.

This report provides the Action Plan prepared by the Provincial LGU, which has a 3-year timeframe and an estimated budget of Php500,000. Key activities identified in the Action Plan are:

- (a) Passing an Executive Order to create a Provincial Technical Working Group (P-TWG) to study and draft a comprehensive policy to strengthen watershed management based on a *ridge-to-reef ecosystem approach* for the province;
- (b) Preparation of the comprehensive policy to strengthen watershed management;
- (c) Public education;
- (d) Alliance building in the study's pilot area - the Agusan River Sub-Watershed (ARSuW);
- (e) Embedding watershed management in the ARSuW with the LGU planning and development process; and
- (f) Monitoring and evaluation.

1 INTRODUCTION

The provinces of Compostela Valley and Davao Oriental sustained heavy damage to population centers, infrastructure, forest, upland, and coastal ecosystems due to the onslaught of Typhoon Pablo (international name “Bopha”). This Category 5 super typhoon, which struck Region 11 starting December 4, 2012, represented the most southerly Category 5 typhoon to have occurred to date throughout the world.

In January 2013, the United States Agency for International Development (USAID) through its Growth with Equity in Mindanao (GEM) Program, completed a rapid assessment of the impacts of Typhoon Pablo. The study identified the eight most severely affected municipalities: (*Province of Compostela Valley*) Municipalities of Laak, Monkayo, Compostela, New Bataan, and Montevista; (*Province of Davao Oriental*) Municipalities of Baganga, Boston, Cateel.

A multi-component disaster recovery assistance program was then designed and implemented to effectively provide support in areas where needs were greatest. This included assistance to the education sector, livelihood and infrastructure projects, and the conduct of a climate change vulnerability assessment (VA) which focused on the 16 infrastructure projects in the eight municipalities that would either be rehabilitated or constructed with USAID funding.

The VA, which was completed in June 2013 by the GEM Program in collaboration with experts from the University of the Philippines – National Institute of Geological Sciences (UP-NIGS), provided an analysis of the potential impacts of climate change, focusing on increased rainfall, flooding, landslide, debris flow events, as experienced during Typhoon Pablo. Mitigation, adaptation and institutional measures, and follow-on activities for potential USAID assistance were recommended to reduce future vulnerability and increase local resilience to extreme rainfall and typhoon-related events by identifying hazard zones and responsive measures, including long-term adaptation planning.

These recommendations were organized into five major tasks and were implemented by GEM with concurrence from USAID:

- Task 1: Two Provincial Conferences on Disaster Management;
- Task 2: Adaptation Capacity Assessment and Planning;
- Task 3: Mobilizing for Watershed Management;
- Task 4: Communications and Training Activities;
- Task 5: Terms of Reference for the Acquisition of Light Detection and Ranging (LIDAR) Data to support a more detailed VA for Davao Oriental Province.

These Tasks are in line with Strategic Objective 2 of USAID’s *Climate Change and Development Strategy*, to increase the resilience of people, places, and livelihoods to changing climate. Further, it supports USAID/Philippines’ Development Objective 3 (DO3), under its *Country Development Cooperation Strategy*, to improve environmental resilience, specifically increasing climate change resilience (Sub IR 3.2.3) and reducing disaster risks (IR 3.1).

The following report presents the findings, results and recommendations of the study on Mobilizing for Watershed Management in a selected demonstration area in the Province of Compostela Valley. This activity is part of Task 3, which was implemented by the *Kahublangan sang Panimalay* Foundation, lead by Dr. Jessica Salas, in cooperation with USAID’s GEM Program.

1.1 Report Contents

This report is composed of five chapters:

Chapter 1 introduces the context of the study.

Chapter 2 describes the research team's approach and methodology and explains how improved watershed management could help communities protect their most important natural assets: land and water. This chapter also describes the variables applied in the study and the recommended mode of intervention.

Chapter 3 presents the study findings, a short profile of Compostela Valley and a description of a demonstration watershed. This chapter also discusses the results of the Provincial LGU assessment of watershed management, structure and functioning.

Chapter 4 presents the study recommendations.

Chapter 5 provides the Action Plan prepared by the LGU. The preparation of this Action Plan was initiated during a provincial workshop supported by USAID, and was refined through, a consultation and review process involving relevant departments within the LGU.

1.2 Acknowledgements

The preparation of this Action Plan would not have been possible without the full support of Provincial Governor Arturo Uy, through his Executive Assistant Mr. Gene Maning, who personally engaged the *ad hoc* TWG in the preparation and discussion of the action plan for watershed management mobilization and saw to it that all activities of the study were attended to. The participation of the head of offices and their designated representatives paved the way for early completion of data gathering and reports. These were the Disaster Risk Reduction and Management Office, the Provincial Planning and Development Office, the Provincial Agriculture Office – Environment, and the Information Dissemination Service Office.

The cooperation of the municipal officials of Monkayo, Compostela and New Bataan was highly appreciated as they facilitated the identification and travel of participants to attend the focus group discussion.

The full support of the GEM 3 Team under the guidance of Chief of Party, Ms. Marilou Sian, Deputy Chief of Party for Infrastructure, Engr. Carlos Tan, Vulnerability Assessment Team Leader Michael Ross, Ms. Nikki Meru, Mr. Cary Andigan and Mr. Lauro Tito Ilagan is hereby acknowledged with great appreciation.

2 WATERSHED MANAGEMENT MOBILIZATION

2.1 Introduction to Watershed Management

The United Nations Millennium Assessment presented four global scenarios of what may happen as the world adapts to climate change. While the *techno-garden* and the *global orchestration* could bring better performance in protecting environmental goods and enhancing environmental services, developing countries like the Philippines may not be able to afford their investment requirements. For these countries, the *adapting mosaic* scenario¹, based on collaborative watershed management, may represent the most appropriate and viable alternative for sustainable development. Under this scenario, global environmental crises are addressed through small, watershed-based initiatives, undertaken by decentralized institutions and embedded in broader sustainable development processes.

Reasons to emphasize the importance of micro watershed management include² :

1. The complexity and specificity of watershed hydrogeological, ecological and socio-economic processes are best captured at the local level;
2. Working in micro watersheds is more cost effective than trying to control extended systems, such as the river basin.

2.2 Study Objectives

The objectives of this study are to:

1. Conduct a needs assessment for watershed management capabilities;
2. Utilize the results of the needs assessment by facilitating the development of a mobilization plan for watershed management improvement in a demonstration watershed in the province; and
3. Assist / coach LGU information staff on watershed communication strategies.

2.3 Conceptual Framework

This study focuses on watershed services based on the framework established by the mandate of each local government unit (LGU) to protect and promote the welfare of its citizens. Article 11 of the Philippine Constitution maintains that the State shall protect and advance the right of the people to a balanced and healthful environment. The Local Government Code echoes this mandate in Section 17:

- (a) *“LGUs shall endeavour to be self-reliant and shall continue exercising the power and discharging the duties and functions currently vested upon them. They shall also discharge the functions and responsibilities of national agencies and offices devolved to them pursuant to this code. LGUs shall likewise exercise such other powers and discharge such other functions and responsibilities as are necessary, appropriate or incidental to efficient and effective provision of the basic services and facilities enumerated therein.”*

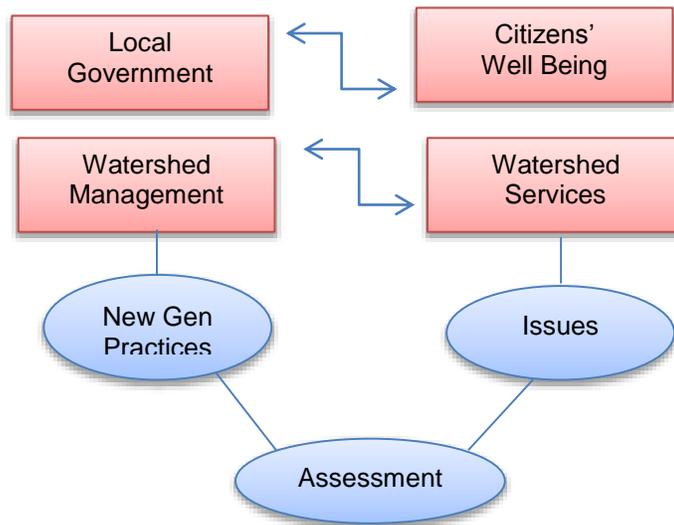
¹ Green Facts <http://www.greenfacts.org/en/ecosystems/toolboxes/scenarios-am.htm>

² The New Generation of Watershed Management Programmes and Projects. Rome, FAO, 2006.

Ecosystem services are defined as benefits or products and services valued by the community coming from the interaction of many natural assets. The term is also defined as the “benefits provided by ecosystems that contribute to making human life both possible and worth living”³. The watershed variables applied in this study were selected from the UN FAO New Generation of Watershed Management as it explains which of the four Millennium Ecosystem Assessment scenarios would be most effective for key variables in the watershed.

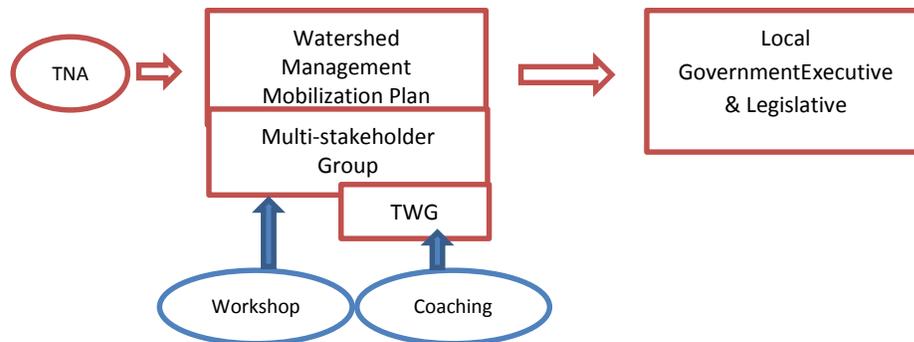
The conceptual framework (**Figure 2.1**) assumes that with the improved capacity of the LGU for managing watersheds, watershed services will be better recognized, protected, and enhanced. Improved capacity for managing the watershed starts with a needs assessment.

Figure 2.1: Schematic Diagram of the Conceptual Framework of the Study



This study was designed to support the LGU’s role in mobilizing improved watershed management (**Figure 2.2**). Starting with the Training Needs Assessment (TNA), the LGU representatives and other stakeholders were assisted in developing a mobilization plan that could be applied by the LGU Executive and Legislative branches.

Figure 2.2: Schematic Diagram for Mobilizing Improved Watershed Management



³ UNEP-IISD Ecosystem Management: Concept to Local Scale Implementation. Nairobi: UNEP, 2012, p. 25.

2.4 Variables Used

This study adopted the FAO 2006 definition of watershed services: water supply, water quality, erosion control, genetic resources, pest control, storm protection and cultural adaptation. Watershed management structure considerations included single or multiple, formalization structure, decision making structure, size, vertical linkage, horizontal linkage, incentive, participatory orientation, socio-eco composition and initiative. The functioning variables of watershed management applied are: planning and goal setting, resource mobilization, conflict management, resource management, provision of services, integration of services, control of bureaucracy, claim-making, collaboration, and gender.

2.5 Methods and Procedures

Identification of Watershed: Maps delineating watersheds and sub-watersheds in the provinces of Compostela Valley and Davao Oriental were provided by GEOS, Inc. A representative, populated watershed was chosen for this pilot study to demonstrate how to establish a watershed organization and how to mobilize watershed management. A watershed crossing political boundaries, such as barangays and municipalities, demonstrates how to build alliance to champion a watershed, large or small or micro.

Data Gathering: The 2011 socio-economic profile of Compostela Valley was utilized. Watershed issues were identified during four Focus Group Discussions (FGDs) involving: 1) farmers, 2) women, 3) indigenous people and 4) civil society, including NGOs, local traders, the academe and church sector groups. A total of 26 people participated in these FGDs. Watershed management structure and functioning was assessed based on discussions with six department representatives of the provincial government.

2.6 Study Limitations

This rapid appraisal provides a limited level of analysis due to time constraints, owing to the urgency of providing capacity-building assistance for disaster preparedness and management, and climate change adaptation to areas most severely devastated by Typhoon Pablo. The lack of additional data to corroborate claims and opinions expressed during the FGDs is a further limitation. While opinions expressed during the FGDs have not been cross referenced with field data, these were validated in a provincial conference workshop.

This report primarily aims to set the groundwork for the immediate integration of watershed management mobilization into the LGUs Disaster Risk Reduction Management (DRRM) and Climate Change Adaptation (CCA) planning exercises.

Activity Pictures



Banana plantation in Compostela Valley



Focus Group Discussions on watershed issues
Farmers, Women, Indigenous Peoples, CSO, Teachers, Church, Local Traders



Assessment of Watershed Management Structure and Functioning at the Provincial Capitol



Watershed Management Mobilization Reporting during the Provincial Conference on Disaster Management



The working team: Information, Planning, Environment & Agriculture, Disaster Risk Reduction Management

3 STUDY FINDINGS

3.1 Brief Profile of the Province of Compostela Valley

The Province of Compostela Valley (**Figure 3.1**) lies in the mid-eastern portion of Mindanao bounded by Agusan del Sur on the north; Davao Oriental on the east and south, Davao Gulf on the southwest and Davao del Norte on the west and northwest. The province has a land area of about 4,666 sq km; 33% of which is classified as Alienable and Disposable (A&D) and 67% is classified as forestland. Nabunturan, the provincial capital, is located 90 km from Davao City.

Figure 3.1: The Province of Compostela Valley



Natural Resources. Forestland areas consists of 45% brushland, 22% secondary growth / residual forest, 13.8% cultivated area, 11.9% old growth forest, 0.86% mossy forest, 4.9% plantation, 0.8% grassland and 0.2% mangrove. Three areas have been proclaimed or proposed as protected areas under the National Integrated Protected Area System (NIPAS):

1. Mabini Protected Landscape and Seascape (6,106 ha);
2. Mainit Hot Springs and Protected Landscape (401ha);
3. Proposed Mount Tagub-Kampalili Ranges Protected Landscapes (42,953 ha).

There are also watershed reserved areas identified for water supply: Upper Agusan River Basin; Andap Watershed; Hijo River Watershed, and Kingking-Matiao River Cluster Watershed. There are six watersheds co-managed by the LGU and DENR: Lapinigan Watershed in Mabini; Maco Watershed in Maco; Eastern Leonard Watershed in Maragusan; Macgum Watershed in Laak; Logum Watershed in Laak, and Bantilan-Sabud Watershed in Laak.

3.2 The Watershed Management Demonstration Area

A well-defined, simple watershed within a political boundary was selected for this pilot study (Figure 3.2). Attention was focused on the watershed issues in that particular area in order to subsequently provide recommendations on how the provincial LGU could improve management of this watershed and, to some degree, how this process may be replicated for other watershed areas. For Compostela Valley, the Agusan River sub-watershed was selected as the demonstration area. It traverses three municipalities: New Bataan, Compostela and Monkayo (Figure 3.3). The river joins Batoto River and form the head waters of the Agusan River. The land area of the delineated sub-watershed is estimated at 64,197 ha and includes land areas within 32 barangays: 10 in the municipality of Monkayo, 11 in the municipality of Compostela and 11 in the municipality of New Bataan. The land area composition of each municipality is estimated at: 33% of the land area of Monkayo, 98% of Compostela and 40% of New Bataan. The population in the watershed was estimated at 90,918 (Table 3.1).

Figure 3.2: Watershed and Political Boundaries, Provinces of Compostela Valley and Davao Oriental

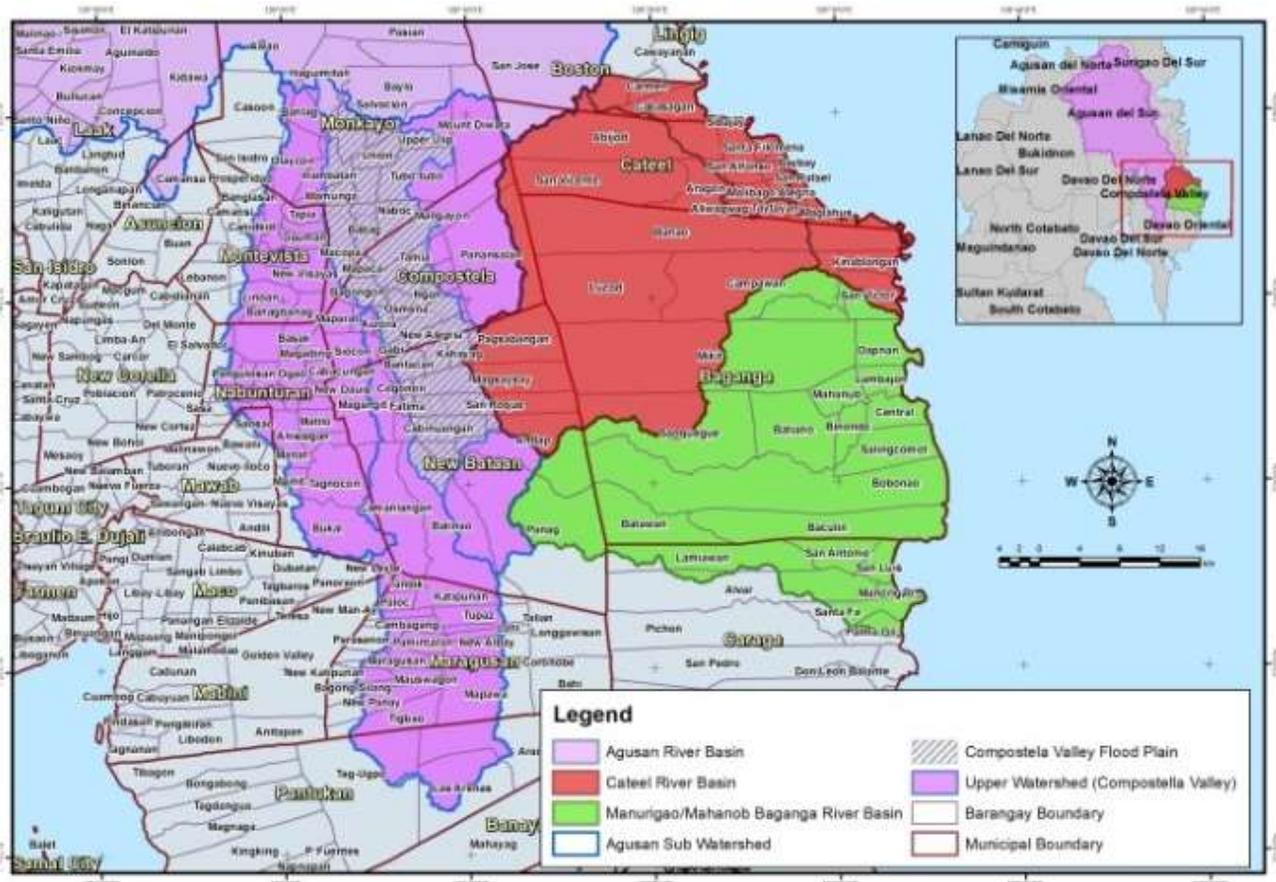
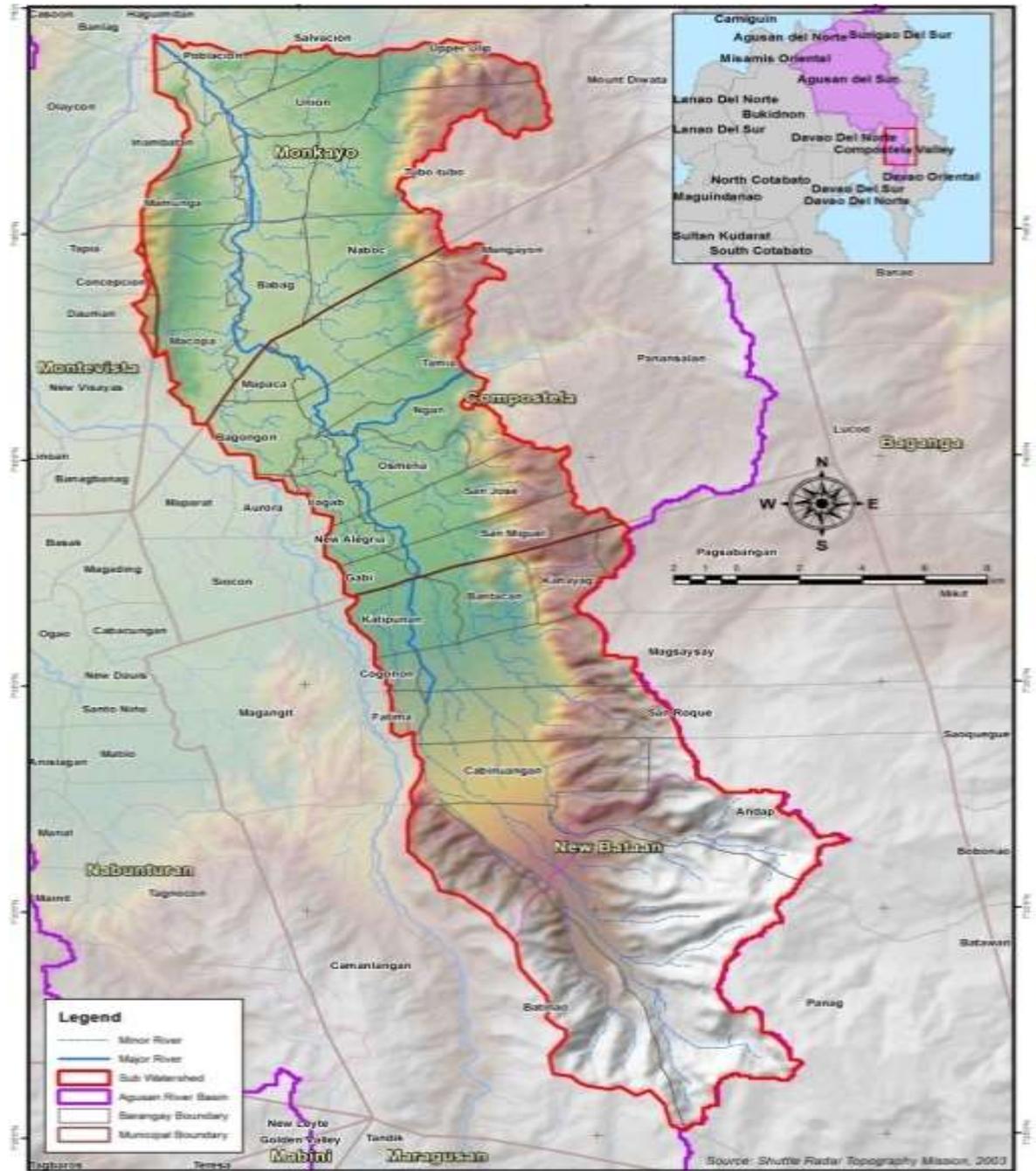


Figure 3.3: Agusan River Sub-Watershed Demonstration Area



Source: GEOS, Inc.

Table 3.1: Estimated Barangays and Population in the Agusan River Sub-Watershed

Municipality /Barangay	Land Area	Population	Assumed % within Sub-Watershed	Estimated for the Sub-Watershed	
				Land area	Population
MONKAYO					
Poblacion	4,992	18,341	50	2,496	9,171
Salvacion	3,400	3,439	20	680	688
Upper Ulip	3,350	4,668	30	1,005	1,400
Union	3,350	3,038	99	3,317	3,008
Inambatan	3,091	1,956	20	618	391
Mamonga	3,081	1,473	60	1,849	884
Tubotubo	3,336	3,615	80	2,669	2,892
Babag	3,351	3,229	100	3,351	3,229
Naboc	3,402	3,044	95	3,232	2,892
Macopa	3,017	2,391	80	2,414	1,913
Total	34,370	45,194		21,630	26,467
COMPOSTELA					
Mangayon	7,488	4,403	99	7,413.02	4,359
Mapaca	711	2,082	100	711.46	2,082
Bagongon	619	1,946	95	587.87	1,849
Tania	3,442	2,621	100	3,442.46	2,621
Ngan	6,775	7,738	75	5,081.49	5,804
Osmena	1,263	4,753	100	1,263.30	4,753
Lajab	1,005	2,586	85	854.09	2,198
New Alegria	932	3,262	85	792.57	2,773
San Jose	505	5,114	95	479.35	4,858
San Miguel	4,858	7,354	95	4,614.68	6,986
Gabi	1,037	3,891	80	829.78	3,113
Total	28,636	45,750		26,070	41,395
NEW BATAAN					
Katipunan	697	1,968	80	557	1,574
Bantacan	1,117	3,587	100	1,117	3,587
Kahayag	3,645	1,613	90	3,280	1,452
Cogonon	653	1,223	75	490	917
Magsaysay	506	1,120	50	253	560
Fatima	835	985	50	418	493
San Roque	5,568	2,090	50	2,784	1,045
Cabinuangan	2,998	10,390	85	2,548	8,832
Andap	11,241	7,550	35	3,934	2,643
Batinao	925	1,085	50	463	543
Panag	2,177	4,706	30	653	1,412
Total	30,361	36,317		16,497	23,056
Sub- Watershed				64,197	90,918

Sources: Local maps and information obtained from the Provincial Planning and Development Office (PPDO)

3.3 Stakeholder Issues on Watershed Services

Water Supply refers to the source, means, or process of supplying water. This usually encompasses reservoirs, tunnels, and pipelines and often the watershed from which the water is ultimately drawn. This is directly tied to the watershed service referred to as water quantity and availability for various needs of the community, including drinking and agriculture.

The results of the FGDs (**Annex A**) indicates a limited supply of potable water, especially in schools. At the validation workshop, one participant said this refers to schools with pipes bringing safe water to the school. Others believe the statement is correct after Typhoon Pablo. A school official from Monkayo who attended the FGD indicated that only the schools in the *poblacion*⁴ have clean water. For the whole area, only 50% of the schools reportedly have clean water source. This situation affects an estimated 13,750 pupils.

Water supplies for farming reportedly has also been reduced since the river changed its course following Typhoon Pablo, with a reported decrease in irrigation water levels.

Water Quality: The most common standards used to assess water quality relate to the health of ecosystems, safety of human contact and drinking water. FGD participants discussed drinking water and water for domestic use, water for agriculture, water for environment (fisheries) and for recreation (swimming). They reported that although there are many springs in the area, people do not drink spring water for fear of water contamination by agricultural chemicals. This situation is more prevalent in the towns of Compostela and Monkayo. Indigenous people (IP) reported that their water sources often dried up and when the water returned, it was dirty. Water-borne diseases in the area have reportedly increased since Typhoon Pablo. FGD participants recommend that the Department of Health (DOH) test the local water quality in the area.

Rice production and the quality of rice are also affected by chemicals in the water. This was discussed during an FG conducted with women stakeholders. Some reported that the river could no longer support fishing, except in areas inhabited by IP who have strict river rules to protect their source of livelihood. Water in the river has reportedly become “milky”. Some say the color of the Ngan River is brown and some say the color of the Nabok River is yellow. All groups reported that water contamination from the mines in the sub-watershed affects their lives. Even animals who drink the river water reportedly die.

Soil erosion is the removal of topsoil faster than the soil forming processes can replace it, due to natural, animal, and / or human activities. FGD participants report that problems caused by erosion include: rivers changing course, islands forming in the rivers, high water levels and other observations. Participants attribute erosion to quarrying, gold panning in the river, unprotected farms, tree plantation and road construction. They perceive erosion to be the cause of landslides and deduce that erosion is affecting them.

Genetic conservation refers to the controlled utilization, protection and development of natural and cultivated organisms to ensure genetic variety and variability. FGD participants reported that the genetic resources of the watershed are adversely affected by the poor quality of water, by the introduction of new species in plants and animals, and poor education on the proper use and conservation of native herbs, fruits and vegetables. Extensive banana plantations in the watershed area have reportedly contributed to the loss of indigenous trees and plants.

⁴ Town centers.

Seedlings of native plants could no longer be found. Aside from the loss of many endemic flora, participants also reported a reduction in endemic fresh water fish.

Pest control generally refers to the regulation or management of a species defined as a pest, usually because it is perceived to be detrimental to human health, the ecology or the economy.

Natural pest control, companion planting, and healthy soils are services which healthy watersheds could offer. Farmer FGD participants reported events of pest infestation. During validation, FGD participants said that Integrated Pest Management was introduced but few farmers have successfully managed to follow the program. The IPs have a way of controlling pests in their production areas because they cannot afford to buy pesticides and inorganic fertilizer. They still use organic methods. One example the IPs gave was the endemic vines called *dubli* which grow in the plains.

Storm protection: Preserving coastal habitats such as coral reefs, marshes, seagrass beds, and mangroves, could improve coastal storm protection and resilience.

FGD participants agreed that a healthy watershed could protect them from storms and they found it difficult to explain how Typhoon Pablo destroyed even their forest and rivers. Participants agreed on the importance of restoring their forests and noted that without the upland forests, they would have suffered from more destruction due to Typhoon Pablo.

Cultural adaptation refers to accommodation and change. It is the evolutionary process by which an individual modifies one's personal habits and customs in order to assimilate with a particular culture. It can also refer to the gradual changes within a culture or society that occur as people from different backgrounds participate and share their perspectives and practices.

The watershed is not only a catchment of water and minerals but also a social catchment. This makes cultural adaptation a vital watershed service. People, as they relate to each other, learn to modify their personal habits and customs and adapt to their environment. During the FGDs, participants pointed out that since the area was previously considered to be "typhoon-free", residents were not taught what typhoon warnings mean. Communities have been doing drills for earthquake and flood, but not for typhoons, which they had not experienced in a long time.

3.4 Assessment of Watershed Management Structure

During the FGDs, specific LGU difficulties were jointly identified and the current structure of watershed management was examined. The watershed is traditionally considered as the upland / forest areas which provide water supply to the downstream population. The catchment or watershed areas beyond the forest is not considered or at least not called a watershed. According to this traditional view, downstream agricultural and populated areas are not commonly viewed as part of the watershed. But if watershed is defined as

*"a topographically delineated area of land from which rainwater can drain as surface runoff, via a specific stream or river system to a common outlet point which may be a dam, irrigation system or municipal water supply take off point, or where the stream / river discharges into a larger river, lake or the sea."*⁵

⁵Guidelines for Watershed Management and Development in the Philippines by DOST, DENR, DA and UPLB, 1999

then a watershed certainly includes the area where surface water passes through as it finds its way to the sea.

The Department of Environment and Natural Resources (DENR) has not devolved to the LGUs the care of the natural resources. Only certain forest management functions, specifically the following, are devolved to the LGU under RA 7160:

1. Implementation of integrated social forestry;
2. Management of and control over communal forests with an area of 50 sq km or less;
3. Establishment of tree parks and greenbelts; and
4. Enforcement of laws related to mangrove resources conservation within municipal waters.

The watershed management structure in Compostela Valley is under the office of the Provincial Agriculture Office (PAGRO). A Provincial Environment and Natural Resources Officer is designated to head the related functions. She is currently supported by three staff members. She is in charge of watershed management as well as all environment concerns from the coast to the forest. Her watershed department defines watershed management as limited to forestry and community-based forest management in the mountains.

With one person at the head of the section, decision making is not shared. Following the guidelines of the new generation of watershed management, the LGU role could be strengthened through collaboration with and participation of multiple stakeholders. Primary responsibility for decision-making may be given to this local body, or to a committee with variations in between.

Vertical linkage refers to the frequency of interaction, exchange of information and resources between organizational levels. Horizontal Linkage characterizes the interaction between and among organizations. This study's assessment for the structure variables for watershed management in the province is shown in **Table 3.2**. Table 3.2 also shows that horizontal linkages are utilized mainly for resource mobilization and partners, like the civil society organizations (CSOs), other government agencies, NGOs and the private sector.

3.5 Assessment of Watershed Management Functions

Goal-setting and Planning. Goal-setting in the province is determined by the Provincial Development Council (PDC), guided by the province's vision and mission statements. For watershed management, plans are done on a per project basis by the Environment and Natural Resources Officer (ENRO), consolidated with the plans of the Provincial Agriculture Office (PAGRO) and are submitted to the Provincial Planning and Development Office (PPDO).

The usual entry point for watershed management in the development planning process is limited to issues in the condition of the forest and sometimes, the condition of rivers and streams. Managing the watershed with a "ridge-to-reef" view encompasses other aspects of the watershed which could not be captured by the existing planning process.

Table 3.2: Assessment of Watershed Management Structure

Variable	Assessment
Function	<ul style="list-style-type: none"> The structure has multi-functions.
Formalization	<ul style="list-style-type: none"> Highly formalized, with Local Government Code as legal basis.
Decision making	<ul style="list-style-type: none"> Authority of LGU limited by national policies and NGAs with their respective mandates. No coordination.
Size	<ul style="list-style-type: none"> Small. PAGRO environmental office has 4 personnel
Vertical linkage	<ul style="list-style-type: none"> Yes. Highly dependent on DENR for technical inputs.
Horizontal linkage	<ul style="list-style-type: none"> Yes. Linkages mainly are for resource mobilization. Partnership with agri-business companies, NGOs, corporate CSOs.
Incentive	<ul style="list-style-type: none"> Regular salaries of employees. Recognition of volunteers.
Participatory Orientation	<ul style="list-style-type: none"> None in the management structure. Participatory activities in field implementation.
Socio-economic composition	<ul style="list-style-type: none"> Government workers belong to the middle-low socio-economic status in the community and the composition is homogeneous.
Initiative	<ul style="list-style-type: none"> For watershed management interventions – international development agencies.

During the FGDs, it was mentioned that often the source of water is far from the area which consumes the water, thus watershed management issues may not be a high priority for downstream communities. It was mentioned that there is a need to look at the watershed as a whole and determine how watershed service issues may be addressed. FGD participants also suggested that watershed plans be included by the municipalities in their respective Municipal Development Plans, included in the Provincial Development Plan and funded under the Annual Investment Plan.

Resource mobilization involves the gathering of community resources for development effort or gaining resources from external sources through the effort of the local organization. Watershed management is only one of the concerns of the environment officer, who works under the Provincial Agriculturist. As a result, watershed concerns compete for limited resources. Even the DENR has limited resources for watershed projects it shares with the province.

During the FGDs, participants opined that if there would be a separate local body for watershed management, it can make proposals and could raise additional funds outside of the LGU general budget. Partners in such a multi-sector, multi-stakeholder body could help generate resources and initiate various ways of raising funds which can be tied with the value of watershed services.

Conflict Management: Participants gave examples of conflicts in the watershed, including: a) plantations and their effect on water quality, b) mining permits issued from a national office, c) small- and large-scale mining activities in the watershed areas.

Table 3.3 summarizes this study's assessment of watershed management functions in the province based on the results of the FGDs.

Table 3.3: Assessment of Watershed Management Functions

Variable	Assessment
Planning and goal setting	Follows the standard planning process of LGUs. Responses to watershed issues are treated as projects.
Resource Mobilization	Limited resources go to PAGRO Environment. Usually DENR provides funds for projects they implement, also limited
Conflict Management	Mitigating solutions are made in case of conflicts. Conflicts are allowed to persist over time without intervention.
Resource Management	Capability needs upgrading. "Myths" in resource management persists because of lack of attention to scientific input.
Provision for Services	Not adequate. Many watershed services were not adequately provided for because of lack of information, lack of mechanism to respond to issues, lack of planning and coordination
Integrated Services	None
Control of Bureaucracy	None
Claim Making	None
Collaboration	None, except for some projects like tree planting
Gender Balance	Yes

3.6 Summary of Findings

A summary of findings of watershed management needs in the selected demonstration area of Compostela Valley is presented in **Table 3.4**.

It appears that there may be a lack of effort to protect the remaining 12% forest area of the province; and to protect soil quality and control soil erosion. Table 3.4 indicates that there is no perceived connection between watershed authority, responsibility and accountability and that people in authority may not fully appreciate the resulting economic impacts of poor watershed management.

A change in watershed management structure could help alleviate this problem by strengthening the integration of natural resource management (NRM) in the LGUs overall socio-economic development planning and process. Watershed management typically consists of a series of short-term projects determined by available funds and priorities. It does not typically address the long-term nature and slow-paced interaction of ecosystem variables.

Table 3.4: Summary of Findings of Watershed Management Needs

No.	Assessment Findings	Outcome
1	Economic activities not linked with watershed services and watershed health	Conservation of watershed assets not appreciated, not prioritized, not balanced with utilization
		Maintenance cost not considered as economic or business cost
2	A disconnect of authority responsibility and accountability in enhancing watershed services	Ineffective response to watershed issues
		Finger-pointing and blaming
		No proactive action
3	Impact of slow variables of ecosystem not considered	Negative impacts of interventions are often too late for mitigation
4	Top down projects	Local knowledge and changing and adapting character of communities to their respective environment not considered
5	Linkage between upstream and downstream communities not recognized	Conservation of natural resources not optimized; equity and rights not recognized
6	Conflicts in land use persist	Conflicts degrade into serious ones or multiple conflicts
7	No mechanism to level off stakeholders contrasting interests and decide on mitigating measures	Disadvantaged stakeholders are powerless, see no hope, find watershed efforts meaningless
8	Implication of land use on water not adequately understood	Weak protection against flood and drought

4 RECOMMENDATIONS

The following recommendations seek to address current deficiencies identified during the FGDs to improve watershed management structure and functioning:

1. Integrate watershed services to support the broad socio-economic development plan of the province, particularly in its disaster risk reduction management (DRRM) and climate change adaptation (CCA) plans.
2. Create a multi-sector, multi-stakeholder, multi-interest body which will serve as a platform for discussing issues in the watershed, to arrive at suitable mitigating measures for the deficiency in watershed services brought about by conflicting interests among stakeholders, and improve the quality of life of the constituents.
3. Integrate the watershed management process into the socio-economic planning and development process and the administrative system of the local government.
4. Enable LGUs to form alliances with other LGUs in protecting their shared watersheds.
5. Support and sustain public education on watershed management.

5 ACTION PLAN FOR WATERSHED MANAGEMENT MOBILIZATION

A workshop was conducted during the August 27 – 28 Provincial Conference for Disaster Management for key LGU participants to validate the issues presented by stakeholders of the Agusan River Sub-Watershed. In addition, conference participants were asked to respond to issues by recommending changes in the structure and functions of watershed management. These recommendations were reviewed by representatives of PAGRO Environment, Provincial DRRM Office, PPDO, IDS, and the Office of the Governor. The consolidated and improved Action Plan for Watershed Management Mobilization is provided in **Table 5.1**.

The core members of the Technical Working Group (TWG) presented the Action Plan. The provincial Executive Assistant noted the urgency to create the Provincial Environment and Natural Resources Office (PENRO), which would be independent of the current Provincial Agricultural Office (PAGRO). The creation of similar offices dedicated to the environment and natural resources was encouraged in the municipalities.

The provincial Executive Assistant also noted that the simultaneous creation of the TWG and the Watershed Management Council would help facilitate decision-making. Together, they can work on a unified plan for the strengthening of watershed management. The Provincial Assistant highlighted that “this should have been done earlier.”

He also emphasized that the created PENRO should act as the secretariat of the Council and will head the TWG. The matter of funds was discussed and the representative of the Provincial DRRM Office explained that since the Watershed Management Council would be considered as a mitigating activity, a risk reduction activity, it could be part of the budget of the Provincial DRRM Office. The new National DRRM Office budget allocation sets aside 50% of the fund to go to risk reduction measures, when in the past it had the same share i.e., 25% of the budget.

The Executive Assistant further emphasized the need to involve the stakeholders in the Council and encouraged those present to do their share in lobbying for the Watershed Management Council among the local chief executives and in the community.

Table 5.1: Recommended Action Plan for Watershed Management Mobilization**Objective:**

To mainstream Disaster Risk Reduction Management (DRRM) and Climate Change Adaptation (CCA) capability in the LGUs through collaborative watershed “ridge-to-reef” management.

Activity	Time Frame	Office Responsible	Resources Needed
1.0 Passing an Executive Order to create a Technical Working Group (P-TWG) to study and draft a comprehensive policy to strengthen watershed management based on ecosystem, ridge-to-reef for the province	2013	Point Persons: PDRRMO & PAGRO	NA
1.1 Preparing the draft Action Plan for Watershed Management Mobilization			10,000
1.2 Submitting the Draft Action Plan for Watershed Management Mobilization to the Governor			NA
1.3 Drafting the EO for the creation of the P-TWG			NA
1.4 Signing and passage of the EO			NA
2.0 Preparation of the comprehensive policy to strengthen watershed management	2014	Provincial TWG	
2.1 Watershed Forum for key stakeholders (Ex: Provincial Dept Heads; NGAs like DENR-PENRO, DA, NIA, DPWH; MENROs of the 3 Municipalities)			20,000
2.2 Levelling off, clarifying and harmonizing the watershed management with the provisions in the Environment Code and other local bodies related to natural resource management			10,000
2.3 Identifying composition of the multi-sector and multi-stakeholder local body for watershed management (Ex: Compostela Valley Watershed Management Council or ComVal WMC)			NA
2.4 Determining options for authority and responsibility (decision-making) structure of watershed management local body			1,000
2.5 Defining relationship with vertical (national government agencies) and horizontal linkages (partners) in watershed management.			3,000
2.6 Embedding the watershed management planning process in the local government planning and development process			10,000
2.7 Studying provisions for: <ul style="list-style-type: none"> • Budgeting and financial management • Conflict management among stakeholders • Coordination in providing services • Documentation for claim process • Guideline for collaboration • Ensuring participation of women 			20,000
2.8 Passage of a provincial ordinance establishing a new watershed management structure			NA

Activity	Time Frame	Office Responsible	Resources Needed
3.0 Public Education	2013 to 2016	PIO	
3.1 Information program through radio program <ul style="list-style-type: none"> Issues on watershed Awareness of lack of coordination and capability to resolve issues Lack of collaboration among stakeholders Offer a venue to discuss on-going conflicting issues 	2013	PIO	50,000
3.2 Preparation of over-all public education plan	2013	PIO/ P-TWG	5,000
3.3 Preparation of modules following the broad plan	2013-2014	PIO	20,000
3.4 Conduct capability building activities <ul style="list-style-type: none"> Orientation for local chief executives Seminars/ trainings for Implementers Partners' Forum for potential donors 	2015	PIO P-TWG	100,000
3.5 Step-up advocacy <ul style="list-style-type: none"> Public assemblies at all levels Quad media advocacy (TV, radio print/outdoor media and internet) Integration of watershed management topics in Dep-Ed curriculum 	2016	PIO PIO P-TWG ARSuW	120,000
4.0 Alliance Building in Demo Watershed, the Agusan River Sub Watershed (ARSuW Board)	2014	Provincial TWG	
4.1 Joint assembly for discussing the common watershed of the 3 towns: New Bataan, Compostela and Monkayo Joint assembly for discussing the common watershed of the 3 towns			30,000
4.2 Drafting and passing of joint ordinance for managing the Agusan River Sub Watershed			10,000
4.3 Creation of the Watershed-TWG or W-TWG for the Agusan River Sub Watershed (ARSuW)			NA
4.4 Drafting of the MOA among key stakeholders of the Agusan River Sub Watershed as its Board members (ARSuW Management Board)	2014	W-TWG /PLGOO	NA
4.5 Signing of the MOA among key stakeholders, who are members of the ARSuWMgt Board		W-TWG / PLGOO	10,000
4.6 Determining Implementing Rules and Regulation for the MOA		W-TWG	10,000
4.7 Considering future merging of the Batoto River Watershed to make a bigger ARSuW		W-TWG P-TWG	NA
5.0 Embedding Watershed Management at ARSuW in the LGU planning and development process	2014	W-TWG / MLGOO	
5.1 Preparation of the ARSuW Management Plan		W-TWG / PTWG MLGOO	20,000
5.2 Approval of the plan by the Compostela Valley Watershed Management Council (ComVal WMC)		W-TWG / P-TWG	NA
5.3 Separating out watershed management activities of the three respective municipalities		W-TWG / MLGOO	4,000

Activity	Time Frame	Office Responsible	Resources Needed
5.4 Separating out activities of the respective departments of the municipalities from the watershed management plan for integration into their respective department plans		W-TWG / MLGOO	4,000
5.5 Integrating department management activities in the respective Municipal and Development Plans and Annual Investment Plans of the three municipalities		M-WMC / MLGOO	3,000
6.0 Monitoring and Evaluation	2014-2016	M-WMC / MLGOO	
6.1 Regular monitoring activities; functional monitoring team			50,000
Total 2013 to 2016			500,000

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