



USAID’S Growth with Equity in Mindanao Program

Final Report Watershed Management Mobilization

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

Volume II: Davao Oriental



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ACRONYMS

AIP	Annual Investment Plans
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
FEGS	Final Ecosystem Goods and Services
FGD	Focus Group Discussion
GEM	Growth and Equity in Mindanao
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

One of the results and follow-on recommendations of the VA Study was this Watershed Management Mobilization pilot study, under which a training needs assessment for watershed management was conducted. 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.

A demonstration watershed within the province of Davao Oriental was selected as the focus of this pilot study. The conceptual framework of the study highlighted the relationship between the local government unit (LGU) and the well-being of its citizens. It also related the relationship between watershed management and watershed services.

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, 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 contiguous micro watersheds in Barangays Mainit, Abijod and Santa Felomena were chosen as a demonstration area for this pilot study on watershed management. This cluster of watersheds, totalling 4,312 ha, was chosen to demonstrate the importance of protecting water resources and a near-shore landscape where the rivers are short, and where an estimated population of 4,815 people are at risk of reduced water supply, sea level rise, storm surge, tsunami, land slide and other hazards. Given the guidance and leadership of the provincial LGU, the residents of this watershed could join hands and optimally utilize their natural assets to create a safer place, produce more, conserve their natural resources, and improve resilience to future events, such as Typhoon Pablo.

The FGDs highlighted the issues felt by the participants. The 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. A shortage of water supplies was reported in the two downstream barangays both for agriculture and domestic use. Children were reportedly most affected as they had to buy water in school every day. Water quality was reportedly poor in all three barangays studied. Most of the wells for which test results are available were contaminated after Typhoon Pablo. Erosion control, an important watershed service, has been compromised because heavy rains during Typhoon Pablo destroyed and eroded even the contoured farms and numerous trees were uprooted.

Based on the study's assessment, the province's existing structure for watershed management is multi-functional, it has legal basis, its decision-making pattern is hierarchical, the size is small, its vertical linkage to national government agencies is active and it has a vibrant partnership with communities although 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 functionality of the watershed management, the planning process is project-based with a short life and a limited budget. Resource mobilization is not based on the watershed unit.

Conflict management, is not the priority of the management unit. Enhancing the provision of watershed services is not yet 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. The new awareness could usher in change in paradigm for managing watershed, assisted by the Action Plan the province prepared.

The findings of the FGDs can be summarized in eight statements:

- (1) Economic activities were not linked with watershed services and watershed health;
- (2) A disconnect of authority, responsibility, and accountability in enhancing watershed services existed;
- (3) The longer timeframes required for some aspects of proper watershed management was not fully considered;
- (4) Existence of top-down projects was the regular mode of operation;
- (5) Linkage between upstream and downstream communities was not recognized;
- (6) Conflicts in land use persisted;
- (7) No mechanism is 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:

- Watershed services should be integrated to support the broad socio-economic development plan of the province, particularly in its disaster risk reduction and management (DRRM) and climate change adaptation (CCA) plans;
- A multi-sector, multi-stake, multi-interest body should be created to serve as a platform for discussing issues in the watershed;
- Watershed management should be embedded in the socio-economic development process of the local government; and
- Since watersheds cross political boundaries of barangay and municipal LGUs, alliances should be formed to protect the watershed, supported by a sustained public education program.

This report provides the Action Plan prepared by the Provincial LGU and has a timeframe of 3 years (2013 to 2016), with an estimated budget of Php 500,000. Key activities identified in the Action Plan are:

- (a) Creating a Technical Working Group by an Executive Order with the purpose of mainstreaming watershed management in the local government units of the province;
- (b) Establishing the legal basis for constituting a strengthened watershed management council, its purpose, its rationale and mechanics through an ordinance;
- (c) Building alliances;
- (d) Embedding watershed management in the local government planning and development process;
- (e) Developing the implementing rules and regulations (IRR) of the ordinance on strengthened watershed management; and
- (f) Increased public education.

1.0 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 15 infrastructure projects in the eight municipalities that would either be rehabilitated or constructed with USAID funding.

The VA, which was completed by the GEM Program in June 2013 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 will support 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).

Task 3, “Mobilizing for Watershed Management”, is the subject of this report for Davao Oriental, and was implemented by the *Kahublangan sang Panimalay* Foundation, lead by Dr. Jessica Salas.

1.1 Report Contents

This report includes four chapters in addition to this Introduction:

Chapter 2 describes the approach and methodology applied in conducting this study. This chapter explains why having an 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 for intervention.

Chapter 3 presents the Study Findings. A short profile of Davao Oriental introduces the chapter, followed by a description of a demonstration watershed. Chapter 3 also shows 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 started at the provincial workshop. The Action Plan was consolidated, commented on and a small group discussion was again held to finalize the contents of the Action Plan.

1.2 Acknowledgements

The preparation of the Action Plan would not have been possible without the full support of Provincial Governor Corazon Malanyaon, who graciously invited the team to talk with her on the value of natural assets in her province and how she could lead in the protection campaign. Her advisors and department heads actively participated during the FGDs, learning more about the new generation of watershed management and how the provincial LGU can better integrate these principals and required actions. During finalization of the Action Plan, the two point persons responsible were the Provincial Planning and Development Coordinator (PPDC) Fred Bendulo and Ms. Dolores D. Valdesco of the Provincial Environment and Natural Heritage Center. These connections, working relationships and results would not have been possible without the GEM Program’s excellent support.

The enthusiastic barangay captains of the demonstration micro-watersheds and the FGD participants from various sectors plus the facilitating presence of Mr. Lelisito “Padodong” Saldana of the Cateel Municipal DRRM Council and Ms. Theresa Obatonon, the Cateel Municipal Operating Officer and Mr. Cary Andigan of GEM made the ground work possible. The work of FGD in-charge, Ms. Marve Banes and staff, and the able technical support of Ms. Marie Antoinette Salas are hereby acknowledged.

2.0 Introduction

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.

2.1 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 a mobilization plan for watershed management improvement in a demonstration watershed in each province; and
3. Assist / coach LGU information staff on watershed communication strategies.

2.2 Conceptual Framework

This study focused 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's 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 of the Code:

- (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.”*

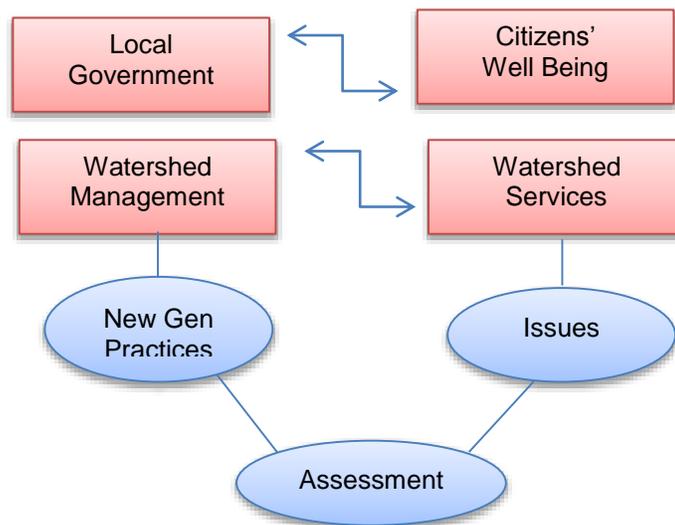
¹ Green Facts <http://www.greenfacts.org/en/ecosystems/toolboxes/scenarios-am.htm>

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 chosen 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.

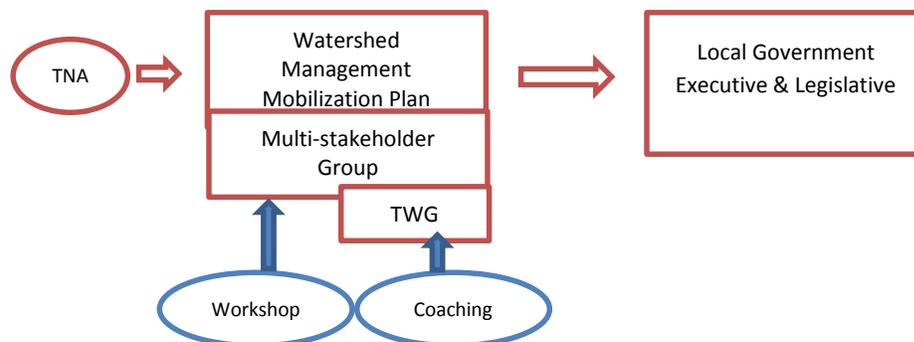
The conceptual framework (**Figure 2.1**) assumes that with the improved capacity of the LGU for managing watersheds, watershed services will be better recognized, protected, and improved. Improved capacity for managing the watershed starts with a needs assessment.

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 asked to develop a mobilization plan which 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.

2.3 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.

2.4 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 to demonstrate how to establish a watershed organization and how to mobilize watershed management for the selected area. 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 4 Focus Group Discussions (FGDs) involving: 1) farmers, 2) women, 3) indigenous people and 4) civil society, including NGOs, local traders, academe and church sector groups. A total number of 26 people participated in these FGDs. Watershed management structure and functioning was assessed based on discussions with 6 department representatives of the provincial government.

2.5 Study Limitations

This rapid appraisal provides a limited level of analysis due to time limitations. The lack of additional data to corroborate claims and opinions expressed during the FGDs is a further limitation. Opinions expressed during the FGDs were not checked with field data but were validated in a provincial conference workshop.

Activity Pictures



Lifeless coconut trees at Cateel



Mangroves uprooted by the wind and the waves



Seedlings are ready for planting for the stripped mountains in the background.
And the barangay folks are talking, mapping, and planning for action.



FGD at Barangay Mainit



Map transecting at Barangay Abijod



Discussing the micro-watershed of Barangay Santa Felomena



Presenting plans at the Provincial Conference on Disaster Preparedness



The Blue Mountain, a Natural Heritage Site: a view from Mati City



A time with the Governor, the Honorable Corazon Malanyaon of Davao Oriental



The working staff in Focus Group Discussion

3.1 Brief Profile of the Province of Compostela Valley

Davao Oriental is located in the easternmost part of Region XI bounded by the Pacific Ocean in the East, Davao Province in the West, Agusan del Sur and Surigao del Sur in the North and Davao Gulf and Celebes Sea in the South. The City of Mati is the provincial capital.

The land area of the province is 516,446 ha comprising 11 municipalities, including its capital town and 183 barangays. Of this land area, 39% has been classified as alienable and disposable (A&D) land while 61% has been classified as timberland / forestland. However, in the timberland / forestland, 10% is production forest and only 4% of the province area is classified protection forest. The province has a coastline that is 466.9 km long, with 1,818.5 ha of mangrove areas and has a total of 47 rivers and 30 creeks.

The population of the province (2010) was 517,618 with a population growth rate of 1.36 % / year.

Coconut is the major agricultural crop in Davao Oriental, with 160,000 ha planted to coconut in 2009. Riceland covers 13,920 ha while corn is planted in 12,345 ha.

The province is also encouraging high value crops such as several types of banana, durian, mango, lanzones, pomelo, cacao, coffee, rubber, mangosteen and rambutan. The province has targeted and accomplished around 8,000 ha for high value crops production. Two towns, Boston and Cateel, do not participate in this program.

Even with only 4% of its land area in protection forest, the lumber industry is institutionalized. The Community Based Forest Management Agreement (CBFMA) involved 60,521 ha. IFMA, or Industrial Forest Management Agreement, operates in 64,607 ha and SIFMA, or Social Integrated Forestry Management Agreement, operates in 24 ha. The total yield is not reported in the provinces' 2011 Socio Economic Profile Report.

3.2 The Watershed Management Demonstration Area

The province of Davao Oriental has two prominent, large watersheds: the Cateel Watershed and the Baganga Watershed. These two watersheds cross the political boundary between Davao Oriental and Compostela Valley. The inter-provincial character of a watershed may increase the challenges of effectively mobilizing watershed management. The character of a "ridge-to-reef" formation of a catchment is better illustrated in the coastal area where people could immediately recognize the flow of water and the well-defined ridges. The micro watersheds of 3 coastal barangays were considered as the demonstration area.

Figure 3.1: Map of the Province of Davao Oriental

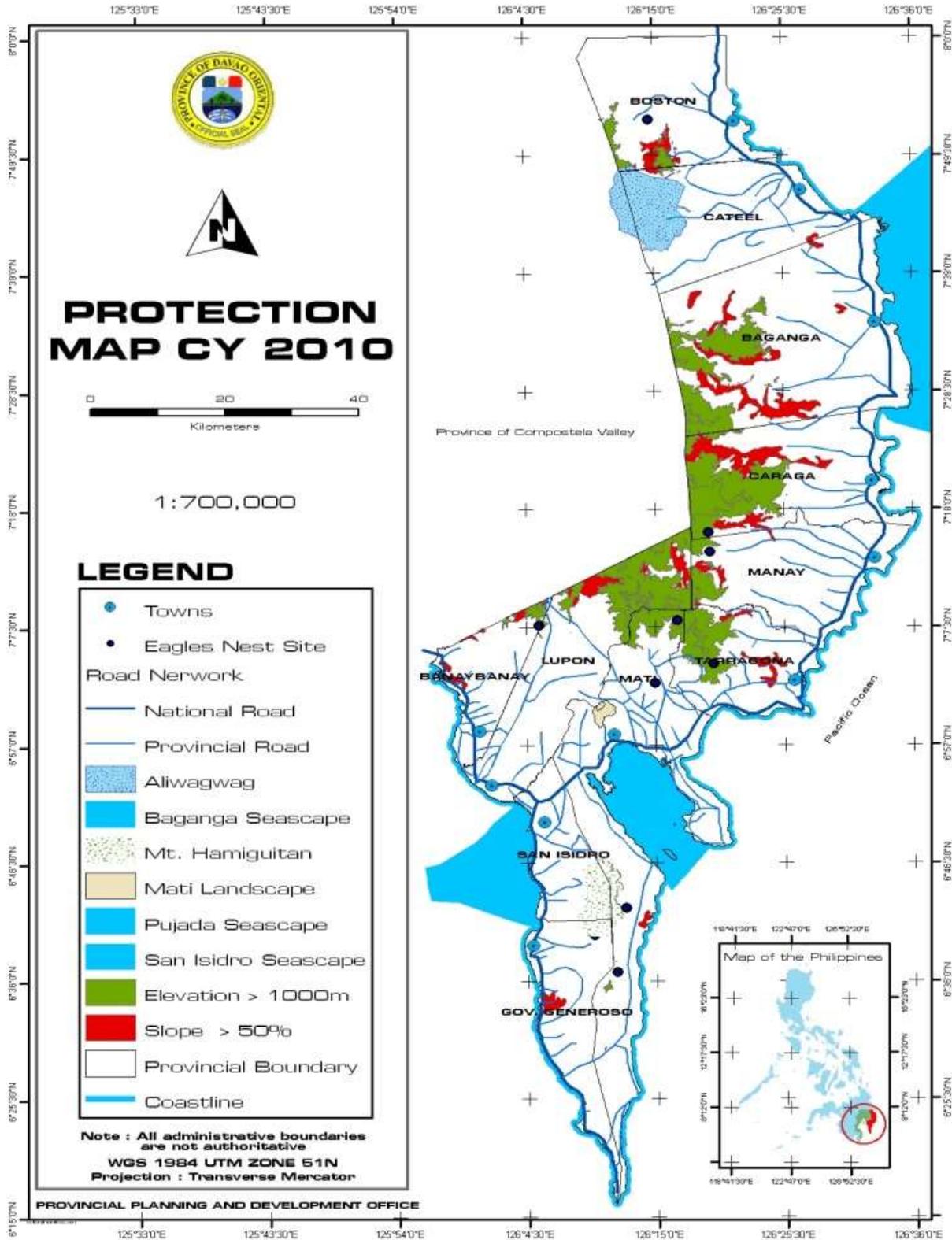
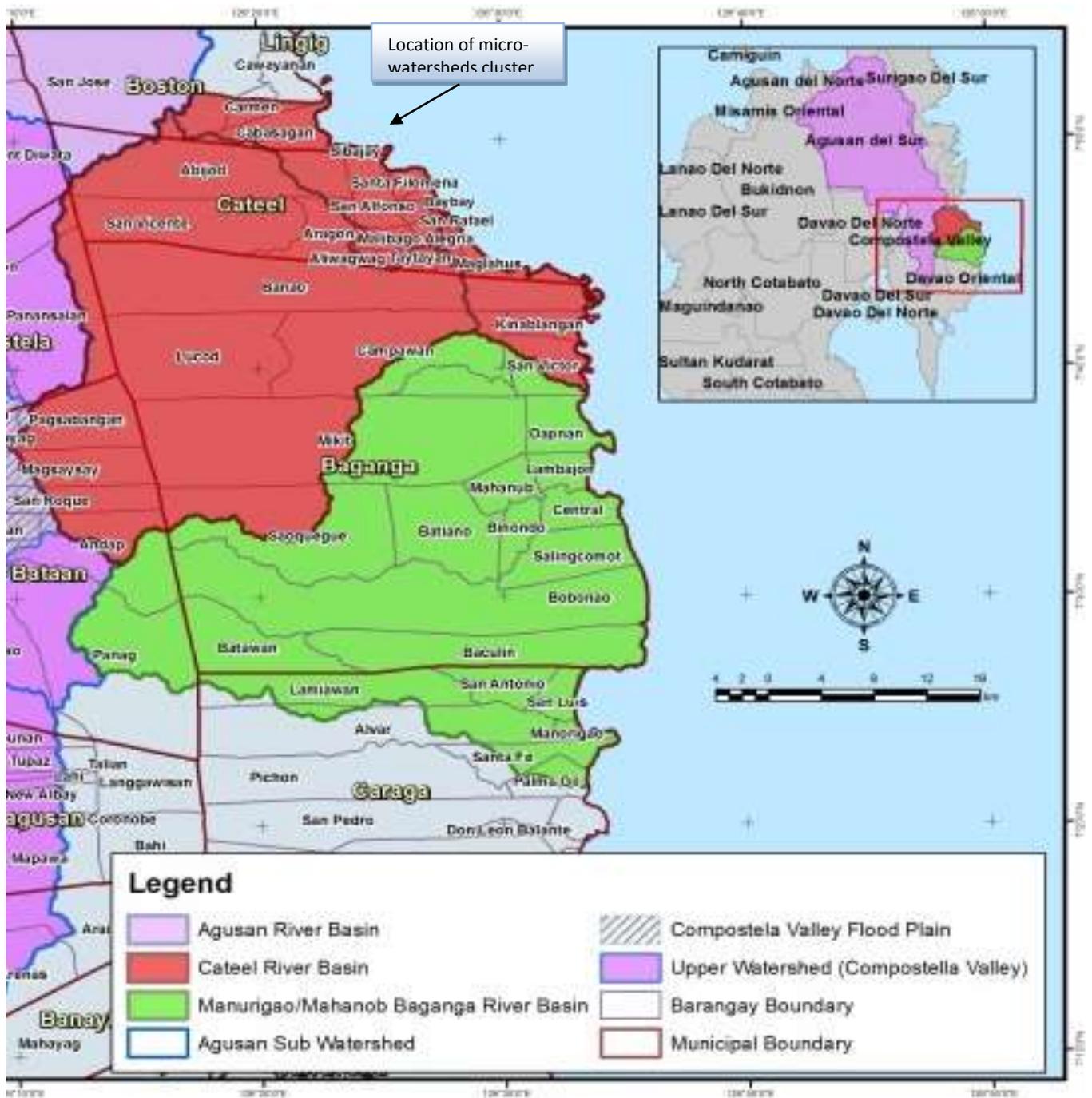
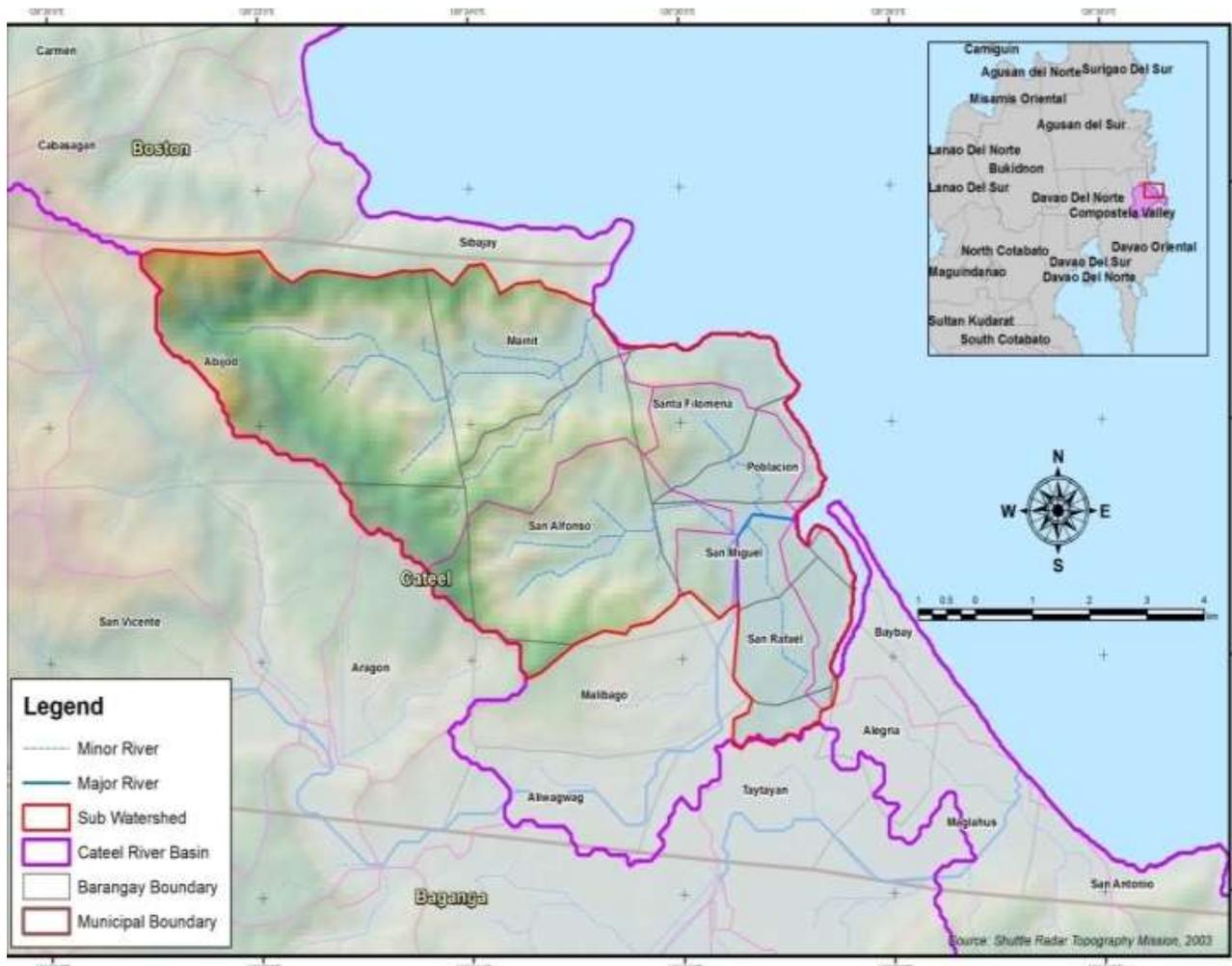


Figure 3.2: The Cateel Watershed and Clusters of Micro Watersheds at Cateel



Source: GEOS

Figure 3.3: Micro Watersheds Cluster at Cateel

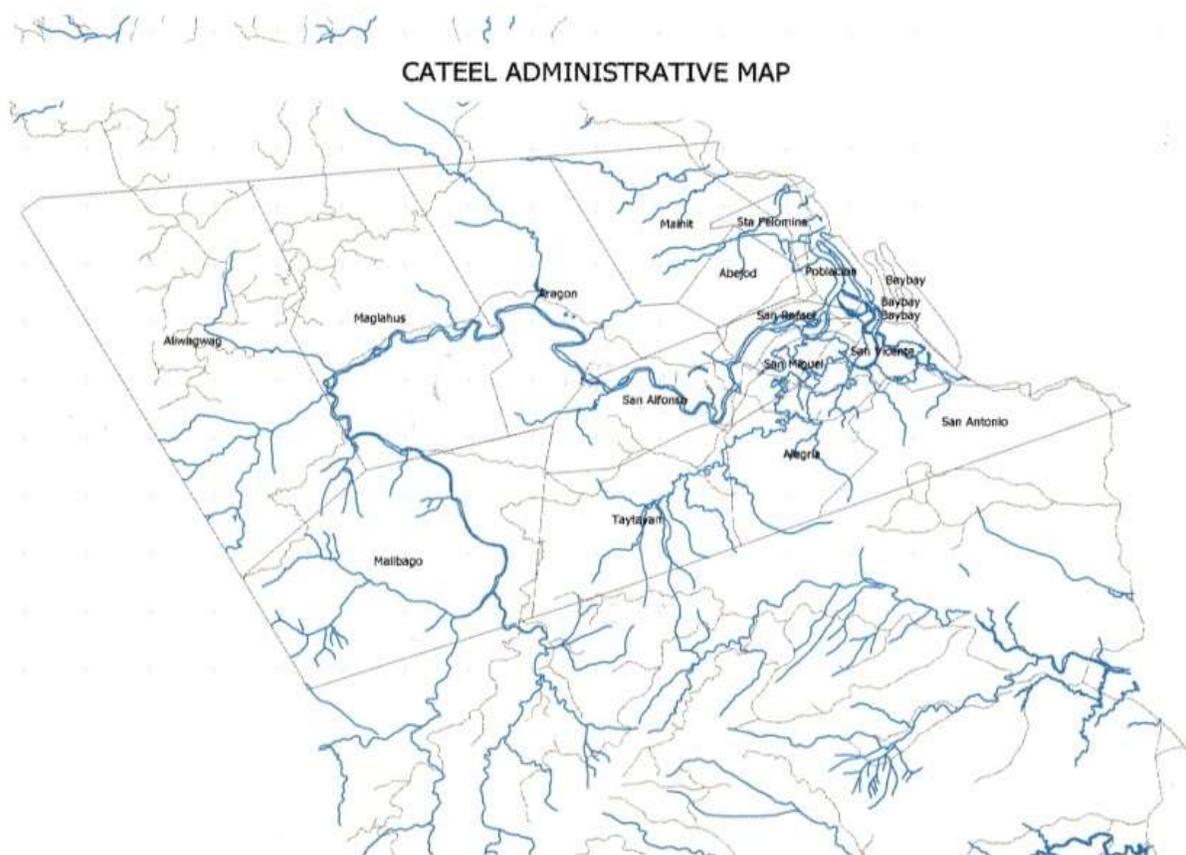


Source: GEOS

GEOS provided a map delineating the micro watersheds outside the Cateel Watershed but within the Municipality of Cateel. These are found in Barangays Mainit, Santa Felomena, San Alfonso, the Poblacion, San Miguel and San Rafael. A site validation was conducted and a meeting was held with the barangay officials of Barangays Mainit, Abijod and Santa Filomena as these are the three adjacent barangays in the eastern part of the town. The three barangay councils did not agree with the barangay boundary delineation and they drew their own map describing the location of the river, the divides and the barangay boundaries. An administrative map from the town Municipal Planning and Development

Office was obtained clarifying the stand of the three barangays (**Figure 3.4**).

Figure 3.4: Administrative Map of Cateel Municipality Showing the Three Rivers of Barangays Mainit, Santa Felomena and Abijod



A cluster of micro watersheds in the Municipality of Cateel were identified: Manat River in Barangay Mainit; Kana-ob River in Barangays Mainit and Abijod, and the Mahan-og River in Barangays Mainit and Abijod, and emptying at the coastline of Barangay Santa Filomena .

The total land area of the three barangays totals some 4,312.4 ha with a population of 4,815 people (**Table 3.1**). Each micro watershed can manage its own area but the cluster can facilitate learning of the stakeholders from the similar situation of each other.

Table 3.1: Barangays in the Micro-watershed Cluster of Cateel

Barangay	Land Area (ha)	Population (2010)
Barangay Mainit	2,739.0	1,759
Barangay Abijod	924.4	1,789
Barangay Santa Filomena	649.0	1,267
Total	4,312.4	4,815

3.3 Stakeholders' Issues on Watershed Services

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

Based on the results of the FGDs (**Annex A**), water supply is not a major problem for the farmers of Barangays Abijod and Mainit, but that damaged and leaking water pipes affect the supply and distribution of water at the household level. It was reported that certain farmers would divert the flow of water to irrigate their rice field, affecting the water supply in the downstream barangay.

In Barangay Abijod, a resolution was passed to mitigate the impact of diverting water flows, but the Barangay has not apprehended anyone to date. While water availability and supply is not a problem in Abijod since it has the source of water, a barangay councillor in a downstream barangay added that Abijod could no longer service the water supply needs of their barangay.

Water Quality: The most common standards used to assess water quality relate to 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). The FGD participants reported that water quality in these micro watersheds has noticeably declined since Typhoon Pablo. All efforts are being coordinated by the provincial government to restore water quality to its normal, pre-typhoon condition, but expert technical assistance may be needed. One technology could be rainwater harvesting and communities may be taught how to install rainwater collection systems.

Soil erosion is the removal of topsoil faster than the soil forming processes can replace it, due to natural, animal, and/or human activities. *Anas* is the local term for soil erosion. FGD participants discussed that because of silted rivers, Barangay San Alfonso has been declared as a flood prone area by the Mines and Geosciences Bureau (MGB) and it was recommended that residents should be relocated. The municipality of Cateel had already purchased four hectares of land for relocation. The MAO of Cateel explained that San Alfonso was a flood plain and the residents anticipated the annual inundation of the river during the months of December - March.

Genetic conservation refers to the controlled utilization, protection and development of natural and cultivated organisms to ensure genetic variety and variability. Based on the FGDs, there seems to be limited awareness of the value of genetic resources as a service of the watershed. Watershed stakeholders say genetic resources of the watershed are affected adversely by poorly implemented laws against poaching and bio-prospecting. Participants talked about wild animals in the area and that they are now gone because the forest is gone.

FGD participants reported that genetic resources of the watershed are adversely affected by poor quality of water, by introduction of new species in plants and animals, and poor education with regard to 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 and seedlings of native plants could no longer be found. Aside from loss of many endemic flora, many 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 a person's 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.

Storm protection: Preserving coastal habitats, such as coral reefs, marshes, seagrass beds, and mangroves, could improve coastal storm protection and resilience. The coastline of Davao Oriental is 466.9 km long. Increasing the presence and condition of mangroves could improve storm protection to the towns located along the coastline.

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

Cultural adaptation is a watershed service since the watershed is not only a catchment of water and minerals but also a social catchment. People, as they relate to each other, learn to modify their personal habits and customs and adapt to that of their neighbour. During the FGDs, participants said that people were not taught what typhoon warnings mean since the area was previously considered to be “typhoon free”. 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.”⁴

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;

⁴Guidelines for Watershed Management and Development in the Philippines by DOST, DENR, DA and UPLB, 1999

2. Management of and control over communal forests with an area of 50 square kilometres or less;
3. Establishment of tree parks and greenbelts; and
4. Enforcement of laws related to mangrove resources conservation within municipal waters.

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.

Table 3-2: Assessment of Watershed Management Structure

Variables	Assessment
Function	<ul style="list-style-type: none"> • Multi function
Formalization	<ul style="list-style-type: none"> • The ENRO office was created under the mandate of the Local Government Code
Decision making	<ul style="list-style-type: none"> • Decisions are fragmented among several national agencies with no coordination with the LGU which is equally responsible and accountable for water and watershed issues
Size	<ul style="list-style-type: none"> • Small
Vertical Linkage	<ul style="list-style-type: none"> • Linkage to national agencies: DENR, DA
Horizontal Linkage	<ul style="list-style-type: none"> • Linkage with local partners, associations encouraged but not sustained
Incentive	<ul style="list-style-type: none"> • Salaries for LGU staff. Recognition for partners
Participatory orientation	<ul style="list-style-type: none"> • No mechanism in the structure which promotes integration/ participation
Socio-economic composition	<ul style="list-style-type: none"> • Structure for WM limited to LGU department/ middle-income status
Incentive	<ul style="list-style-type: none"> • Intl development agency

The Cateel River is significant to the province because it is the source for irrigating 1,500 ha of rice fields. Decisions over water and watershed services issues are fragmented among several national agencies with no coordination with LGU which is equally responsible and accountable for watershed services of its citizens

There are 4 water districts in the province: San Isidro, Lupon, Mati City, and Baganga. The LGU has no direct authority over creation and operation of these water districts. Yet the LGU is responsible for providing safe and available water to its citizens. Water resource has not been a problem in the past because of the 37% forest cover. Decisions as to granting of permits for logging operations and issuance of titles to convert forestland to alienable and disposable (A&D) status⁵ are the responsibilities of national government agencies.

⁵ Alienable and Disposable land classification.

Thru the vertical linkage with PAWB of DENR, the province applied for the declaration of Mt. *Hamigitan*, or the Blue Mountain, as a national heritage of UNESCO. The Governor personally supervised the process and spent for the required documentation.

The structure for watershed management is limited to a LGU department. The staff comprise middle-income to low socio-economic status employees. This type of characteristic may not be capable of asserting decisions, policy compliance to respond to watershed issues. On the other hand, the structure is not dominated by a single interest (Table 3.2).

3.5 Assessment of Watershed Management Functions

Another facet of watershed management is how it functions. Ten variables were chosen to assess the watershed management functioning task of the province of Davao Oriental. These are: goal setting and planning, resource mobilization, conflict management, resource management, provision of services, integration of services, control of bureaucracy, claim making, collaboration and creating gender balance. (Table 3-2)

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.

During the FGDs, it was mentioned that often times the source of water is far from the area which consumes the water, thus watershed management issues may not be a high priority of 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 the need for watershed plans be included by the municipalities in their respective Municipal Development Plans, included in the Provincial Development Plan and funded in the Annual Investment Plan.

Resource mobilization involves the gathering of community resources for development effort or gaining resources from outside sources through the effort of the local organization. Watershed management is only one of the concerns of the environment officer, who is 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 should be a separate local body for watershed management, the body can make proposals and could raise funds in addition to the limited resources that may be available from the LGU general budget. Partners in such a multi-sector, multi-stakeholder body could help generate resources, including 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 Functioning

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 cases of conflicts allowed to persist over time without intervention.
Resource Management	Capability needs upgrading. “Myths” in resource management persist because of lack of 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

An example was given during the FGDs on how services in the watershed are not well integrated. To help address / control erosion, the DENR plants trees, DPWH puts up gabon structures, the Provincial NRO works on river bank erosion, and the MAO works on how to conserve soil by putting up farm bunds. Integration should be strengthened, coordinated by the provincial LGU.

The FGD assessment for the capacity to effect integration of services was “non-existent or to a little extent.”

3.6 Summary 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 forest areas of the province; and to protect soil quality and control soil erosion. Table 4 indicates that there is no perceived connection between watershed authority, responsibility and accountability and that the 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 are not linked with watershed services and watershed health.	<ul style="list-style-type: none"> • Conservation of watershed assets not appreciated, not prioritized, not balanced with utilization. • Maintenance cost not considered as economic or business cost
2	There is a disconnect of authority responsibility and accountability in enhancing watershed services.	<ul style="list-style-type: none"> • Ineffective response to watershed issues. • Finger-pointing and blaming • No proactive action
3	Impact of slow variables of ecosystem not considered.	Negative impact of interventions oftentimes happen 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 is 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 measures against flood and drought

The following are suggested 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-stake, multi-interest body which will serve as a platform for discussing issues in the watershed to arrive at 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; and
5. Support and sustain public education for the watershed management.

A workshop was conducted during the August 29 – 30 Provincial Conference for Disaster Preparedness for the participants to validate the issues presented by stakeholders. In addition, conference participants were asked to respond to issues by recommending changes in the structure and functions of watershed management. A recommended Action Plan was prepared by 4 groups. The output was reviewed by the point persons appointed by the governor and the workshop output was consolidated into one Action Plan for Watershed Mobilization. The objective of the plan is to strengthen watershed management capability of the LGUs of Davao Oriental.

The consolidated Action Plan for Watershed Management Mobilization is provided in **Table 5.1**.

Table 5.1: Action Plan for Watershed Management Mobilization

Activity	Schedule	Office Responsible	Resources Required (Php)
1. Creation of a Technical Working Group by Executive Order with the purpose of mainstreaming Integrated Watershed Management in the local government units of Davao Oriental. The ENR Office will serve as the secretariat.	2013	Point person appointed by ENRO and PPDO	10,000
2. Establishing the legal basis for constituting a Strengthened Watershed Management, its purpose, its rationale, its mechanics, through an ordinance.			
2.1 Drafting an ordinance considering the guidance of the new generation of watershed management (from ridge-to-reef concept).	2013	TWG	10,000
2.2 Levelling off and harmonizing with the Provincial Environment Code.	2014 Q1	TWG	10,000
2.3 Identifying possible watershed organizations (micro, small, medium, large) within the province.	2013 Q4	TWG	10,000
2.4 Stakeholder mapping and analysis for the demo watershed (Mainit-Santa Filomena-Abijod Micro Watersheds Cluster).	2013 Q4	ENRO	20,000
2.5 Defining authority and responsibility of the local body for watershed management (clarify what was embodied in the draft ordinance). Options: a multi-sector group comprising a local body for watershed management (new) or modify authority of an existing local body to undertake watershed management responsibility.	2014 Q2	TWG	1,000

Activity	Schedule	Office Responsible	Resources Required (Php)
2.6 Clarify relationship between the Watershed Management Local Body and the existing Provincial Environment and Natural Resources Council	2014 Q2	TWG	3,000
2.7 Decide on the final version of the ordinance	2014 Q3	TWG	3,000
3.0 Building alliances of LGUs in the same watershed organization			
3.1 Creation of Task Force on MASA (Mainit-Abejod-StaFilomena Micro Watershed Management Alliance. Members are all agencies and CSOs.	2013	MLGOO / TWG	
3.2 Conduct dialogue on Stakeholders government and NGOs Barangay officials	2013	MLGOO/ TWG	10,000
3.3 Conduct of barangay assembly on the 3 covered barangays of MASA	2013	MLGOO MASA-MW	30,000
3.4 Joint session (consideration and approval): Barangay Resolution / MOA; LGU Council Resolution	2014	MASA-MW MLGOO	10,000
3.5 MOA signing by stakeholders	2014	MASA-MW MLGOO	10,000
3.5 Implementation of the provisions stated in the MOA. MASA Watershed Plan: <ul style="list-style-type: none"> • Planning • Budgeting • Formulation of ordinances / rules / policies • Adoption of the Watershed Plan 	2015	MASA-MW	10,000
3.7 Implementation of the MASA Micro Watershed Plan and IEC	2015	MASA-MW	
3.8 Monitoring and Evaluation; Quarterly meetings; site inspections; reports/ feedback.	2016	MASA-MW / TWG	50,000
4.0 Embed watershed management planning process in the local government planning system.			
4.1 Conduct planning sessions with concerned LGUs on watershed management for 2014 annual investment plan (AIP) / Budget call (Maybe done for the demo watershed, MASA Micro Watershed Cluster only)	2014	TWG / PPDO	10,000
4.2 Prepare watershed management and development plan of the MASA Micro Watershed for inclusion in the AIP and DRRM plan	2014	ENRO / MENRO / MLGOO / MASA	20,000

Activity	Schedule	Office Responsible	Resources Required (Php)
4.3 Cull out from the MASA Micro Watershed Management Plan, activities for the Barangay Development Plan of the 3 barangays respectively.	2014	MENRO / MLGOO / MASA	
4.4 Include the respective activities from the MASA Watershed Management Plan to the respective Barangay Development Plan and the AIP.	2014	MLGOO / BDC	
4.5 Submit the Barangay Development Plan to the concerned Municipality	2015	BDC	
4.6 Adopt watershed management and development as a regular program and AIP and DRRM / CCA Plans by all LGUs (Barangay, Municipal, Provinces)	2016	LGU all levels	
4.7 Regular operation and implementation of watershed and development program by all LGUs thru their respective watershed management and development committees	2016	LGU all levels	
5.0 Developing the IRR of the Ordinance on Strengthened Watershed Management			
5.1 Provision on resource mobilization	2014	TWG	4,000
5.2 Provision for conflict management	2014	TWG	4,000
5.3 Provision for resource management	2014	TWG	4,000
5.4 Provision for coordination of delivery of service	2014	TWG	4,000
5.5 Provision for collaboration with horizontal linkages with partners and vertical linkages with national government agencies	2014	TWG	4,000
6.0 Public Education			
Information dissemination <ul style="list-style-type: none"> • Through radio and TV • Through tabloids / newspapers • Posters / leaflets or flyers • Pulong-pulong / dialogue • Inter personal approach 	2014	PIO	190,000
For resolutions: Communication support <ul style="list-style-type: none"> • Identify possible problems and issues • Inform the community on the importance of watershed management • Conduct trainings/ seminars for stakeholders • Application/ implementation of the watershed management activities Monitoring and evaluation of activities	2014 - 2016	PIO with TWG	50,000
Total			Php 477,000

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