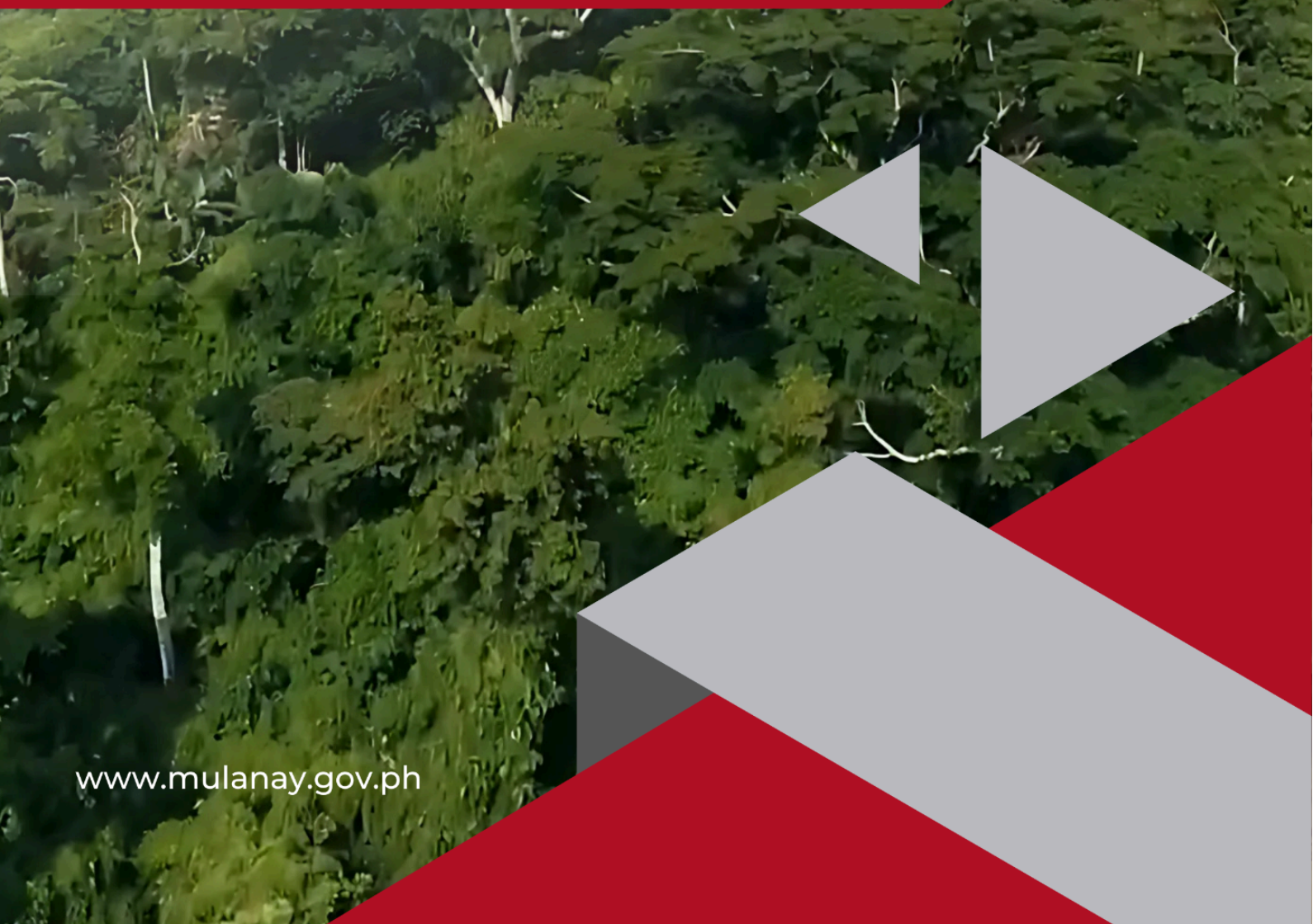
Republic of the Philippines
Province of Quezon
MUNICIPALITY OF MULANAY

Aangat Aasenso

MT. KAMHANTIK ARCHAEO-ECOLOGICAL TOURISM SITE

CONVERGENCE AREA DEVELOPMENT PLAN (CADP)

■ 2026 - 2030



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ACRONYMS

ABD Agrobiodiversity

AFF Agriculture, Forestry and Fisheries

AFFECBD Agriculture, Forestry and Fisheries-Enterprise Cluster and Business Development

AMAD Agribusiness and Marketing Assistance Division

AMAS Agribusiness Marketing and Assistance Service

AMIA Adaptation and Mitigation Initiative in Agriculture

APCO Agricultural Program Coordinating Officer

ARBDSP Agrarian Reform Beneficiaries Development and Sustainability Program

ARD Assistant Regional Director

CA Convergence Area

CADP Convergence Area Development Plan

CAO City Agriculture Officer

CAP Convergence Area Profile

CCI TWG City Convergence Initiative Technical Working Group

CD Capacity Development

CDP Comprehensive Development Plan

CENRO City Environment and Natural Resources Officer

CLGOO City Local Government Operations Officer

CLUP Comprehensive Land Use Plan

CPDC City Planning and Development Coordinator

CRAO Climate Resilient Agriculture Office

CRVA Climate Risk Vulnerability Assessment

CWG Component Working Group

DA Department of Agriculture

DAR Department of Agrarian Reform

DENR Department of Environment and Natural Resources

DILG Department of the Interior and Local Government

DNFP Deputy National Focal Person

DRRMO Disaster Risk Reduction and Management Office

FLUP Forest Land Use Plan

ICRM Integrated Coastal Resource Management

ICT Information and Communications Technology

ICTS Information and Communications Technology Service

IKSTP Indigenous Knowledge Systems and Traditional Practices

IP Indigenous People

IWMP Integrated Watershed Management Plan

JAO Joint Administrative Order

JMO Joint Memorandum Order

KM Knowledge Management

L&D Learning and Development

LCCAP Local Climate Change Action Plan

LCDD Local Capacity Development Division

LGMED Local Government Monitoring and Evaluation Division

LGU Local Government Unit

M&E Monitoring and Evaluation

MCI TWG Municipal Convergence Initiative Technical Working Group

MENRO Municipal Environment and Natural Resources Officer

MLGOO Municipal Local Government Operations Officer

MPDC Municipal Planning and Development Coordinator

MA Municipal Agriculturist

MAO Municipal Agriculture Officer

MEAT Marine Protected Area Effectiveness Assessment Tool

MIS Management Information System

MISS Management Information Systems Service

MOA Memorandum of Agreement

MPDC Municipal Planning and Development Coordinator

MPM-RD Master in Public Management major in Rural Development

NCI-SRD National Convergence Initiative for Sustainable Rural Development

NFP National Focal Person

NIPAS National Integrated Protected Areas System

NSC National Steering Committee

NTWG National Technical Working Group

PA Provincial Agriculturist

PA Policy and Advocacy

P/A/Ps Programs, Activities, and Projects

PARPO Provincial Agrarian Reform Program Officer

PCAF Philippine Council for Agriculture and Fishery

PCI TWG Provincial Convergence Initiative Technical Working Group

PDP Philippine Development Plan

PEMO Provincial Environment Management Officer

PENRO Provincial Environment and Natural Resources Officer

PLLO Presidential Legislative Liaison Office

PMD Planning and Management Division

PMED Planning, Monitoring and Evaluation Division

PMS Planning and Monitoring Service

PPDC Provincial Planning and Development Coordinator

RAFIS Regional Agriculture and Fisheries Information Section

RBME Results-Based Monitoring and Evaluation

RCI TWG Regional Convergence Initiative Technical Working Group

RD Regional Director

RED Regional Executive Director

RFO Regional Field Office

RPBDD Regional Program Beneficiaries Development Division

SEAT Socio-economic Assessment Tool

SWOT Strengths, Weaknesses, Opportunities, Threats

TWG Technical Working Group

ToC Theory of Change

VCA Value Chain Analysis

WFP Work and Financial Plan

Republic of the Philippines
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OFFICE OF THE MUNICIPAL MAYOR

MESSAGE

Greetings to all Mulanayins and esteemed partners in sustainable development!

It is with great pride and optimism that I present the Mt. Kamhantik Archaeo-Ecological Tourism Site Convergence Area Development Plan (CADP)—a landmark initiative that embodies our shared commitment to heritage conservation, environmental sustainability, and inclusive economic growth. This plan reflects the Aangat Aasenso advocacy of our administration, ensuring that no one is left behind in our pursuit of progress.

The Municipality of Mulanay is blessed with rich biodiversity, fertile lands, and a deep historical legacy. Our beloved Mt. Kamhantik, nestled within the Buenavista Protected Landscape, is not only an ecological treasure but also an invaluable cultural heritage site. Through this Convergence Area Development Plan, we envision Mulanay as a premier ecotourism destination, balancing conservation with community-driven development.

Our Aangat Aasenso advocacy focuses on uplifting the lives of our people by promoting sustainable livelihoods, strong governance, and environmental stewardship. With this CADP, we aim to:

- Protect and restore our forests and watersheds for future generations.
- Promote community-based ecotourism, empowering local entrepreneurs and cooperatives.
- Strengthen cultural heritage conservation, ensuring that the legacy of Mt. Kamhantik remains alive. Advocate for solid waste management and climate resilience, securing a cleaner and safer environment for all.
- Encourage academic and scientific research, enhancing our strategies for conservation and development.

This ambitious plan is not the work of one individual or institution—it is the result of collaboration among various stakeholders, including our local government, national agencies, academic institutions, private sector partners, and most importantly, the people of Mulanay. The realization of this vision depends on our collective action, responsibility, and unwavering dedication.

As we move forward, I invite all Mulanaynins to take part in this transformative journey. Let us work together to build a thriving, resilient, and progressive Mulanay—one that honors its past while embracing a sustainable future.

Mabuhay ang Mulanay! Aangat, Aasenso!

HON. ARISTOTLE L. AGUIRRE
Municipal Mayor

Chapter 1. Executive Summary

The Mt. Kamhantik Archaeo-Ecological Tourism Site Convergence Area Development Plan (CADP) 2026–2030 presents a strategic and integrative roadmap for transforming Mt. Kamhantik into a model of sustainable ecotourism, cultural preservation, and inclusive rural development. Located at Mount Kamhantik, Barangay Buenavista within the Municipality of Mulanay, Quezon Province, Mt. Kamhantik spans approximately 284.27 hectares as part of the Buenavista Protected Landscape (BPL)—a declared protected area under NIPAS and recognized for its archaeological and ecological importance.

Plan Objectives

The core objective of the Mt. Kamhantik CADP is to promote sustainable ecotourism by conserving and preserving the area's rich biodiversity and significant archaeological heritage. This goal is grounded in a collaborative approach that emphasizes active community participation and strong institutional support. It reflects the unified direction of the plan's three strategic pillars: protecting and managing forests and biodiversity, conserving and promoting archaeological sites, and strengthening local institutions to ensure inclusive and sustainable development.

To achieve the overall goal of promoting sustainable ecotourism in Mt. Kamhantik through biodiversity conservation and heritage preservation, the plan is guided by five key sub-objectives:

1. **Biodiversity Conservation** – Through regular ecological monitoring and rehabilitation of forests, watersheds, and coastal areas, especially mangroves.
2. **Cultural Heritage Preservation** – Protecting and promoting Mt. Kamhantik's unique ancient limestone burial tombs, declared a Local Cultural Treasure and under consideration as a National Cultural Treasure.
3. **Community-Based Ecotourism Development** – Promoting sustainable tourism ventures that generate local employment and entrepreneurship.
4. **Environmental Management** – Implementing RA 9003 through waste management facilities and IEC campaigns.
5. **Scientific Research and Knowledge Sharing** – Strengthening partnerships with academic institutions for continuous research on biodiversity, archaeology, and sustainable practices

Methodology

The plan is rooted in the National Convergence Initiative for Sustainable Rural Development (NCI-SRD) framework, employing a ridge-to-reef approach and participatory planning with stakeholders including DENR, DA, DAR, DOT, LGUs, and local communities. GIS tools, watershed vulnerability assessments, biodiversity inventories, and socio-economic surveys were utilized to inform strategy formulation.

Area Situation

Mt. Kamhantik is situated in Sitio Maglayao, Barangay Buenavista, within the Buenavista Protected Landscape (Parcel 2) in Mulanay, Quezon Province. Covering 284.27 hectares, it forms part of the 6,901-hectare Mulanay River Watershed and is protected under the NIPAS Act. The area is notable for its rare prehistoric limestone burial tombs and rich biodiversity, making it a nationally significant archaeological and ecological site.

Mulanay, located in the Bondoc Peninsula, is endowed with diverse ecosystems, fertile agricultural land, and coastal resources. Despite its natural wealth, the area faces challenges such as deforestation, declining land productivity, and inadequate infrastructure, which hinder sustainable development and environmental conservation efforts.

Key findings include:

- Presence of endemic flora and fauna, migratory birds, and threatened ecosystems.
- Significant archaeological artifacts supporting heritage conservation.

- Socio-economic challenges such as low farmer income, poor market access, and limited financial capital.
- Opportunities for forest and coastal rehabilitation, ecotourism, organic agriculture, and scientific exploration

Key Programs and Recommendations

- Establishment of eco-trails, view decks, resting areas, and museums to support tourism.
- Construction of Materials Recovery Facilities (MRFs) and sanitary landfills for waste management.
- Capacity-building for local tour guides and enterprise development.
- Conduct of archaeological research every two years and biodiversity assessments biennially.
- Creation of a local CADP Coordinating Office and Watershed Management Council.
- Mobilization of funds from LGU budgets, private sector, and international grants (e.g., GEF, UNDP).

Sustainability Strategy

The CADP outlines long-term resilience through institutional strengthening, economic diversification, ecological restoration, and inclusive governance. A Results-Based Monitoring and Evaluation (RBME) system and annual CADP Summits will ensure adaptive implementation and community feedback integration.

Chapter 2. Introduction/Background/Rationale

The National Convergence Initiative for Sustainable Rural Development (NCI-SRD) was established as a government strategy to harmonize and integrate the programs, projects, and resources of key rural development agencies in the Philippines. The initiative seeks to promote holistic and sustainable development in rural areas by ensuring better coordination and synergy among government efforts in agriculture, agrarian reform, environment, and natural resource management.

Recognizing the need to address fragmented rural development interventions, the Philippine government institutionalized the NCI-SRD to strengthen inter-agency collaboration and maximize the impact of rural development programs. It primarily focuses on uplifting the socio-economic conditions of rural communities through resource conservation, sustainable agriculture, and equitable land distribution.

Legal References and Policy Framework

The implementation of the NCI-SRD is guided by various legal mandates, policies, and agency issuances that provide the foundation for its institutionalization and operationalization.

1. **Executive Order No. 318, s. 2004** (Promoting Sustainable Forest Management in the Philippines)
   Encourages inter-agency collaboration in sustainable forest management, which aligns with the NCI-SRD's goals of integrating environment and agriculture in rural development.

2. **Executive Order No. 366, s. 2004** (Directing a Strategic Review of the Operations and Organizations of the Executive Branch and Providing Options and Incentives for Government Employees Affected by the Rationalization of the Functions and Agencies of the Executive Branch)
   Provides the structural foundation for government agencies to streamline their functions, including inter-agency coordination efforts under the NCI-SRD.

3. **Executive Order No. 385, s. 2004** (Adopting the National Convergence Initiative as the Government Strategy for Sustainable Rural Development and for Other Purposes)
   Officially designates the NCI as the primary convergence framework for sustainable rural development, ensuring the integration of efforts among the Department of Agriculture (DA), Department of Agrarian Reform (DAR), and Department of Environment and Natural Resources (DENR).

4. **Memorandum of Understanding (MOU) on NCI-SRD (2009, updated 2015)**
   Strengthens the institutional collaboration among DA, DAR, and DENR, later expanded to include the Department of the Interior and Local Government (DILG) to enhance local governance involvement in sustainable rural development.

5. **Executive Order No. 366, s. 2010**
   Further institutionalizes NCI-SRD as a mechanism for coordinating and integrating rural development policies and programs among agencies.

6. **DA-DAR-DENR-DILG Joint Administrative Order (JAO) No. 01, s. 2010** (Guidelines for the Implementation of the National Convergence Initiative for Sustainable Rural Development)
   Defines the operational framework, key principles, and implementation mechanisms for NCI-SRD.

7. **Republic Act No. 8435** (Agriculture and Fisheries Modernization Act of 1997)
   Supports the convergence framework by emphasizing rural infrastructure development, market linkages, and sustainable agricultural practices.

Overview of NCI-SRD Implementation

The NCI-SRD operates under an inter-agency collaboration framework that aligns the planning, implementation, and monitoring of rural development programs. The key implementing agencies include:

- Department of Agriculture (DA): Leads agricultural productivity enhancement and market-driven interventions.
- Department of Agrarian Reform (DAR): Ensures land tenure security and access to rural development support services.
- Department of Environment and Natural Resources (DENR): Oversees environmental sustainability and natural resource management.
- Department of the Interior and Local Government (DILG): Facilitates governance support and capacity-building for local government units (LGUs) in rural development planning.

Core Strategies and Priority Areas

The NCI-SRD follows a ridge-to-reef approach, which ensures the sustainable use of upland and lowland resources while minimizing environmental degradation. Key strategies include:

1. Watershed-based Resource Planning and Management - Integrates land use, water resources, and agricultural activities in a sustainable framework.
2. Agro-Enterprise Development and Market Linkages - Promotes value-adding activities and strengthens farmers' and fisherfolk's access to markets.
3. Climate-Resilient Agriculture and Rural Infrastructure - Focuses on infrastructure development, irrigation, and climate-smart agricultural technologies.
4. Community-Based Natural Resource Management - Enhances the capacity of local communities to sustainably manage forests, watersheds, and coastal resources.
5. Policy Harmonization and Institutional Development - Aligns national and local policies to support sustainable rural development.

Mulanay is a coastal municipality located on the Bondoc Peninsula in the province of Quezon, Philippines. It is situated at the geographical coordinates of 13° 31' 5" North latitude and 122° 24' 5" East longitude. The town faces Tayabas Bay, suggesting that Mulanay was once submerged under the sea millions of years ago, as evidenced by the limestone deposits found in the area. When the sea receded and exposed dry land, flora and fauna began to appear, eventually leading to human habitation.

Rationale for Selection as a Convergence Area

Mt. Kamhantik was selected as a priority Convergence Area Development Plan (CADP) site under the National Convergence Initiative for Sustainable Rural Development (NCI-SRD) due to its unique position at the intersection of environmental conservation, cultural heritage, and rural enterprise potential.

Key reasons for its selection include:

- Ecological importance: As part of a critical watershed and biodiversity hotspot, the area supports climate resilience, food systems, and water regulation.
- Cultural significance: The archaeological value of Mt. Kamhantik positions it as a national cultural heritage site with high educational and tourism potential.
- Community potential: The presence of organized communities, local tourism initiatives, and LGU support provide a strong foundation for inclusive, community-led development.
- Alignment with the Ridge-to-Reef Approach: The area includes upland forests, midland agricultural zones, and coastal resources—making it ideal for integrated planning and multi-sector collaboration.

Its designation as a CADP site aims to harmonize conservation efforts with sustainable development goals, foster institutional collaboration, and serve as a replicable model for eco-cultural tourism, resource management, and community empowerment in rural landscapes.

The Buenavista Protected Landscape (BPL), located within the Mulanay River Watershed, is a vital ecological and cultural area in Mulanay, Quezon. As part of the karst landscapes of the Bondoc Peninsula, it features numerous caves within and around its boundaries. The porous limestone formations of this karst region act as a natural aquifer, supplying clean groundwater to local communities. However, the ongoing decline in forest cover has led to a significant reduction in groundwater reserves, posing a threat to this essential water source.

BPL serves as a habitat for diverse flora and fauna, including several threatened and endemic species. Among the vulnerable faunal species that rely on its secondary forests are the Luzon Hornbill, Luzon Bleeding Heart, White-browed Shama, Southern Luzon Giant Cloud Rat, Philippine Pit Viper, and Northern Philippine Temple Pit Viper. These species are highly sensitive to human-induced disturbances, emphasizing the need for continued conservation efforts. The area is also home to rare and endangered plant species, such as Hoya, Jade Vine, Begonia, and native tree species like Gisok-gisok, Malak-malak, Kalingag, and Dalindingan.

The Mt. Kamhantik Archaeo-Ecological Tourism Site Convergence Area has been proposed based on its diverse ecosystem types, including forest, agroforestry, and grassland ecosystems. The Municipality of Mulanay, particularly 10 barangays—Buenavista, Cambuga, Santa Rosa, Bagupaye, Latangan, and the four Poblacion barangays—plays a crucial role in implementing NCI-SRD (National Convergence Initiative for Sustainable Rural Development) programs, projects, and activities (PPAs), meeting financial governance standards as a recipient of the Good Financial Housekeeping certification.

This convergence area holds great potential as a key production hub to enhance livelihood opportunities and increase household incomes in the communities. Many residents of these barangays live below the poverty threshold, making sustainable development and tourism crucial for economic upliftment. Strong institutional support and collaboration exist among LGU Mulanay, the Department of Environment and Natural Resources (DENR) through the Protected Area Management Board (PAMB), the National Museum, and other stakeholders to develop and protect this site.

The Municipality of Mulanay has allocated funds in its Annual Investment Plan (AIP) for the continued protection of BPL, which includes regular forest guard deployment, ongoing archaeological research, biodiversity assessments, reforestation activities, and cave explorations. These initiatives reinforce the site's importance in both conservation and sustainable development.

A key archaeological discovery within the Buenavista Protected Landscape is the unearthing of ancient sarcophagi at Mt. Kamhantik, providing historical and cultural significance to the region. This finding strengthens the site's heritage value and supports ongoing research to uncover more about the early inhabitants of the area.

In recognition of its cultural significance, Mt. Kamhantik was declared a Local Cultural Treasure through Sangguniang Bayan Resolution No. 125, Series of 2016. Furthermore, a request has been submitted to the National Museum for its designation as a National Cultural Treasure through Sangguniang Bayan Resolution No. 114, Series of 2016.

The Buenavista Protected Landscape has also been integrated into the Comprehensive Land and Water-Use Plan (CLWUP) of Mulanay for 2025-2035, ensuring its sustainable management. Additionally, the Municipal Tourism Development Plan identifies BPL as a priority area for sustainable heritage eco-tourism, aligning conservation efforts with responsible tourism.

Applying a ridge-to-reef approach, the 10 barangays play distinct roles in the environmental sustainability of the Mulanay River Watershed:

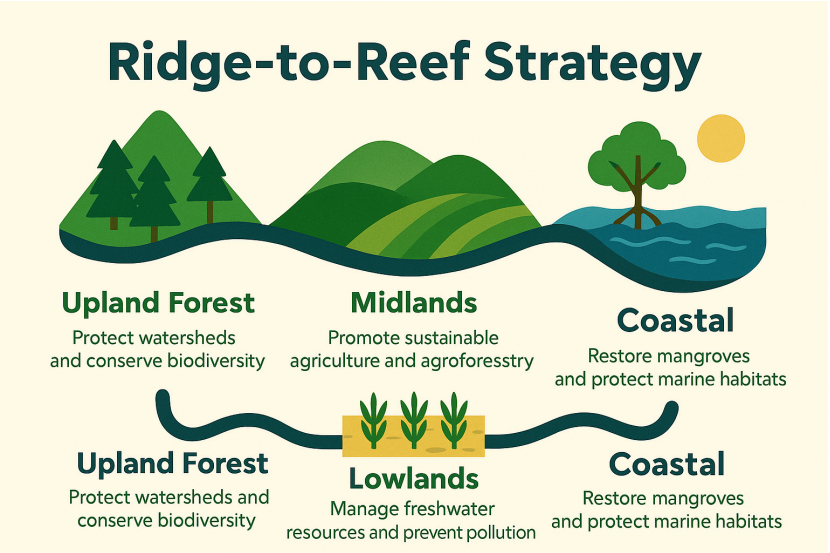
- Barangay Buenavista consists of forestry and agroforestry ecosystems, essential for biodiversity conservation.
- Barangay Cambuga serves as a production area, supporting local agriculture.
- Barangay Santa Rosa, Bagupaye, and the four Poblacion barangays are key settlements, where urban and economic development can be aligned with environmental sustainability.
- Barangay Latangan, where the Mulanay River flows, is designated for mangrove reforestation, contributing to coastal protection and habitat restoration.

This holistic ecological management strategy integrates upland forests, agricultural zones, urban settlements, and coastal ecosystems, ensuring the long-term environmental and economic resilience of the Mulanay River Watershed.

Existing Challenges

Mt. Kamhantik faces several pressing challenges that underscore the need for a comprehensive and integrated development approach under the Convergence Area Development Plan (CADP). Environmental degradation, including deforestation and weakened watershed protection, continues to threaten the area's rich biodiversity and natural resources. The site's high ecotourism potential remains largely untapped due to inadequate infrastructure, such as poor access roads and lack of visitor facilities. Its cultural treasures—particularly the ancient limestone burial tombs—are vulnerable to deterioration and damage from unregulated access and limited protection. Additionally, the local agricultural sector suffers from low productivity due to insufficient access to technology, markets, and financial support. Compounding these issues is the poor implementation of solid waste management systems, which contributes to environmental pollution in both upland and coastal areas. Finally, there is a need to strengthen local institutions and build community capacity to effectively participate in sustainable development initiatives. These interlinked challenges highlight the urgency and relevance of the CADP in guiding coordinated, multisectoral interventions in Mt. Kamhantik.

Ridge-to-Reef Strategy for Mt. Kamhantik CADP



The ridge-to-reef strategy is a core principle of the Mt. Kamhantik Convergence Area Development Plan (CADP), integrating interventions across upland, midland, lowland, and coastal ecosystems. This approach recognizes the interconnectedness of land, water, and human activity from the highest ridges of Mt. Kamhantik down to the coastal habitats of Mulanay, ensuring that conservation and development efforts are holistic, sustainable, and climate-resilient.

- Upland Forests (Ridge): This zone includes Mt. Kamhantik's forested areas serve as vital biodiversity habitats and the main recharge zones for the Mulanay River Watershed. The CADP emphasizes forest protection, reforestation, biodiversity monitoring, and the control of upland erosion and runoff that affect downstream ecosystems.
- Midlands: Agricultural zones in the mid-elevation areas are targeted for sustainable farming practices, including agroforestry, contour farming, and organic agriculture. These reduce sedimentation and pollution flowing to the rivers and coasts, while also increasing local food security and livelihood.
- Lowlands: Riverbanks and freshwater systems are managed to prevent siltation and pollution. The CADP includes construction of small water impoundments, enforcement of buffer zones, and IEC campaigns to protect water quality and maintain the watershed's ecological functions.
- Coastal Areas (Reef): The strategy culminates in the coastal ecosystems of Mulanay, where mangrove rehabilitation, marine sanctuary establishment, and sustainable fishing practices are prioritized. These measures protect marine biodiversity, prevent coastal erosion, and support the livelihoods of fisherfolk.

Through this ridge-to-reef framework, the CADP ensures that each ecological zone is addressed with context-appropriate interventions, while maintaining the integrity of the entire landscape. This integrated planning enables Mt. Kamhantik to function not only as an ecotourism site but as a living system of environmental, cultural, and socio-economic resilience.

Chapter 3. Area Situation

Regional Context

Mulanay is part of the CALABARZON Region (Region IV-A), which is strategically situated in the central section of Luzon, Philippines. This region comprises five provinces—Batangas, Cavite, Laguna, Quezon, and Rizal—and is known for its economic significance and rapid urbanization. The regional center is Calamba City, Laguna, serving as the administrative and economic hub of CALABARZON. As one of the provinces in this region, Quezon plays a crucial role in the region's agricultural and coastal economy, with Mulanay contributing to these sectors through its rich natural resources, agricultural lands, and coastal fishing grounds.

Provincial Context

Mulanay is situated within Quezon Province, a first-class province that occupies the largest land area in CALABARZON, covering 870,660 hectares (8,706.60 sq. km.) or 53.21% of the region's total land area. The province is bordered by Aurora Province to the north, Laguna and Rizal to the west, Batangas to the southwest, and Camarines Norte and Camarines Sur to the southeast. The provincial capital, Lucena City, is approximately 137 kilometers southeast of Metro Manila, while the first municipality along the Maharlika Highway, Tiaong, is about 89 kilometers from the metropolis. The province consists of 39 municipalities, one component city (Tayabas), and one highly urbanized city (Lucena), further divided into 1,242 barangays across four congressional districts.

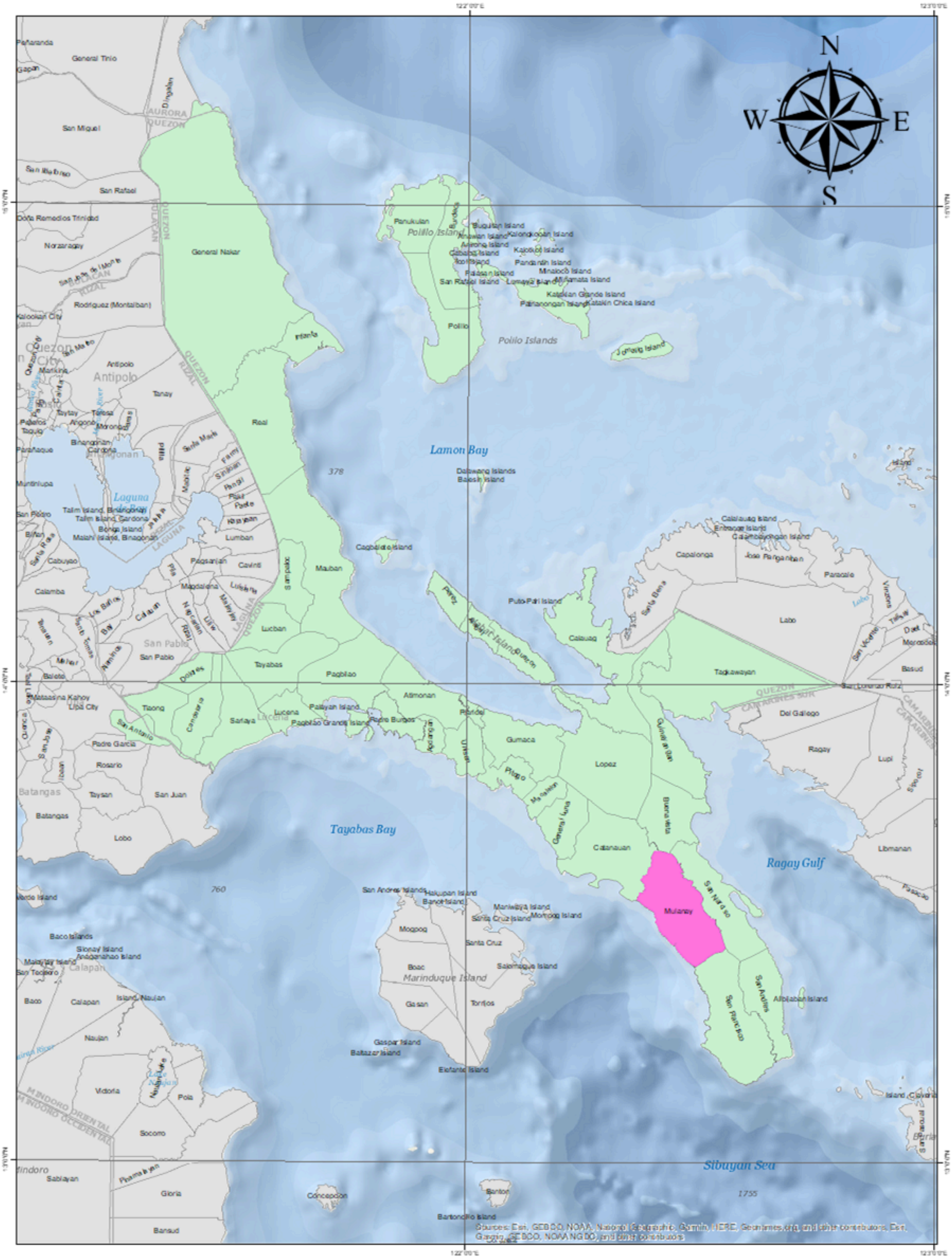
Municipal Context

Mulanay is located within the Bondoc Peninsula, a distinct subregion of Quezon Province. It is bordered by Catanauan to the north, San Narciso to the east, San Francisco to the south, and Tayabas Bay to the west. The municipality is positioned at 13° 31' 5" North latitude and 122° 24' 5" East longitude, approximately 279 kilometers southeast of Metro Manila and 142 kilometers from Lucena City. Mulanay consists of 28 barangays, of which four are classified as urban—collectively known as Poblacion 1, 2, 3, and 4, where the municipal hall and key government institutions are located. The remaining 24 barangays are classified as rural, each further divided into sitios and puroks. Mulanay's geographical location, diverse landscape, and access to Tayabas Bay make it an essential part of Quezon's economic, agricultural, and coastal development.

Location of the Convergence Area

The Mt. Kamhantik Convergence Area Development Plan (CADP) is geographically located in Sitio Maglayao, Barangay Buenavista, within the jurisdiction of the Municipality of Mulanay, Province of Quezon, Region IV-A (CALABARZON). The site lies within Parcel 2 of the Buenavista Protected Landscape (BPL) and covers an estimated 284.27 hectares of forested terrain and archaeological features. This area is officially designated as a protected area under the National Integrated Protected Areas System (NIPAS) Act, which legally ensures its environmental and cultural preservation.

The CADP area is situated within the 6,901-hectare Mulanay River Watershed, one of the critical watersheds in the Bondoc Peninsula. The watershed plays a key role in supporting the municipality's irrigation systems, aquaculture productivity, freshwater supply, and coastal resource sustainability. Mt. Kamhantik, being part of this watershed system, contributes to both the ecological function and historical identity of the landscape.



Map 1 Mulanay Location Map

3.1. Geo-Morphological Features

The Mulanay River Watershed is one of the most significant natural assets of the municipality, spanning 6,901 hectares and acting as a crucial lifeline for both the environment and the communities that rely on it. As a key tributary of the Mulanay River Basin, this watershed nourishes thirteen (13) barangays, including Bagupaye, Bolo, Buenavista, Butanyog, Ibabang Cambuga, Ilayang Cambuga (Mabini), Latangan, San Pedro, and four (4) Poblacion barangays. Beyond being a source of water, the watershed sustains agriculture, supports biodiversity, and enhances the quality of life for residents.

At the heart of this watershed lies the Buenavista Protected Landscape (BPL), formerly known as the Buenavista Watershed Forest Reserve. Recognized for its ecological importance, this area was declared a protected landscape under the National Integrated Protected Areas System (NIPAS) through Presidential Proclamation No. 294. Spanning 284.27 hectares in Sitio Kamhantik, Barangay Buenavista, this landscape showcases a mix of grasslands, secondary-growth forests, and coconut plantations.

The terrain of the watershed is diverse, with grasslands dominated by Cogon (*Imperata cylindrica*) and Talahib (*Saccharum spontaneum*), while hilly areas are home to native trees such as Kakawate, Ipil-ipil, and Hauili. These plants not only help stabilize the soil but also contribute to watershed protection and erosion control.

The Mulanay River Watershed is more than just a body of water; it is an interconnected system of vital ecosystems, including:

- Forests that provide shelter for diverse plant and animal species.
- Key biodiversity areas that help maintain the region's ecological balance.
- Secondary-growth forests that absorb carbon and help regulate the climate.
- Agricultural lands that support farmers through irrigation and soil enrichment.
- Urban and rural settlements that depend on the watershed for drinking water, sanitation, and flood control.

This watershed plays a key role in agriculture, ecotourism, and climate resilience. Its streams and tributaries recharge groundwater supplies, ensuring a steady water flow even during dry seasons. It also serves as a buffer against extreme weather events, reducing the risk of flooding and droughts.

To manage and protect this valuable resource, the Buenavista Protected Landscape (BPL) has been divided into two zones covering a total of 287.24 hectares:

1. Strict Protection Zone (SPZ) – 64.92 hectares (22.6%), a designated conservation area where biodiversity and natural habitats are strictly safeguarded.
2. Multiple Use Zone (MUZ) – 222.32 hectares (77.4%), an area where sustainable activities such as agroforestry, ecotourism, and community-based livelihoods are allowed.

The zoning was determined through a comprehensive Geographic Information System (GIS) analysis, integrating thematic maps and ecological data to ensure the sustainable management of the watershed's resources. Given the watershed's environmental and socio-economic importance, there is a continuous need for sustainable land-use planning, forest rehabilitation programs, and watershed management strategies to maintain its ecological integrity and support the livelihood of communities dependent on it.

3.1.1 Geology

The rock formations in Mulanay date back to the Cenozoic Era (Age of Mammals), approximately 66 million years ago. The most recent formations belong to the Quaternary Alluvium, composed of unconsolidated river and beach deposits, including clay, silt, sand, and gravel from the Holocene period (around 11,700 years ago). These deposits are commonly found in river basins across Barangays Poblacion Proper, Patabog, Canuyep, and Ilayang Yuni. Another key formation is the Malumbang Formation, a fossiliferous limestone with interbedded

siltstone and coarse-grained stone from the Pleistocene Period (2.58 million to 11,700 years ago), predominantly found in coastal barangays and within the Buenavista Protected Landscape. The Canguinsa Formation, dating back to the Pliocene period (5.33 to 2.58 million years ago), consists mainly of sandstone with calcareous shale conglomerate and is widespread in the southeastern part of Mulanay. The oldest formation, the Vigo Formation, formed during the Miocene period (23.03 to 5.33 million years ago), is composed primarily of shale with interbedded sandstone and limestone and dominates the northern region of the municipality.

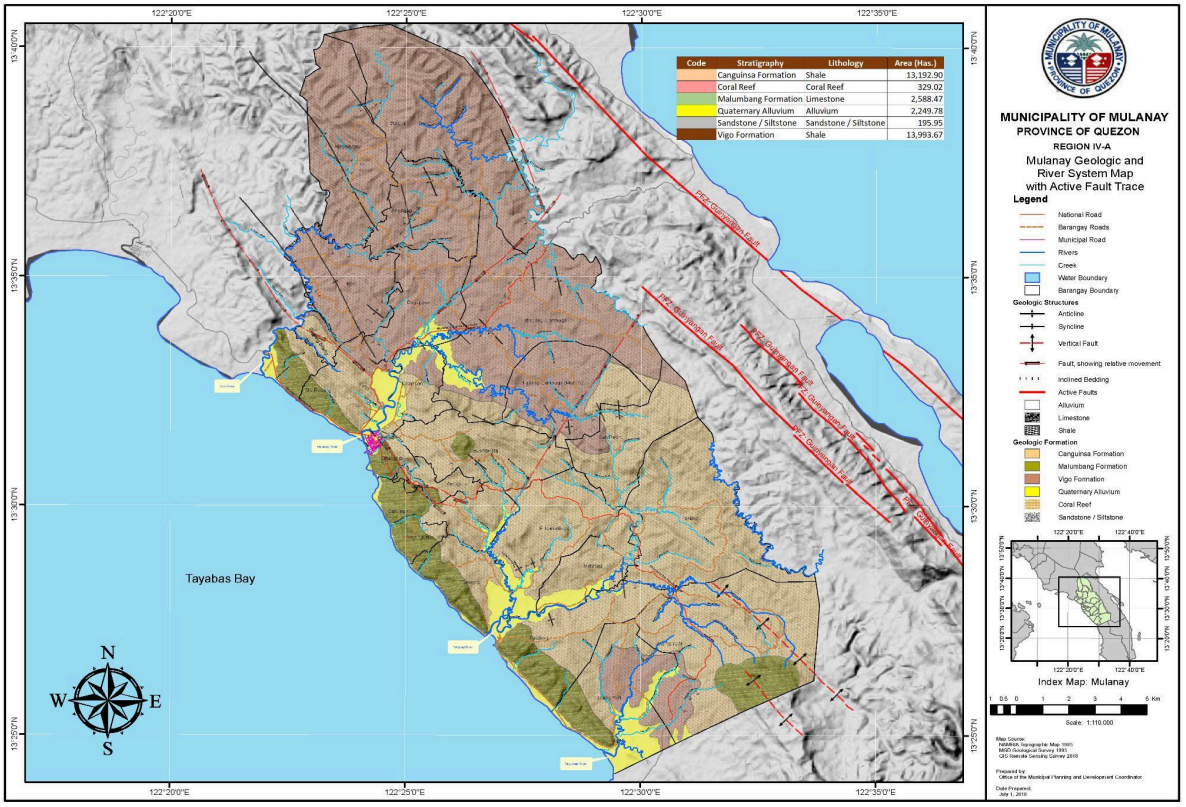
In terms of structural geology, synclines and anticlines—which refer to folded rock formations with younger and older layers, respectively—are predominantly found within the Vigo Formation, particularly in the northern hilly areas of Barangays Bolo, Magsaysay, Anonang, Burgos, Ibabang Cambuga, Ilayang Cambuga, and Buenavista. These formations contribute to the steep slopes of the area, with inclinations ranging from 17 to 79 degrees. Faults, which indicate significant rock displacement due to earth movement, are also notable within Mulanay's geological structure. The Vigo Formation in Barangay Bolo transitions into the Canguinsa Formation in Barangays Bagong Silang, Sta. Rosa, Latangan, and Buenavista, where fault activity is evident. Similarly, the Malumbang Formation meets the Canguinsa Formation near Barangays Poblacion Proper, Butanyog, San Isidro, Sagongon, and Canuyep, further indicating fault presence. Many of these fault movements align with the Guinayangan Fault System, which extends into neighboring San Narciso, affecting the region's geological stability and landscape development.

Table 1 Rock Formation

Stratigraphy	Lithology	Area (in Hectares)	% Total Area	Era	Formation Period (Series/Epoch)		Estimated Age	Location Description
Sandstone / Siltstone	Sandstone / Siltstone	195.95	0.68%	CENOZOIC ERA - Age of Mammals	Quaternary	Holocene period	11,700 years BP (Before Present)	mostly found on river basin, coastal areas
Coral Reef	Coral Reef	329.02	1.15%					The coral area of Mulanay is one of the richest marine areas in Quezon. The particular site near Barangay Ibabang Yuni is one of the best-preserved areas.
Quaternary Alluvium	Alluvium	2,062.04	7.19%					consist of unconsolidated river and beach deposits; mostly clay, silt, sand and gravel
Malumbang Formation	Limestone	2,256.35	7.87%			Pleistocene period	2,588,000 to 11,700 years ago	essentially cream buff or dirty white sandy and fossiliferous limestone with local interbeds of fossiliferous siltstone and medium to coarse grained stone
Canguinsa Formation	Shale	11,992.40	41.81%		Tertiary (Neogene)	Pliocene period	5.333 million to 2.58 Ma (million years ago)	predominantly sandstone with interbeds of calcareous shale conglomerate and sandstone
Vigo Formation	Shale	11,846.84	41.30%			Miocene period	23.03 to 5.332 Ma (million years ago)	comprise predominantly by shale with interbeds

Stratigraphy	Lithology	Area (in Hectares)	% Total Area	Era	Formation Period (Series/Epoch)		Estimated Age	Location Description
								of sandstone and limestone. Locally carbonaceous
TOTAL		28,682.60	100.00%					

Source: MGB Geological Survey 1993



Map 2 Geologic Map

3.1.2 Topography and Slope

The municipality is characterized by rugged terrain with few plains, valleys, and swamps. Narrow strips of land along the coast and river valleys are available for growing crops. The undulating lowlands along the coast are well drained.

The slope ranges from 0–8%, 8-18% and above. The highest slope is at Barangay Burgos which has a slope of 30% and above. The elevated portion is at 384 meters above sea level at Mount Maglayao (Mt. Kamhantik), Barangay Buenavista. Its susceptibility to erosion is directly proportional to the slope percentage and to the degree of susceptibility.

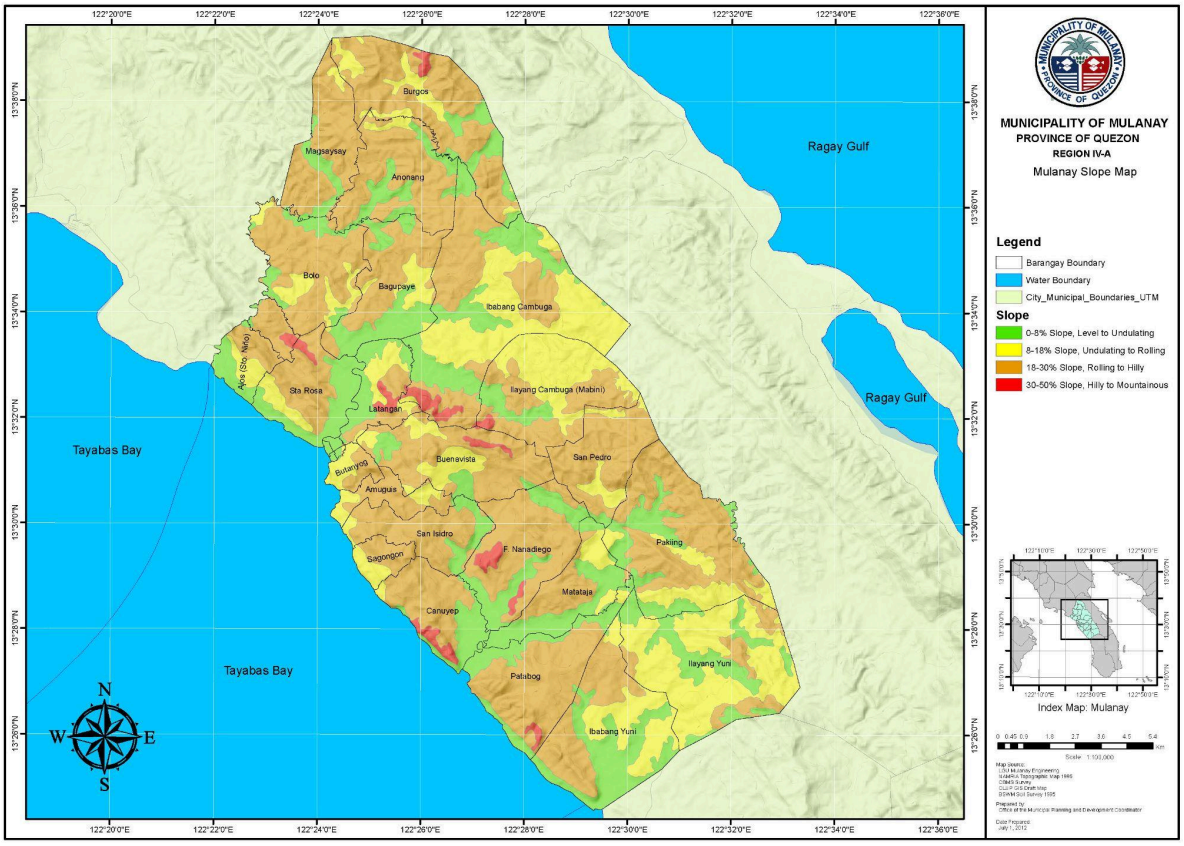
Table 2 Land Area of the Municipality by Slope and Potentiality to Erosion

Slope	Level	Erosion Potential	Suitability	Area (in Hectares)
0-8%	Level to Undulating	No apparent erosion	Urban Use	6,986
8-18%	Undulating to Rolling	Less susceptible to erosion	Urban Use	7,394

18-30%	Rolling to Hilly	Moderately susceptible to erosion	Forest Use	16,604
30-50% and above	Hilly to Mountainous	Highly Susceptible to erosion	Forest Use	1,017
TOTAL				**32,000**

Source: DENR

The slope ranges from 0–8%, 8-18% and above. The highest slope is at Barangay Burgos which has a slope of 30% and above. The elevated portion is at 384 meters above sea level at Mount Maglayao (Mt. Kamhantik), Barangay Buenavista. Its susceptibility to erosion is directly proportional to the slope percentage and to the degree of susceptibility.



Map 3 Slope Map

3.2 Climatic Condition

3.2.1 Climatic Type

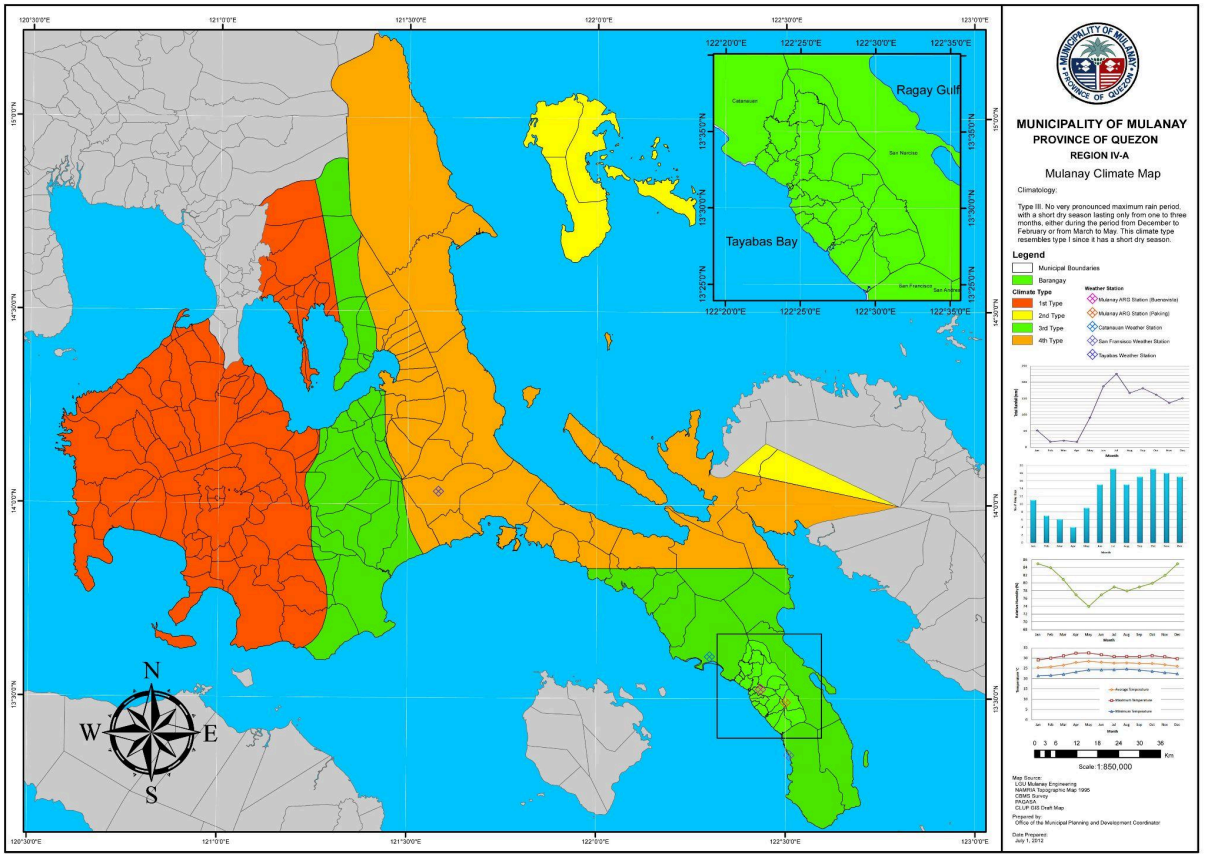
Mulanay has a Type III climate based on the Modified Coronas Classification of Climate which is characterized by a no very pronounced maximum rain period, with a short dry season lasting only from one (1) to three (3) months, either during the period from December to February or from March to May. The data on climate attributes – temperature, rainfall, relative humidity, climatological normal, and climatological extremes – of Mulanay are patterned after the data of the PAGASA Climatology and Agrometeorology Division stationed in Alabat, Quezon.

3.2.2 Temperature

Shown in the table below is the trend of temperature changes from 2010 to 2019 which are recorded and measured in terms of mean temperature, mean maximum temperature, and mean minimum temperature annually. There are gaps in the 2011 data which is why it is not included in the analysis. Since 2010, the mean temperature of the municipality ranges from 27.1 to 27.7 °C without any drastic increase or decrease. Mean Temperature is the average of the maximum and minimum temperature in °C recorded for the day.

3.2.3 Rainfall

Rainfall is the "amount of precipitation (commonly rain or hail) expressed in millimeters depth of the layer of the water which has fallen" (PAGASA, 2019). Presented in the figure below is the monthly data within the years 2012 to 2019 that were summed up per year to produce the annual total rainfall data, excluding years 2011 and 2017 since these years have data gaps. The highest amount of rainfall was recorded in 2016 at 3,490.7 mm of precipitation, while the least amount was in 2019 at 1,845.4 mm. In 2013, the annual total rainfall increased by 50 mm and by 227.2 mm in 2014. The years where the annual amount of precipitation decreased were 2015, 2018, and 2019, with the last one having the greatest decrease by 33.40 percent.



Map 4 Climatological Map

3.3 Soil Characteristic

As per a report of the Bureau of Soils in Quezon Province, Mulanay has two soil types: the Faraon Clay Loam and the Catanauan Clay Loam. Around 27,863 hectares (87.07%) of the soil that cover Mulanay is Faraon Clay Loam. This soil type is the most extensive upland soil of the Province, mostly found in the Bondoc Peninsula Area.

The greater portion of this type is found along low-lying hills that are planted with coconut and seasonal crops like rice, corn, and root crops. Fruit trees like avocado, santol, guava, star apple, and jackfruit are also grown in this type of soil. The yield of the crops grown in this soil type is moderately higher than those in Bolinao soils. Upland rice yields roughly range from 15 to 40 cavans per hectare, whereas coconut yields range from 1,500 to 3,000 nuts per hectare per year.

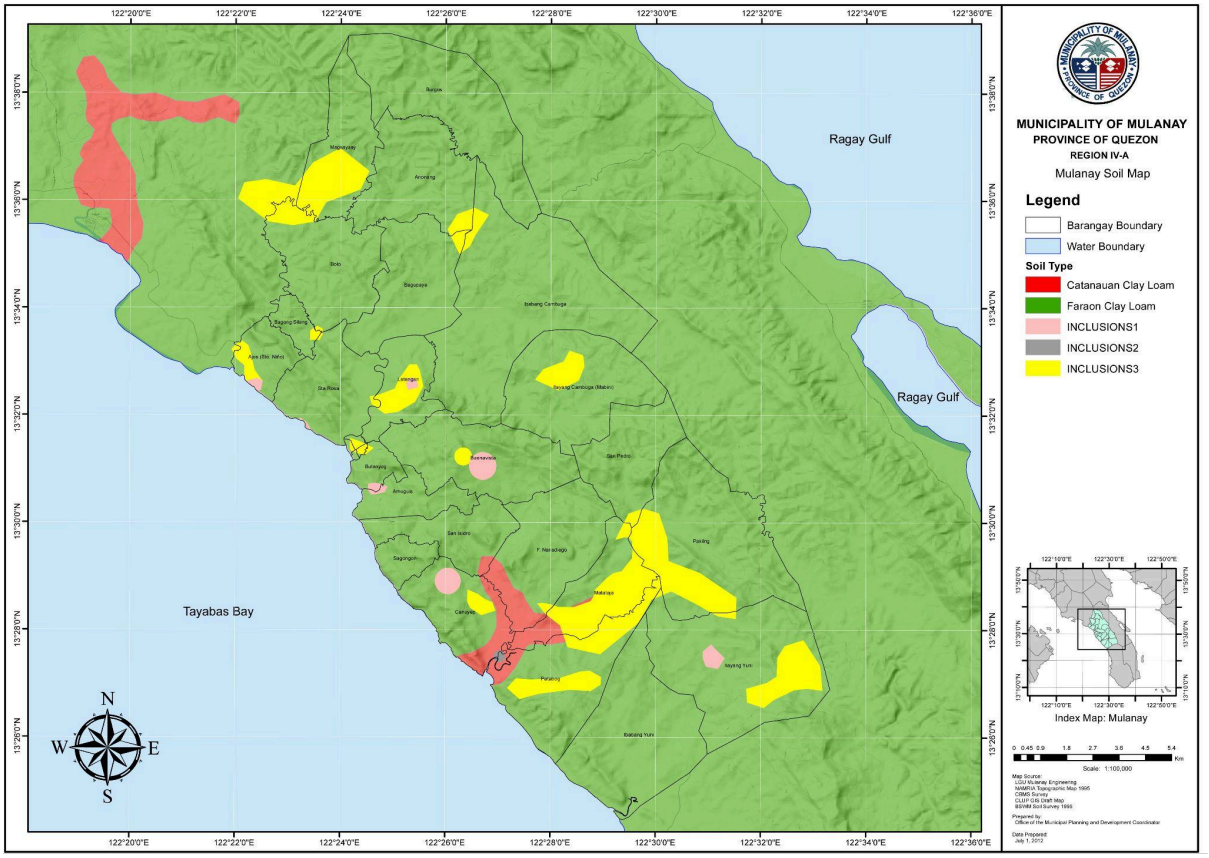
Catanauan Clay Loam covers about 1,054 hectares which is 3.29% of the total land area of the municipality. This soil type is found in the valleys of the locality and is used mostly for paddy rice. Farmers used to plant local varieties like “Binuhangin” during Palagad season and “Inapostol and Senador” in the regular planting season. The yield of the rice ranges from 40-50 cavans per hectare. Other varieties are similar to the local varieties mentioned earlier. Rice fields with this type of soil are mostly rain fed so that after harvest, they are either tilled or planted with other crops like corn and root crops in small scale.

Another report conducted by the UPLB Soil Science Division says that there are some soil inclusions observed in the municipality. Inclusions are from Catanauan clay loam mixed with Faraon clay loam and vice versa. Upland soils are with medium fragments of limestone, medium granular structure, friable and soft when moist, brown (clay) to yellowish brown.

Table 3 Soil Types

Soil Types	Area (in Hectares)	% Total Area	Crop Suitability	Location Description
Faraon Clay Loam	27,863	87.07%	coconut, rice, corn, root crops, fruit trees, and grasses	strongly rolling, hilly, and mountainous lands
Catanauan Clay Loam	1,054	3.29%	rice, corn, and root crops	nearly level to slightly undulating
Soil Inclusions				
INCLUSION 1 Contains soils with observed limestones and hard soils	237.92	0.74%	Agroforestry / forestry	strongly rolling, hilly, and mountainous lands
INCLUSION 2 Are found in CATANAUAN CLAY LOAM boundary; but does not fit the soil series; it fits the morphological description of FARAON CLAY LOAM more	12.322	0.03%	coconut, rice, corn, root crops, fruit trees, and grasses	strongly rolling, hilly, and mountainous lands
INCLUSION 3 Are found in FARAON CLAY LOAM boundary, but does not fit the soil series; it fits the morphological description of CATANAUAN CLAY LOAM more	2833.142	6.75%	rice, corn, and root crops	nearly level to slightly undulating
TOTAL	**32,000**	**100.00%**		

Source: SEP CY 1990, Mulanay, Quezon; Soil Map, Bureau of Soils, CLUP CY 2002 - 2012, p. 25 and UPLB Soil Science Division



Map 5 Soil Map

3.4 Water Resources

Most of the rivers are used for fishing and irrigation. Only two rivers, the Burgos River and the Sibuyan River, are used for drinking water. The rivers were classified into class which is Class C rivers are not suitable for drinking water but are suitable for irrigation and fishing and Class B rivers are suitable for drinking water, irrigation, and fishing. The longest river is the Guinhalinan River, which is 21.6 kilometers long. The shortest river is the Ajos River, which is 6 kilometers long.

Table 4 Major Rivers

Name	Barangays traversed	Approximate Length (km)	Major uses	Classification
Ajos River	Bagong Silang, Ajos	6.0	Fishing, Irrigation	Class C
Tagbacan River	Magsaysay, Bolo, Bagong Silang	11.8	Fishing, Irrigation	Class C
Magsaysay River	Magsaysay	7.44	Drinking, Irrigation	Class C
Burgos River	Burgos	8.24	Drinking, Irrigation	Class B
Guinhalinan River	Burgos, Cambuga	21.6	Drinking, Irrigation	Class C
Mulanay River	Cambuga, Bagupaye, Latangan, Santa Rosa, Poblacion	8.33	Fishing, Irrigation	Class C
Cambuga River	Cambuga	7.98	Irrigation	Class C
Mabini River	Mabini, Cambuga	14.0	Irrigation	Class C
Matataja River	F. Nañadiego, Canuyep, Patabog	7.86	Fishing, Irrigation	Class C
Old Patabog River	Matataja, Patabog	8.78	Fishing, Irrigation	Class C
Tayuman River	Ibabang Yuni	10.5	Fishing, Irrigation	Class C

Sibuyan River	Ilayang Yuni, Pakiing	7.6	Drinking, Irrigation	Class B

The main source of potable water in Mulanay comes from springs located in Barangay Buenavista. Other water sources/springs are located in other rural barangays, namely: Bagong Silang, Bagupaye, Cambuga, F. Nañadiego, Latangan, Matataja, Pakiing, Patabog, Sagongon, San Isidro, San Pedro, Sta. Rosa, and Ajos (Sto. Niño). Some barangays, on the other hand, depend on open dug wells, shallow wells, and deep wells for water.

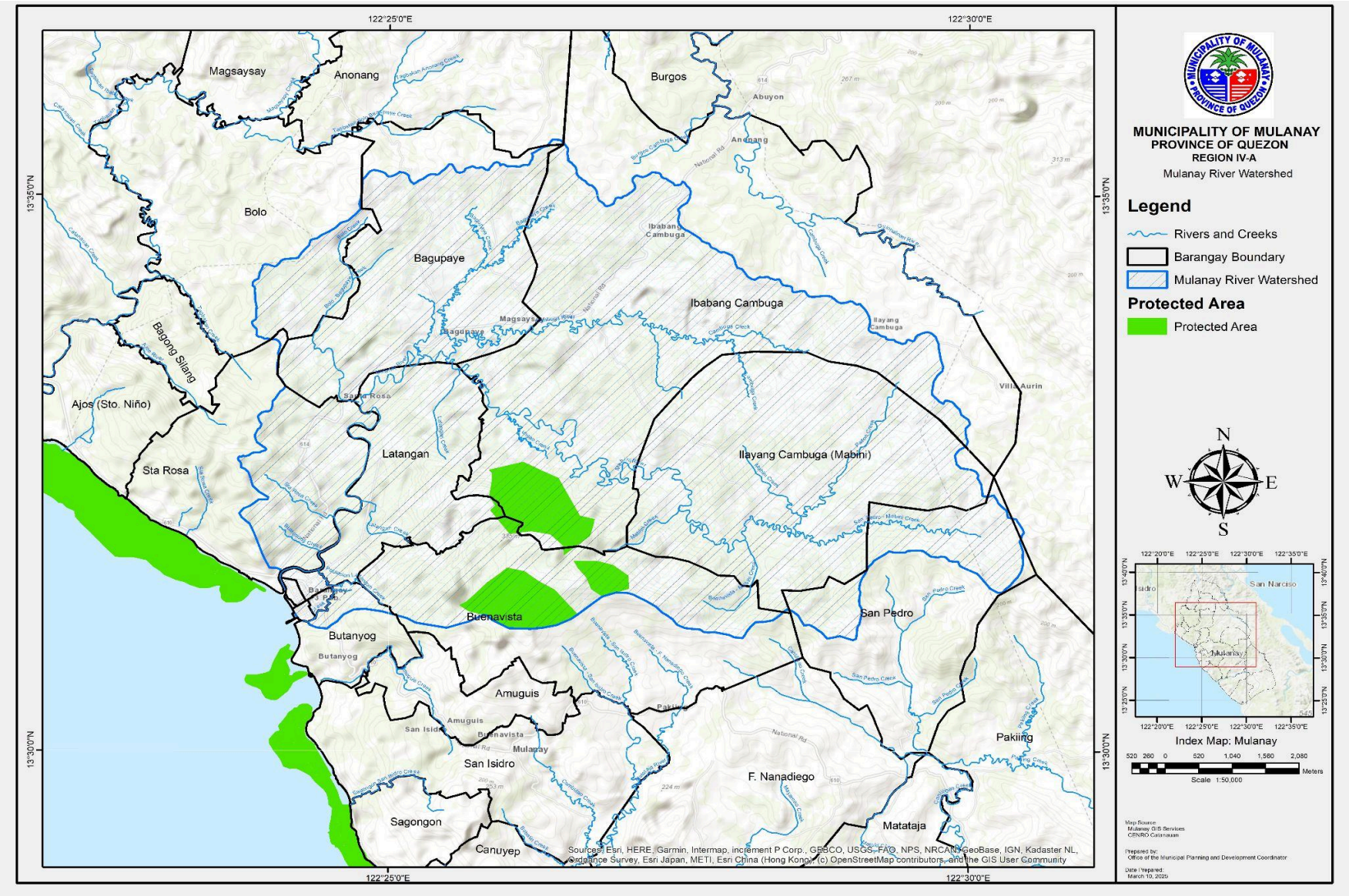
Table 5 Location of Springs

Barangay	Spring Name	Developed	Classification
Ajos (Sto. Niño)	Tinaan, Mabilog, Centro, Bahay Buaya	Yes	Class B
Bagong Silang	Bahay Buaya Ibaba	Yes	Class B
Bagupaye	Kangisingon, Centro	Yes	Class B
Bolo	Centro	Yes	Class B
Buenavista	Kamhatik, Subo, Tangke	Yes	Class B
Burgos	Silangan Inawitan	Yes	Class B
Butanyog	Macadogcadog	Yes	Class B
Canuyep	Bas-an	Yes	Class B
F. Nañadiego	Cancalao, Kangmangatang, Mayao-mao	Yes	Class B
Ibabang Cambuga	Barracks	Yes	Class B
Ibabang Yuni	Philseed	Yes	Class B
Ilayang Yuni	Tayuman	Yes	Class B
Latangan	Cacawan, Agsayan, Busay	Yes	Class B
Magsaysay	Mabawa, Kampong Palayan	Yes	Class B
Matataja	Himbabalod, Kinyaman, Ilayang Kansati	Yes	Class B
Pakiing	Sumagonsong, Bulaksina	Yes	Class B
Patabog	Cambanggali, Manggahan, Old Patabog	Yes	Class B
Sagongon	Mapalang	Yes	Class B
San Isidro	Pansoy, Alulod, Bayeye	Yes	Class B
San Pedro	Mahayahay, Tinoklisan, Balogo	Yes	Class B
Sta. Rosa	Maligaya, Cantumbao, Bulagsong	Yes	Class B

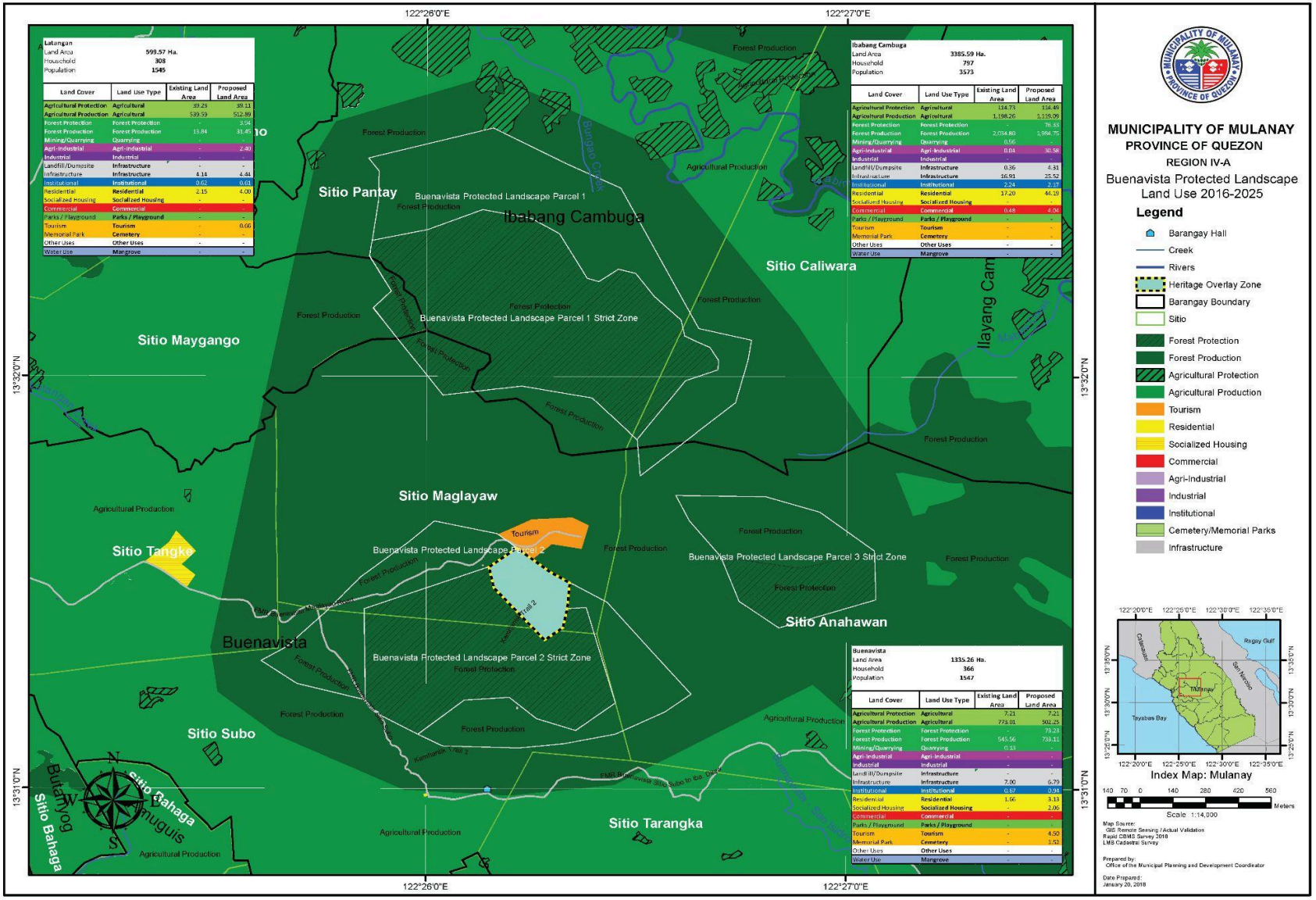
3.5 Watersheds

The Mulanay River Watershed serves as a crucial drainage system for water resources across ten barangays in the municipality. Covering a total area of 6,901 hectares, it is the largest among the two sub-watersheds in Mulanay. The watershed plays an essential role in providing water for agricultural and domestic use, supporting local livelihoods and sustaining biodiversity within the region. The Mulanay River, which traverses through Barangays Buenavista, Cambuga, Santa Rosa, Bagupaye, Latangan, and the four Poblacion barangays, acts as the primary waterway that connects different communities and facilitates irrigation.

A significant portion of the watershed falls within the Buenavista Protected Landscape (BPL), a designated conservation area that safeguards critical water resources and ecological systems. Due to its porous karst landscape, BPL functions as an aquifer, supplying clean water to nearby communities. However, deforestation and land degradation have led to a decline in groundwater reserves, making watershed conservation efforts increasingly vital. Sustainable land management practices, such as reforestation, soil conservation, and agroforestry, are necessary to maintain the watershed's ecological balance. Additionally, climate change adaptation strategies and local governance initiatives play a key role in preserving the hydrological and ecological integrity of the Mulanay River Watershed for future generations.



Map 6 Mulanay River Watershed and Buenavista Protected Landscape



Map 7 Map of Mt. Kamhantik Archaeo-Ecological Tourism Site within the Buenavista Protected Landscape

3.4 Land Cover and Land Use

3.4.1 Land Uses

The Mulanay River Watershed plays a crucial role in the socio-economic and environmental sustainability of the municipality. The watershed area is characterized by a mix of land uses, including agricultural, forest, residential, commercial, and institutional zones, reflecting the diverse needs of the local communities.

Agriculture remains the dominant land use within the watershed, with 4,016.72 hectares allocated for agricultural production, alongside 347.83 hectares designated for agricultural protection. Significant areas are also dedicated to forest land protection (284.26 hectares) and forest land production (2,733.77 hectares), reinforcing the watershed's role in ecological preservation. Barangays such as Ibabang Cambuga, Ilayang Cambuga (Mabini), Buenavista, and Santa Rosa exhibit a combination of agricultural and forest land uses, supporting both food production and environmental conservation.

Table 6 Existing General Land Use in the Watershed Areas

Barangay	Land Area	Total Area within the Watershed	Urban Use Areas	Water Use	Forest Land Protection	Forest Land Production	Agricultural Production
Bagupaye	1,197.10	1010.48	29.68			206.27	774.53
Barangay 1 (Pob.)	9.36	9.36	8.07	1.29			
Barangay 2 (Pob.)	20.77	20.76	20.23	0.53			0.00
Barangay 3 (Pob.)	9.74	9.74	9.28				0.08
Barangay 4 (Pob.)	8.06	7.46	7.46				0.00
Bolo	1,234.61	214.57	0.46				214.11
Buenavista	1,335.26	699.33	3.45	0.24	139.91	276.81	418.70
Butanyog	201.7	43.40	2.11	0.58			38.23
Ibabang Cambuga	3,385.59	2031.25	23.66		144.35	1,323.72	683.26
Ilayang Cambuga (Mabini)	1,533.66	1514.76	8.52			723.49	782.75
Latangan	599.59	599.52	8.24	0.51		13.84	575.01
San Pedro	921.33	314.94	0.14			189.65	125.16
Sta. Rosa	923.04	425.15	15.41	3.95			404.89
Total	**9,022.17**	**6900.71**	**136.69**	**7.10**	**284.26**	**2,733.77**	**4,016.72**

A substantial portion of the watershed is classified as agricultural land, which constitutes over 25% of the total land area of Mulanay. These lands are primarily used for coconut farming, rice cultivation, and mixed cropping systems, providing livelihood opportunities for local communities. The agricultural protection zones, classified under the Strategic Agriculture and Fisheries Development Zones (SAFDZ), ensure that high-quality farmlands remain safeguarded against conversion.

Forested areas within the watershed account for a significant portion of land cover, with both production and protection forests. The Buenavista Protected Landscape spans 284.26 hectares, preserving secondary-growth forests and vital habitats for endemic flora and fauna. Additionally, patches of timberland areas are found in Buenavista, Cambuga, Patabog, Ilayang Yuni, Ibabang Yuni, Butanyog, and Latangan, contributing to the region's ecological stability.

Urban development within the watershed primarily consists of residential (65.37 hectares), commercial (4.97 hectares), institutional (15.40 hectares), and infrastructure (49.58 hectares) zones. Most urban expansion is concentrated in Poblacion barangays and Bagupaye, where residential areas are growing alongside infrastructure developments. However, limited land is allocated for parks and playgrounds (1.38 hectares), highlighting the need for more green spaces in urban areas.

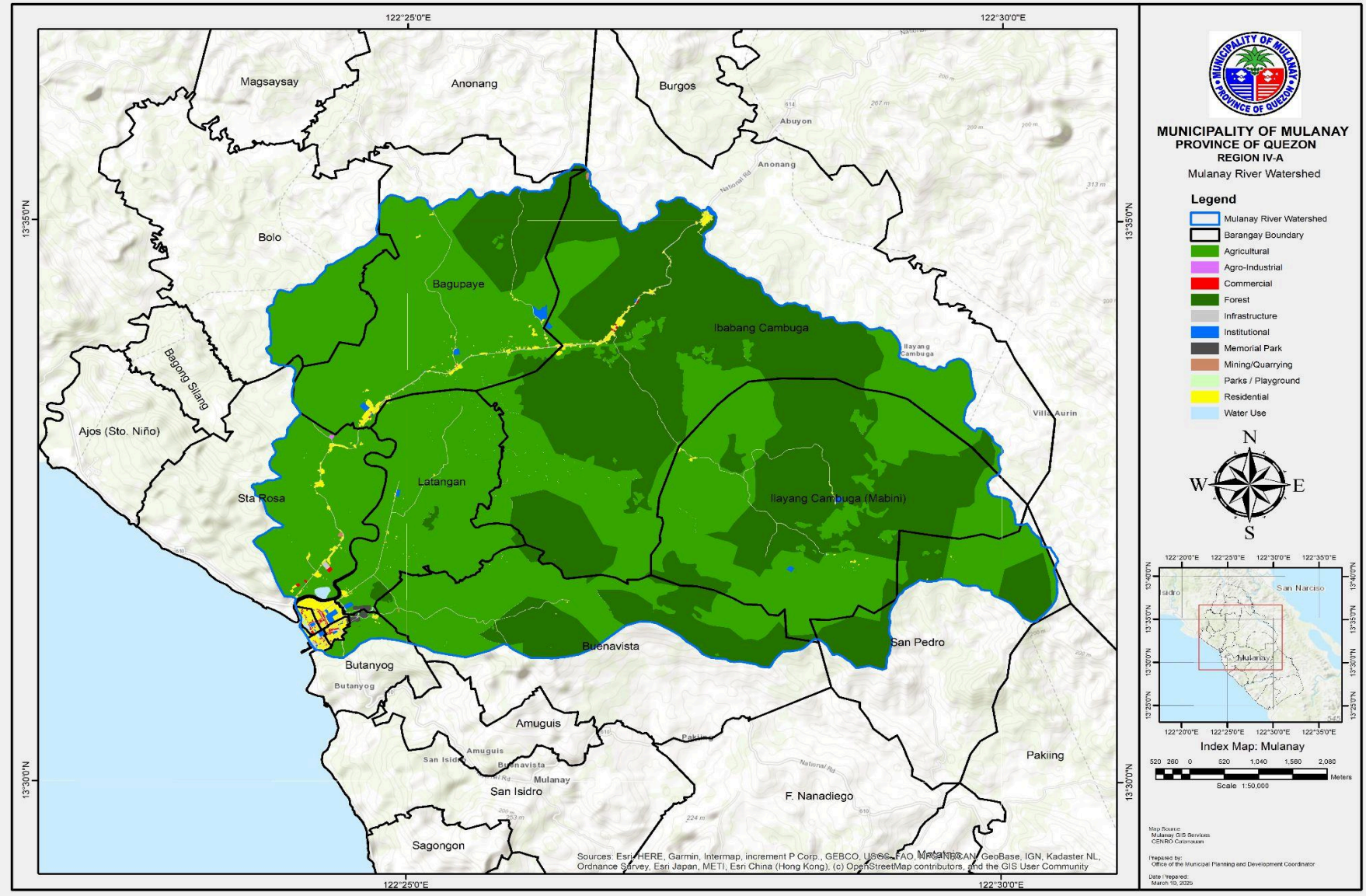
Table 7 Existing Urban Land Use in the Watershed Areas

Barangay	Urban Use Areas	Residential	Commercial	Institutional	Infrastructure	Parks / Playground
Bagupaye	29.68	12.55	0.19	5.76	11.18	
Barangay 1 (Pob.)	8.07	5.17	0.94	0.50	1.29	0.18
Barangay 2 (Pob.)	20.23	14.07	1.21	2.53	2.42	
Barangay 3 (Pob.)	9.28	5.67	0.84	0.44	2.34	
Barangay 4 (Pob.)	7.46	3.55	0.42	0.97	1.97	0.54
Bolo	0.46				0.46	
Buenavista	3.45	0.09		0.01	3.35	
Butanyog	2.11	1.13			0.98	
Ibabang Cambuga	23.66	10.79	0.48	1.93	10.47	
Ilayang Cambuga (Mabini)	8.52	1.53		1.71	5.28	
Latangan	8.24	2.14		1.53	4.56	
San Pedro	0.14	0.14				
Sta. Rosa	15.41	8.56	0.88	0.03	5.27	0.67
Total	**136.69**	**65.37**	**4.97**	**15.40**	**49.58**	**1.38**

Additional land uses include landfill/dumpsite areas (0.36 hectares), tourism (2.59 hectares), memorial parks (2.30 hectares), agro-industrial (0.45 hectares), and mining/quarrying (1.18 hectares). While tourism is slowly developing in certain barangays like Sta. Rosa, there is a need to balance economic activities with environmental sustainability, especially in areas prone to resource extraction activities such as quarrying.

Table 8 Existing Other Land Use in the Watershed Areas

Barangay	Other Land Uses	Landfill / Dumpsite	Tourism	Memorial park	Agro-Industrial	Mining/Quarrying
Bagupaye	0.00	-				
Barangay 1 (Pob.)	0.00	-				
Barangay 2 (Pob.)	0.00	-				
Barangay 3 (Pob.)	0.38	-		0.38		
Barangay 4 (Pob.)	0.00	-				
Bolo	0.00	-				
Buenavista	0.49	0.36				0.13
Butanyog	2.48	-		2.48		
Ibabang Cambuga	0.61	-			0.04	0.56
Ilayang Cambuga (Mabini)	0.00	-				
Latangan	1.92			1.92		
San Pedro	0.00					
Sta. Rosa	3.49		2.59		0.41	0.49
Total	**9.37**	**0.36**		**4.78**	**0.46**	**1.18**



Map 8 Existing Land Uses within the Mulanay River Watershed

The Mulanay River and its tributaries serve as essential water sources for irrigation, domestic consumption, and local fisheries. Mangrove forests, located along coastal barangays such as Sta. Rosa and Butanyog, provide natural coastal protection and serve as breeding grounds for marine species. The presence of creeks and estuaries further enhances the hydrological network, contributing to the ridge-to-reef ecological balance.

3.4.2 Land Classification and Tenure Systems

The Mulanay River Watershed spans 6,901 hectares and consists of diverse land classifications, which include alienable and disposable lands, forestlands, timberlands, and unclassified lands. Based on data from the Department of Environment and Natural Resources (DENR), the total land area of Mulanay is 32,026 hectares, of which 19,220 hectares (60.01%) are classified as Alienable and Disposable (A&D) Land, 10,703 hectares (33.42%) are designated as Forest Land/Timberland, and 2,103 hectares (6.57%) remain unclassified.

The alienable and disposable lands are primarily used for agriculture, settlements, and infrastructure development, with key agricultural areas falling under Strategic Agriculture and Fisheries Development Zones (SAFDZs). The forestlands include protected landscapes, such as the Buenavista Protected Landscape (BPL), which covers 284.27 hectares, and other timberland areas found in Buenavista, Cambuga, Patabog, Ilayang Yuni, Ibabang Yuni, Butanyog, and Latangan. These areas are crucial for biodiversity conservation, carbon sequestration, and water regulation.

The tenure system in the watershed varies, with a significant portion of the land covered by the Comprehensive Agrarian Reform Program (CARP). The municipality has five Agrarian Reform Communities (ARCs), with 5,261 hectares of land distributed to farmer-beneficiaries. However, there is still a balance of 604 hectares pending distribution, affecting local land ownership security.

Additionally, informal settlements and land tenure challenges persist in some areas, particularly in Barangays Buenavista, Bagupaye, Ilayang Cambuga, Ibabang Cambuga, and Santa Rosa, where land ownership disputes and untitled properties limit formal development initiatives. To address these issues, land titling programs and sustainable land-use planning measures are being implemented to balance economic development with environmental conservation.

The Mulanay River Watershed remains a vital resource for agriculture, forestry, and water supply, making proper land classification, tenure security, and sustainable management essential for long-term ecological and economic stability.

3.5 Flora and Fauna

The Buenavista Protected Landscape, situated in Barangay Buenavista, Mulanay, Quezon, encompasses diverse ecosystems, including secondary-growth forests, grasslands, and coconut lands. This variety supports a rich array of flora and fauna.

Flora:

A notable botanical discovery in the area is *Strongylodon juangonzalezii* or the Jade Vine, a new species identified in 2016. This species is remarkable for its dense inflorescence comprising 27–31 flowers per cluster on a lateral branch. The flowers exhibit a color transition from lilac when young to blue upon maturing. Currently, only two thriving lianas of this species are known within the protected landscape.

Additionally, a floral inventory conducted by the UPLB Museum of Natural History's Botanical and Forestry Herbaria in February 2015 highlighted Mulanay's rich tree biodiversity, earning it the moniker "Museum Municipality of Trees."

Table 9 Plant Species found at Mulanay Buenavista Protected Landscape

Common Name	Scientific Name	Common Name	Scientific Name
Duguan 	*Myristica philippinensis*	Malapapaya 	*Polyscias nodosa*
Bolong-eta 	*Diospyros philosanthera*	Balobo 	*Diplodiscus paniculatus*
Toog 	*Petersianthus quadrialatus*	Malaikmo 	*Aglaia eximia*

Common Name	Scientific Name	Common Name	Scientific Name
Kalumpit 	*Terminalia Microcarpa*	Taluto 	*Pterocymbium tinctorium*
Amugis 	*Koordersiodendron pinnatum*	Jade Vine 	*Strongylodon juangonzalezii*

Fauna:

The protected landscape provides habitat for various wildlife species, including monitor lizards, wild cats, hornbills, owls, wild doves, and bats. The area also serves as a stopover for migratory bird species such as the great egret, little egret, little heron, striated heron, plovers (Charadrius species), whimbrels, common redshanks, common greenshanks, common terns, and whiskered terns.

These findings underscore the ecological significance of the Buenavista Protected Landscape in conserving the Philippines' biodiversity.

Table 10 Animal Species found at Mulanay Buenavista Protected Landscape

Common Name	Scientific Name
Monitor Lizard 	*Varanus Salvator*
Wild Cat 	*Palm Civet*
Tarictic Hornbill 	*Tarictic Hornbill*
Grass Owl 	*Tyto Capensis*

Common Name	Scientific Name
Wild Dove 	*Columbidae*
White Bat 	*Albino Bat*
Great Egret 	*Ardea alba*
Striated Heron 	*Butorides striata*

Common Name	Scientific Name
Plovers 	*Charadrius spp.*
Whimbrel 	*Numenius phaeopus*
Common Tern 	*Sterna hirundo*

3.6 Unique Natural and Cultural Attractions

The Buenavista Protected Landscape in Mulanay, Quezon, is a remarkable area that blends biodiversity, ecological importance, and cultural heritage. This protected site is known for its dense forests, unique flora and fauna, pristine river systems, and historical significance. Among its most outstanding natural features is the recently discovered plant species, *Strongylodon juangonzalezii*, which exhibits stunning lilac-to-blue flowers, adding to the rich botanical diversity of the area. Mulanay is also aiming to become the Bamboo Capital of Quezon Province due to the abundance of native bamboo species and the thriving bamboo-based industries in the municipality.

The Mulanay River plays a crucial role in sustaining local biodiversity and providing essential resources to surrounding communities. Its mangrove forests and coastal ecosystems act as natural barriers against erosion and serve as habitats for diverse marine life. The area also attracts migratory birds like egrets, herons, and plovers, making it a notable site for birdwatching. Distinctive limestone formations and unexplored caves add to its potential for eco-tourism and scientific study. Native species suitable for planting include Bakawan Babae (*Rhizophora mucronata*), Bakawan Lalaki (*Rhizophora apiculata*), Pipisik (*Bruguiera gymnorhiza*), Pagatpat (*Sonneratia alba*), Bakawang Bato (*Xylocarpus granatum*), Saging-saging (*Aegiceras corniculatum*), Aroma (*Acacia farnesiana*), and Nipa or Sasa (*Nypa fruticans*). These species are vital for stabilizing coastlines, enhancing marine biodiversity, and supporting sustainable coastal management through soil retention, carbon sequestration, and local livelihood opportunities.

One of the most significant discoveries in the area is the unearthed sarcophagus, an archaeological find that suggests the presence of an ancient burial practice. This discovery highlights the deep historical roots of the region, possibly linked to early indigenous communities that inhabited the area before Spanish colonization. The sarcophagus, along with other artifacts, serves as crucial evidence of the rich cultural heritage of Mulanay, Quezon.

Culturally, the region has a deep historical significance, with evidence of indigenous Tagalog and Dumagat settlements that predate Spanish colonization. Artifacts and oral traditions suggest that the site was once an important center for trade and daily life among early inhabitants. During the Spanish colonial period, the surrounding areas developed notable churches, ruins, and religious traditions that remain part of local festivals today.

The traditional livelihoods of the communities in and around the landscape include fishing, coconut farming, and bamboo weaving, with handcrafted items such as the "Kolong-Kolong" bamboo crafts reflecting sustainable practices passed down through generations. The Buenavista Protected Landscape holds great potential for eco-tourism, offering guided nature walks, river kayaking, and community-based conservation programs that promote both environmental preservation and local economic growth. This unique convergence of natural beauty and cultural heritage makes the Buenavista Protected Landscape a vital ecological and historical treasure in Mulanay, Quezon.

Table 11 Unique Natural Attractions of Buenavista Protected Landscape

Feature	Description
Unearthed Sarcophagus	Ancient burial site, evidence of early civilization 
Rare Flora	*Strongylodon juangonzalezii*, rare tree species, and diverse vegetation

Feature	Description
	
Wildlife & Birds	Migratory birds like egrets, herons, and plovers 
Mulanay River	Pristine waters supporting biodiversity and local communities
Mangrove Forests	Coastal protection and marine life habitat 
Limestone Formations & Caves	Unexplored caves with eco-tourism potential

Feature	Description
	

Table 12 Cultural and Historical Significance of Buenavista Protected Landscape

Feature	Description
Indigenous Heritage	Early Tagalog and Dumagat settlements
Spanish-Era Influence	Old churches, ruins, and colonial traditions
Traditional Livelihoods	Fishing, coconut farming, and bamboo weaving
Handicrafts	Bamboo crafts and woven products
Festivals & Traditions	Local events celebrating cultural heritage

3.7 Policies, Governance and Institutions

The Mulanay River Watershed is governed by a combination of local, provincial, and national policies aimed at sustainable resource management, environmental conservation, and socio-economic development. The Local Government of Mulanay (LGU Mulanay), in coordination with national government agencies (NGAs) such as the Department of Environment and Natural Resources (DENR) and the Department of Agriculture (DA), plays a crucial role in implementing regulatory measures, conservation programs, and land-use planning strategies.

1. Policy Framework and Governance Structure

The governance of the watershed is aligned with national environmental laws and municipal ordinances, including:

- The Clean Water Act (RA 9275) – Regulates water pollution and ensures the protection of freshwater resources within the watershed.
- The National Integrated Protected Areas System (NIPAS) Act (RA 7586) – Establishes protection guidelines for the Buenavista Protected Landscape (BPL), a key conservation area within the watershed.
- The Climate Change Act (RA 9729) – Mandates climate resilience strategies, particularly in flood-prone and landslide-prone areas.
- The Ecological Solid Waste Management Act (RA 9003) – Guides waste management policies, especially in settlements near the Mulanay River and other tributaries.

The Municipal Environment and Natural Resources Office (MENRO) and the Barangay LGUs are responsible for enforcing these policies, conducting monitoring activities, and promoting community participation in environmental conservation efforts.

2. Institutional Roles and Stakeholder Participation

The watershed is managed through multi-sectoral collaboration involving government institutions, civil society organizations, and local communities. Key institutions include:

- Municipal Government of Mulanay – Leads the implementation of the Comprehensive Land and Water Use Plan (CLWUP) and ensures that local policies align with national development frameworks.
- DENR and the Protected Area Management Board (PAMB) – Oversees the management of forest lands and conservation areas within the watershed, including the Buenavista Protected Landscape.
- Local Disaster Risk Reduction and Management Council (LDRRMC) – Develops risk mitigation measures, especially for climate-induced hazards like flooding and landslides in barangays within the watershed.
- Community-Based Organizations (CBOs) and NGOs – Assist in reforestation projects, agroforestry initiatives, and sustainable farming programs in watershed barangays such as Buenavista, Cambuga, Santa Rosa, Bagupaye, Latangan, and the four Poblacion barangays.

3. Land Use and Environmental Regulations

The Mulanay River Watershed is divided into different land-use classifications, with designated zones for agriculture, forestry, and urban development.

- Forest and Agroforestry Zones – Cover Buenavista Protected Landscape and portions of Latangan, Cambuga, and Santa Rosa, where reforestation and biodiversity conservation programs are enforced.
- Agricultural Production Zones – Located in Bagupaye, Buenavista, and Cambuga, where Strategic Agriculture and Fisheries Development Zones (SAFDZs) promote sustainable farming and soil conservation.
- Urban and Settlement Areas – Concentrated in the four Poblacion barangays, where urban planning policies regulate building permits, waste management, and disaster preparedness initiatives.

4. Challenges and Policy Gaps

Despite governance efforts, the watershed faces several challenges, including:

- Encroachment into protected areas – Informal settlements within the Buenavista Protected Landscape (BPL) threaten biodiversity and water resources.
- Deforestation and land degradation – Agricultural expansion and illegal logging contribute to soil erosion and reduced water retention capacity of the watershed.
- Insufficient funding for conservation programs – Limited financial resources hinder the full implementation of environmental policies and sustainable livelihood projects for communities dependent on the watershed.

To address these gaps, LGU Mulanay, in partnership with DENR and national agencies, is strengthening enforcement mechanisms, promoting eco-tourism initiatives, and enhancing community-based conservation programs to ensure the long-term sustainability of the Mulanay River Watershed.

3.8 Demography

The CBMS 2022 demographic data highlights the population distribution across 13 barangays, totaling 26,303 residents within 6,350 households in the Mt. Kamhantik Archaeo-Ecological Tourism Site Convergence Area. Santa Rosa (3,946) and Cambuga (3,835) remain the most populated barangays, indicating they serve as major residential and economic hubs. Conversely, Barangay 4 (Poblacion) has the lowest population (728), suggesting a smaller or less dense community. The Poblacion barangays collectively account for a significant portion of the population, with Barangay 2 (Poblacion) having the highest at 3,490 residents, likely due to its role as a central area for commerce and governance.

The gender distribution remains balanced, with 13,311 males and 12,992 females, showing a slight male majority in most barangays. Notably, Santa Rosa and Cambuga have nearly equal gender ratios, while Barangay 3 (Poblacion) has a higher female population than males. In terms of households, Santa Rosa

(989) and Cambuga (992) also lead, reinforcing their prominence as densely populated areas. Meanwhile, Barangay 4 (Poblacion) has the lowest number of households (197), supporting its classification as a smaller community.

These population trends have significant implications for resource management, ecotourism development, and infrastructure planning. High-density barangays such as Santa Rosa and Cambuga may require expanded access to water, livelihood support, and transportation improvements. Meanwhile, rural barangays like Latangan and Mabini, with fewer households, may rely more on agriculture, forestry, and natural resource-based economies, necessitating targeted rural development programs.

Given the balanced gender distribution, policies should ensure equal opportunities for employment, education, and social services, particularly in the context of sustainable ecotourism and heritage conservation in Mt. Kamhantik. Overall, strategic planning should focus on balancing population growth, environmental sustainability, and economic opportunities to ensure long-term development in the Mt. Kamhantik Convergence Area.

Barangay	Household	Population	Male	Female
Bagupaye	682	2898	1498	1400
Barangay 1 (Pob.)	336	1514	750	764
Barangay 2 (Pob.)	828	3490	1725	1765
Barangay 3 (Pob.)	295	1280	599	681
Barangay 4 (Pob.)	197	728	333	395
Buenavista	372	1,508	788	720
Butanyog	461	2116	1072	1044
Bolo	227	995	505	490
Cambuga	992	3,835	1,998	1837
Latangan	346	1,530	778	752
Mabini	371	1,559	803	756
San Pedro	254	904	461	443
Santa Rosa	989	3,946	2001	1945
Total	**6,350**	**26,303**	**13,311**	**12,992**

Table 13 Watershed Area Demographic Profile

3.9 Agricultural Economic Sectors

Quezon Province, located in the CALABARZON Region, is a major agricultural hub in the Philippines, covering 870,660 hectares with a diverse topography ranging from coastal areas to upland forests. It is the largest province in CALABARZON and ranks sixth largest in the country. Agriculture remains the backbone of the provincial economy, with key commodities including coconut, banana, cacao, lowland vegetables, livestock, and aquaculture. The province is also a leading producer of coconut-based products such as virgin coconut oil and copra, which are major export earners.

Within Quezon Province, the Municipality of Mulanay stands out as an agriculturally rich and environmentally significant area, particularly due to the Mulanay River Watershed, which spans 6,901 hectares and serves as a primary water source for agricultural and domestic use. The watershed encompasses thirteen (13) barangays, including Bagupaye, Bolo, Buenavista, Butanyog, Ibabang Cambuga, Ilayang Cambuga (Mabini), Latangan, San Pedro, and four (4) Poblacion barangays making it a key resource for sustainable farming and livelihood development.

Given Mulanay's abundant natural resources and agricultural potential, this Commodity Investment Plan (CIP) aims to enhance production efficiency, introduce value-added processing, and improve market access for priority commodities. The plan focuses on high-value crops such as coconut (virgin coconut oil and copra), banana, cacao, and lowland vegetables, as well as livestock and aquaculture, including swine, broiler chicken, chicken egg production, and mangrove crab farming.

With the implementation of sustainable land management, improved farming practices, and infrastructure support, Mulanay aims to become a model municipality for integrated agroforestry and agribusiness development in Quezon Province. The CIP framework aligns with national and provincial development goals, ensuring that agricultural modernization contributes to economic growth, food security, and environmental sustainability in the region.

The commodities selected for investment are based on land suitability, market demand, and processing potential. These include perennial crops, agroforestry products, livestock, and aquaculture.

Table 14 Commodity Profile

Commodity	Opportunities	Challenges	Interventions
Virgin Coconut Oil	High export demand; value-added processing	Inconsistent supply, limited processing facilities	Establish processing centers, improve post-harvest handling
Coconut Oil	Large local and global market	Price fluctuations, aging coconut trees	Coconut replanting programs, support for processing plants
Banana	Fast-growing, high market demand	Susceptible to diseases like Fusarium wilt	Distribution of disease-resistant seedlings, pest control programs
Cacao	Growing demand for chocolate production	High production costs, limited processing centers	Establishment of cacao nurseries, farmer training on fermentation techniques
Lowland Vegetables	Year-round production potential, local food security	Climate sensitivity, pest infestation	Climate-smart agriculture, irrigation expansion, integrated pest management
Bamboo	Sustainable raw material for furniture and crafts	Lack of processing centers, limited market access	Establishment of bamboo processing hubs, strengthening market linkages
Calamansi	Export potential, value-added processing (juice, concentrate)	Limited high-yielding seedlings, pest problems	Provision of disease-resistant seedlings, training in pest control
Abaca	Sustainable fiber industry, increasing global demand	Limited supply of planting materials, high production cost	Establish abaca nurseries, provide technical training
Mangrove Crab Farming	Expanding aquaculture industry	Lack of local supply of crablets	Establish hatcheries, training programs for aquasilviculture
Swine	Strong domestic demand for pork	Disease outbreaks (ASF), high feed costs	Biosecurity measures, disease monitoring, breed improvement programs
Broiler Chicken	Fast-growing livestock, high market potential	High production costs, disease risks	Access to low-cost feeds, vaccination programs
Chicken Egg (Layer Farming)	High protein demand, continuous production cycle	Heat stress, high feed prices	Improvement of layer housing facilities, climate adaptation strategies

The investment plan is designed to address key production challenges, enhance processing capacity, and improve market access.

1. **Infrastructure Development**

- Farm-to-market roads in key agricultural barangays such as Buenavista, Cambuga, Santa Rosa, and Bagupaye.
- Processing and storage facilities for coconut oil, virgin coconut oil, banana, and cacao.
- Expansion of irrigation systems for vegetable production areas within the watershed.

2. **Capacity Building and Technical Support**
   - Farmer training programs on organic farming, post-harvest processing, and pest management.
   - Support for cooperatives to strengthen value chain integration and improve farmers' market access.
3. **Market Linkage and Enterprise Development**
   - Development of value-added products such as coconut oil, calamansi juice, cacao-based products, and bamboo furniture.
   - Formation of agribusiness partnerships with traders, exporters, and processing firms.
   - Promotion of eco-tourism and farm tourism initiatives, integrating agriculture and biodiversity conservation within the Buenavista Protected Landscape.
4. **Environmental Protection and Climate Resilience**
   - Promotion of agroforestry models combining coconut, cacao, abaca, and bamboo to enhance soil conservation and carbon sequestration.
   - Strengthening the Mulanay River Watershed Management Program to improve water conservation and prevent land degradation.
   - Expansion of mangrove reforestation in Latangan to support sustainable fisheries and climate adaptation.

The success of this investment plan requires collaborative efforts from government agencies, private sector partners, and community organizations.

Table 15 Agency/Stakeholder

Agency/Stakeholder	Role
Municipal Government of Mulanay	Policy implementation, funding allocation, and monitoring
Department of Agriculture (DA)	Technical support, funding for crop and livestock programs
Department of Environment and Natural Resources (DENR)	Watershed management, biodiversity conservation
Provincial Government of Quezon	Coordination with national agencies, support for processing facilities
Private Sector and Cooperatives	Investment in agribusiness, processing plants, and product distribution
Academe and Research Institutions	Feasibility studies, farmer training programs

The Mulanay Watershed Commodity Investment Plan is a strategic roadmap to enhance agricultural productivity, strengthen value chain development, and promote sustainable resource management. By integrating infrastructure development, capacity building, market expansion, and environmental sustainability, the municipality of Mulanay aims to become a leading agricultural hub in Quezon Province.

3.9.1 Agriculture Profile

The Municipality of Mulanay, located in the Bondoc Peninsula of Quezon Province, is primarily an agricultural and fishing community. The Mulanay River Watershed, spanning 6,901 hectares, serves as a critical resource for irrigation, fisheries, and household water supply, supporting the livelihoods of farmers and fisherfolk across thirteen (13) barangays, including Bagupaye, Bolo, Buenavista, Butanyog, Ibabang Cambuga, Ilayang Cambuga (Mabini), Latangan, San Pedro, and four (4) Poblacion barangays.

Agriculture remains the dominant economic activity, with key commodities such as coconut (virgin coconut oil and copra), banana, cacao, lowland vegetables, swine, broiler chicken, chicken egg, and mangrove crab farming. However, challenges such as outdated farming techniques, climate vulnerability, and limited market access affect the sector's productivity. To address these issues, government initiatives, infrastructure investments, and farmer support programs are being implemented to enhance agricultural output, promote value-added processing, and integrate climate-smart farming practices.

3.9.1.1 Average Annual Income of Farmers and Fisherfolk

Economic disparities exist among farmers and fisherfolk in Mulanay, with 36.56% of households earning below the poverty threshold and 12.91% below the food threshold. The average household income varies by barangay, influenced by factors such as crop yield, fishing activities, and access to markets.

Table 16 Average Income of Farmers and Fisherfolks

Barangay	Average Household Income (PHP)	Households Below Poverty Threshold (%)	Households Below Food Threshold (%)
Barangay 1 (Pob.)	243,709.29	32.14%	12.80%
Barangay 2 (Pob.)	202,104.51	30.80%	14.13%
Barangay 3 (Pob.)	315,597.84	11.53%	5.42%
Barangay 4 (Pob.)	307,852.22	9.64%	4.06%
Bagupaye	136,042.49	50.29%	31.09%
Buenavista	150,215.64	42.20%	18.43%
Cambuga	162,032.78	35.50%	16.74%
Mabini	104,885.18	53.91%	23.72%
Santa Rosa	175,490.15	28.80%	12.19%
Latangan	121,740.54	47.12%	20.35%
Other Barangays	85,296.35 – 163,137.09	37.57% – 50.29%	16.91% – 31.09%

3.9.1.2 Top Commodities Along Mulanay River Watershed Areas

The agricultural landscape of Mulanay is dominated by a mix of perennial crops, livestock, and aquaculture. These commodities serve as primary sources of income and employment within the watershed.

Table 17 Top Commodities along Mulanay River Watersheds

Commodity	Primary Use	Economic Potential	Production Area (Ha)	Avg. Annual Production (MT)
Coconut (Virgin Coconut Oil, Copra)	Export, oil production	High – strong domestic and global demand	5,919.62	378.86
Banana (Saba, Latundan, Lakatan)	Local consumption, processing	Moderate – growing local demand	1,757.95	759.43
Cacao	Chocolate production	Emerging – potential for export markets	15.00	NDA
Corn	Local consumption, animal feed, and processing	Moderate – important for livestock feed and local consumption	192.00	48.00
Lowland Vegetables	Household and market sales	Moderate – essential for local food security	106.00	22.67
Bamboo	Handicrafts, furniture, construction	Emerging – potential for value-added industries	NDA	NDA
Calamansi	Juice, concentrate production	Moderate – increasing demand for processed products	NDA	NDA
Mangrove Crab Farming	Aquaculture and seafood trade	High – profitable export market	NDA	NDA
Swine (Pork Production)	Meat industry	High – strong local demand but affected by ASF outbreaks	3,523 Heads 6.3 MT	6.3 MT
Broiler Chicken	Poultry meat	High – rapid turnover rate, essential for food security	7,558 Heads 6.3 MT	4.2 MT
Chicken Egg Production	Household and commercial supply	Moderate – continuous production cycle	-	2,656 pcs.

The table presents an overview of key agricultural and aquacultural commodities in the Mulanay River Watersheds, highlighting their economic potential, primary uses, and current production data. While some commodities have well-documented production figures, several entries are still under research by the Local Government Unit (LGU) and other organizations.

1. Dominant Agricultural Commodities

- Coconut (Virgin Coconut Oil, Copra) remains a high-value crop due to strong domestic and global demand. With 5,919.62 hectares of production area, it is one of the most significant commodities in the watershed region, although its average annual production is only 378.86 MT.
- Banana (Saba, Latundan, Lakatan) is also a major commodity with 1,757.95 hectares cultivated, yielding the highest recorded production at 759.43 MT annually. Its growing local demand makes it an essential crop for both consumption and processing.
- Corn plays a crucial role in local consumption and livestock feed, with 192 hectares dedicated to its cultivation, producing 48 MT per year.
- Lowland Vegetables contribute to local food security, covering 106 hectares and producing 22.67 MT annually.

2. Emerging and Underdeveloped Commodities

- Cacao has 15 hectares of production area and is identified as an emerging crop with potential for export markets, though its production data is still under research.
- Bamboo is noted for its potential in handicrafts, furniture, and construction but lacks specific production data.
- Calamansi has economic potential in juice and concentrate production, yet data regarding its production remains unavailable.

3. Livestock and Aquaculture

- Swine (Pork Production), despite challenges posed by ASF (African Swine Fever), remains a high-demand commodity. The region reported 3,523 heads of swine production, yielding 6.3 MT of meat annually.
- Broiler Chicken production is essential for food security, with 7,558 heads recorded and an annual production of 4.2 MT.
- Chicken Egg Production contributes to both household and commercial supply, producing 2,656 pieces annually.
- Mangrove Crab Farming is identified as a high-value aquaculture commodity with export potential, though its production figures are still being studied.

4. Challenges and Opportunities

- Several commodities such as Cacao, Bamboo, Calamansi, and Mangrove Crab Farming remain under-researched, with the LGU and other organizations still assessing their full economic potential.
- ASF outbreaks continue to impact the swine industry, posing risks to pork production.
- Despite the high demand for coconut and banana, their yield per hectare appears relatively low, suggesting potential areas for improvement in agricultural practices.

To maximize the economic potential of the Mulanay River Watersheds, it is crucial to support ongoing research on under-documented commodities such as cacao, bamboo, calamansi, and mangrove crab farming. Enhancing production efficiency through improved farming techniques, irrigation, and pest control can help increase yields for high-value crops like coconut and banana. Investments should also be directed toward emerging commodities, particularly cacao and calamansi, to capitalize on their growing market demand. Additionally, strengthening disease control measures, especially for the swine industry, is essential to mitigate the risks posed by ASF outbreaks. For the aquaculture sector, developing infrastructure and improving market access, particularly for mangrove crab farming, can unlock its profitable export potential. Overall, a coordinated effort between the LGU, farmers, and industry stakeholders will be key to fostering sustainable agricultural and aquacultural growth in the region.

3.9.1.3 Top Commodities Per Barangay in Mulanay Watershed

Each barangay in the watershed specializes in different agricultural commodities, depending on land suitability, access to water sources, and local expertise.

Table 18 Top Commodities per Barangay

Barangay	Major Commodity	Production Area (ha)	Avg. Annual Production (MT)
Buenavista	Coconut, Cacao, Corn, Calamansi	1,185.64	75.88
Cambuga	Coconut, Banana, Corn, Lowland vegetables, Bamboo, Swine	3,203.44	205.02
Mabini	Coconut, Banana, Corn, Cacao, Swine	1,457.62	93.29
Santa Rosa	Coconut, Banana, Coconut, Corn, Broiler Chicken, Bamboo	871.44	55.77
Bagupaye	Coconut, Corn, Cacao, Swine	1,164.51	74.53

Barangay	Major Commodity	Production Area (ha)	Avg. Annual Production (MT)
Latangan	Coconut, Corn, Mangrove Crab Farming, Lowland vegetables	588.95	37.69
Poblacion 1, 2, 3, 4	Poultry, chicken eggs, banana, calamansi	46.04	NDA

3.9.1.4 Percentage of People Involved in Agriculture and Fishery Sector

Agriculture and fisheries account for a significant portion of employment in Mulanay, with 2,871 individuals engaged in farming and fishing activities.

Table 19 Employment per Sector

Sector	Total Employment	Percentage of Workforce
Agriculture, Forestry, and Fishing	2,871	22.2%
Crop Farmers	1,571	12.1%
Farm Workers	6,061	46.2%
Fisherfolk (Inland and Coastal)	547	4.2%
Livestock and Dairy Farmers	18	0.1%
Poultry Farmers	11	0.08%

Despite the strong agricultural workforce, challenges such as low productivity, lack of modern equipment, and vulnerability to climate risks remain key concerns for Mulanay's economic development.

3.10 Livelihood and Enterprises Profile

The municipality's livelihood opportunities are influenced by its natural resources, coastal access, and agricultural productivity. The Mulanay River Watershed, which spans 6,901 hectares, plays a key role in supporting economic activities by providing irrigation for farmlands, fisheries, and agroforestry systems.

The local economy is largely driven by micro, small, and medium enterprises (MSMEs), with businesses ranging from agriculture and forestry to wholesale trade and food services. Employment opportunities are concentrated in agriculture (40.06%), wholesale and retail trade (30.45%), and manufacturing (3.72%). These sectors contribute to income generation, employment, and local revenue.

3.10.1 Employment by Sector in Mulanay

The employment distribution in Mulanay reflects a strong reliance on agriculture, fisheries, and trade-related activities.

Table 20 Number of Workers and Revenue per Sector

Sector	Number of Workers	Percentage of Workforce	Total Revenue (PHP)
Agriculture, Forestry, and Fishing	2,871	40.06%	145,086,852
Wholesale and Retail Trade; Repair of Motor Vehicles	2,995	30.45%	201,587,136
Manufacturing	641	3.72%	13,338,600
Transportation and Storage	118	1.65%	7,608,600
Accommodation and Food Service Activities	438	6.11%	25,693,200
Construction	74	1.03%	1,899,600
Financial and Insurance Activities	16	0.22%	1,350,000

The agriculture, forestry, and fishing sector remains the primary livelihood source, but wholesale and retail trade have become a dominant income-generating activity, contributing PHP 201.58 million in annual revenue.

3.10.2 Types of Enterprises in Mulanay

Mulanay hosts a variety of businesses, from agricultural processing to retail and service-based enterprises. The table below presents the number of commercial establishments per sector.

Table 21 Business Category and Growth rate

Business Category	2022	2023	Growth Rate (%)
Wholesale and Retail Trade	380	428	12.63%
Agriculture, Forestry, and Fishing	44	55	25.00%
Accommodation and Food Services	25	54	116.00%
Manufacturing	18	7	-61.11%
Financial and Insurance Activities	42	32	-23.81%

The rise in accommodation and food service businesses suggests that Mulanay is becoming a more attractive location for tourism and eco-tourism activities.

3.10.3 Micro, Small, and Medium Enterprises (MSMEs) in Mulanay

MSMEs play a critical role in Mulanay's economy, supporting job creation, local commerce, and sustainable development.

Table 22 Number of MSMEs

Enterprise Category	Number of Businesses	Employment Contribution (%)	Sector Dominance
Micro Enterprises (<3M PHP Capital)	545	83.2%	Retail, Agriculture
Small Enterprises (3M - 15M PHP Capital)	92	14.1%	Food Processing, Trading
Medium Enterprises (15M - 100M PHP Capital)	18	2.7%	Manufacturing, Transportation

Micro-enterprises dominate the local economy, with most businesses focusing on retail, food services, and agricultural trade.

3.10.4 Livelihood Programs and Financial Inclusion

To support economic sustainability, Mulanay has implemented several livelihood programs and financial assistance initiatives, particularly for farmers, fisherfolk, and small-scale entrepreneurs.

Table 23 Livelihood Beneficiaries per Program

Program	Number of Beneficiaries	Target Sector
Sustainable Livelihood Program (SLP)	3,600 individuals	Farmers, Entrepreneurs
Payapa at Masaganang Pamayanan (PAMANA)	600 per barangay	Conflict-affected communities
Department of Agriculture (DA) Production Support	305 households	Small-scale farmers
DTI Negosyo Center Program	500 individuals	MSME owners

These programs focus on capacity building, access to financing, and business development for vulnerable groups.

3.10.5 Financial Access and Entrepreneurship

Financial access is crucial for business sustainability, and Mulanay shows a moderate level of financial inclusion.

Table 24 Percentage of Population per Financial Access

Indicator	Percentage of Population
Has a Financial Account (Bank, Coop, Digital Wallet)	69.62%
Has Business Loans	53.36%
Has Insurance Coverage	68.34%
Engaged in E-Commerce	1.22%

While financial access is improving, e-commerce participation remains low, highlighting the need for digital business training and market expansion efforts.

The livelihood and enterprise sector in Mulanay is a mix of traditional agriculture, trade, and emerging tourism-related businesses. While agriculture and wholesale trade remain the backbone of the economy, opportunities for MSMEs, financial inclusion, and eco-tourism development are growing.

3.11 Development Potentials of the Convergence Area

The Mulanay Convergence Area, which includes the Mulanay River Watershed, presents significant opportunities for agricultural productivity, ecological conservation, and sustainable economic development. With a total land area of 6,901 hectares, the watershed serves as a lifeline for thirteen (13) barangays, including Bagupaye, Bolo, Buenavista, Butanyog, Ibabang Cambuga, Ilayang Cambuga (Mabini), Latangan, San Pedro, and four (4) Poblacion barangays. The availability of water resources, fertile soil, and an engaged farming community make this area highly suitable for integrated agroforestry, eco-tourism, and climate-resilient farming.

The primary development potentials of the convergence area revolve around agriculture, forestry, and aquaculture. The expansion of high-value crops such as coconut, banana, cacao, lowland vegetables, and bamboo can increase farmer incomes while promoting sustainable land use practices. Additionally, livestock and poultry farming, including swine, broiler chicken, and egg production, can be further developed with improved access to financial resources, veterinary support, and modernized facilities. The mangrove ecosystems in coastal barangays also provide an excellent environment for mangrove crab farming, a lucrative aquaculture venture.

To optimize these potentials, the Mulanay Municipal Government, in partnership with national agencies and private stakeholders, is focusing on infrastructure improvements, market accessibility, and value-added processing. Farm-to-market roads, post-harvest facilities, and digital market linkages will be established to enhance supply chain efficiency. The convergence area also has the potential for eco-tourism and heritage conservation, especially in Buenavista Protected Landscape and Mt. Kamhantik, where historical, cultural, and environmental assets can drive tourism-based livelihood opportunities.

Table 25 Development Potentials Highlight

Development Potential	Key Features	Opportunities	Interventions Needed
Agricultural Expansion	High-value crops (coconut, banana, cacao, vegetables, bamboo)	Increased farmer income, export potential	Irrigation, financial assistance, training programs
Livestock & Poultry	Swine, broiler chicken, egg production	Meat and poultry industry growth	Veterinary support, breeding centers, processing facilities

Aquaculture Development	Mangrove crab farming in coastal areas	High market demand, sustainable fisheries	Hatcheries, coastal resource management, market linkages
Eco-Tourism & Heritage	Buenavista Protected Landscape, Mt. Kamhantik	Increased local tourism, job creation	Protected area management, tour development, local enterprise support
Infrastructure & Market Linkages	Farm-to-market roads, digital marketing	Reduced transport costs, improved farmer income	Investment in roads, logistics hubs, e-commerce training
Climate-Resilient Agriculture	Agroforestry, soil conservation	Sustainable farming, disaster mitigation	Agroforestry expansion, reforestation, watershed protection

3.12 Agrarian Reform

Agrarian reform plays a crucial role in ensuring land distribution and security of tenure for farmers within the Mulanay River Watershed. The watershed, covering multiple barangays, supports agricultural productivity and rural livelihoods. Based on the latest data, a total of 1,955.76 hectares of agricultural land has been distributed to 1,337 agrarian reform beneficiaries (ARBs) in five key barangays within the watershed area.

Table 26 Agrarian Beneficiaries per Barangay

Barangay	Area	Agrarian Beneficiaries
BAGUPAYE	236.76	163
BUENAVISTA	55.69	61
IBABANG CAMBUGA	1452.25	960
ILAYANG CAMBUGA (MABINI)	7.00	4
SANTA ROSA	204.05	149
Grand Total	**1955.76**	**1,337**

Land Distribution and Beneficiaries

- Barangay Ibabang Cambuga holds the largest share, with 1,452.25 hectares of land distributed among 960 beneficiaries. This area plays a significant role in coconut and mixed-crop production, supporting both smallholder farming and agribusiness ventures.
- Barangay Bagupaye follows with 236.75 hectares allocated to 163 beneficiaries. This land is primarily utilized for agroforestry, coconut farming, and diversified crops, contributing to both local consumption and commercial agricultural activities.
- Barangay Santa Rosa has 204.05 hectares benefitting 149 farmers, enhancing sustainable agricultural practices and ensuring food security in the area.
- Barangay Buenavista-Mulanay has 55.69 hectares awarded to 61 beneficiaries, supporting small-scale farming and integrated agroforestry efforts.
- Barangay Ilayang Cambuga has a smaller land allocation of 7 hectares, with 4 beneficiaries, mainly involved in household-based agriculture.

Agricultural Development and Economic Impact

The implementation of agrarian reform in these barangays has improved the livelihoods of smallholder farmers by providing them with legal ownership of farmlands. This security of tenure has enabled them to access government programs such as credit financing, agricultural training, and support services for

improving crop yields and market access. The presence of agrarian reform beneficiaries in these areas aligns with the broader goals of food security, economic sustainability, and environmental conservation within the Mulanay River Watershed.

Challenges and Opportunities

While agrarian reform has positively impacted farmers, challenges remain, including the need for infrastructure development, access to post-harvest facilities, and stronger market linkages. Future programs should focus on sustainable land management, crop diversification, and cooperative-based enterprises to further enhance productivity and economic growth.

3.13 National Tax Allotment

The Local Government Unit (LGU) of Mulanay, Quezon, relies heavily on the National Tax Allotment (NTA) as a primary source of funding for its various programs, projects, and services. The NTA, formerly known as the Internal Revenue Allotment (IRA), is a share of local government units from national internal revenues collected by the national government, as mandated by the Local Government Code of 1991. This funding mechanism enables the LGU to finance priority development initiatives, essential public services, and governance functions.

For the fiscal year, Mulanay's NTA allocation is distributed across multiple sectors to support economic development, social services, environmental management, and administrative operations. The allocation follows national guidelines ensuring that funds are used to enhance local development, improve public services, and boost economic growth.

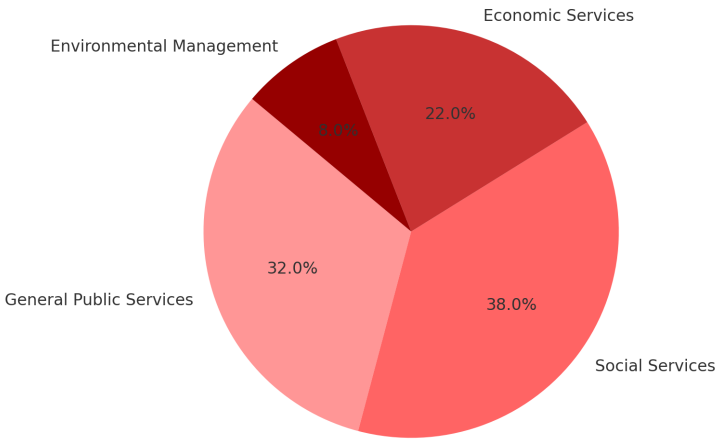


Figure 1 National Tax Allotment (NTA) Distribution

Breakdown of Budget Allocations:

1. **General Public Services (30-35%)**
    - LGU administrative operations
    - Legislative and executive services
    - Public order and safety programs
    - Disaster risk reduction and management (DRRM)
2. **Social Services (35-40%)**
    - Health services (barangay health centers, maternal and child care, immunization)
    - Education and scholarships
    - Social welfare programs for vulnerable groups (elderly, PWDs, indigents)
    - Housing and basic utilities
3. **Economic Services (20-25%)**

- Agricultural and fishery development (farm-to-market roads, irrigation, and subsidies)
- Infrastructure projects (road networks, bridges, public markets)
- Tourism development programs
- Business and cooperative support initiatives

4. **Environmental Management (5-10%)**
   - Watershed conservation and reforestation projects
   - Solid waste management and sanitation programs
   - Climate change mitigation and adaptation strategies

Key Investment Priorities

With the Mulanay River Watershed playing a significant role in local livelihoods and environmental sustainability, part of the NTA allocation is channeled toward watershed protection, agricultural productivity, and sustainable land management. Investments in agroforestry, irrigation systems, and coastal resource management are also prioritized to enhance food security and economic resilience.

Additionally, the LGU is leveraging national funding to increase support for livelihood programs, improve disaster preparedness, and promote eco-tourism as part of its long-term development agenda.

Challenges and Future Strategies

While the NTA provides significant financial support, challenges remain in ensuring efficient budget utilization, addressing gaps in local revenue generation, and optimizing fund allocation for high-impact projects. Moving forward, the LGU aims to:

- Strengthen local revenue collection to reduce dependency on NTA.
- Enhance public-private partnerships for infrastructure and economic development.
- Improve budget transparency and participatory governance to align spending with community needs.
- Secure additional grants and funding from national agencies, NGOs, and foreign aid for specialized programs.

3.14 Social Services

The Mulanay River Watershed serves as a vital lifeline for the communities surrounding it, supporting not only agricultural activities but also social services such as health, education, and infrastructure development. The watershed spans multiple barangays, where access to basic services is crucial for sustainable development and community resilience.

3.14.1 Health and Sanitation

Health services within the Mulanay River Watershed area are centered around rural health units, barangay health stations, and mobile clinics. The local government, in partnership with national agencies, continues to implement programs for maternal and child healthcare, disease prevention, and sanitation improvement. However, some remote areas within the watershed barangays still experience limited access to health services due to geographical constraints and inadequate facilities.

Waterborne diseases remain a concern, as some communities still lack access to safe drinking water and proper waste disposal systems. The watershed plays a key role in providing water resources, making it imperative to implement conservation programs to maintain water quality. Sanitation initiatives, including the construction of communal toilets and waste management programs, have been prioritized in barangays along the river to prevent pollution and improve public health.

3.14.2 Basic Education Resources

Education in the Mulanay River Watershed barangays is supported by public elementary and secondary schools, with some areas having private institutions. The Local School Board has been actively allocating resources for educational improvement, but challenges remain in terms of classroom shortages, outdated materials, and lack of digital learning infrastructure.

Despite these challenges, efforts are being made to enhance learning accessibility through scholarship programs, school feeding initiatives, and the integration of environmental education focused on the importance of the watershed. Schools within the watershed barangays also promote sustainable farming practices and conservation awareness to ensure the younger generation values and protects their natural resources.

3.14.3 Schools

Barangays within the Mulanay River Watershed have a mix of primary, secondary, and alternative learning centers, catering to the educational needs of the community. However, certain areas face difficulties in terms of teacher-student ratios, insufficient classrooms, and lack of teaching materials.

To address these issues, the local government, in collaboration with the Department of Education (DepEd), has been expanding educational facilities, constructing additional classrooms, and providing financial support for teacher training and educational resources.

3.14.4 Classrooms

One of the pressing concerns in the watershed barangays is the shortage of classrooms, particularly in densely populated areas. Many schools operate on a multi-shift system, leading to limited learning hours per student. While classroom construction has been prioritized in the Annual Investment Plan (AIP), funding constraints remain a challenge.

With the continuous population growth in Mulanay River Watershed barangays, future infrastructure planning must include more disaster-resilient classrooms and eco-friendly learning spaces that align with sustainable development goals.

3.14.5 Infrastructure

The Mulanay River Watershed influences major infrastructure developments, as road networks, bridges, and public facilities are designed to withstand environmental changes such as flooding and soil erosion. Several barangays still require improved access roads, particularly those located in elevated and remote areas.

Investment in riverbank protection projects, improved irrigation systems, and resilient school and health infrastructure is crucial in ensuring that the watershed continues to support socio-economic activities while maintaining ecological balance. The Local Government Unit (LGU), with support from national agencies and non-government organizations, has initiated several projects focusing on:

- Road rehabilitation and expansion to improve connectivity among watershed barangays.
- Health center and school facility improvements to enhance service delivery.
- Water system upgrades to ensure clean and sustainable water access for households and schools.

With a strong commitment to sustainable development, Mulanay River Watershed remains a critical area for investment in social services, ensuring that communities thrive while preserving the watershed's ecological integrity.

3.15 Susceptibility and Vulnerability to Natural Disasters

The Mulanay River Watershed plays a crucial role in the ecological and economic landscape of the municipality, yet it is also highly susceptible to various natural disasters. Given its geographical location, topographical features, and reliance on natural resources, communities within the watershed face risks from flooding, landslides, typhoons, coastal erosion, and droughts. The vulnerability of the area is further exacerbated by climate change, environmental degradation, and human activities that contribute to the depletion of natural buffers.

3.15.1 Flooding and Riverbank Erosion

The Mulanay River, as the largest watershed in the municipality, serves as the primary drainage system for multiple barangays. During heavy rainfall and typhoon events, the river often swells beyond capacity, leading to flooding in low-lying areas and settlements near the riverbanks. Barangays within the watershed, such as Bagupaye, Buenavista-Mulanay, Ibabang Cambuga, Ilayang Cambuga, and Santa Rosa, are particularly prone to flood hazards.

Factors Contributing to Flood Susceptibility:

- Deforestation in upstream areas reduces the capacity of the watershed to absorb rainwater, increasing surface runoff.
- Siltation and sedimentation in river channels lead to reduced water flow capacity.
- Unregulated land development along flood-prone zones worsens flood risks.
- Extreme weather events cause flash floods, particularly during the typhoon season.

To mitigate flooding, the local government and partner agencies have initiated riverbank protection projects, reforestation programs, and drainage improvements. However, continuous monitoring and enforcement of watershed protection policies remain necessary.

3.15.2 Landslides and Soil Erosion

The mountainous and hilly terrain of some barangays in the Mulanay River Watershed makes them vulnerable to landslides, particularly after prolonged rainfall or seismic activity. Areas with steep slopes, such as Ibabang Cambuga and Ilayang Cambuga, are at risk due to unstable soil conditions and land conversion for agriculture and infrastructure projects.

Key Factors Contributing to Landslide Susceptibility:

- Loss of vegetation cover reduces soil stability.
- Excessive rainfall saturates the soil, making it prone to slippage.
- Unregulated quarrying and excavation weaken the land structure.
- Road construction on steep slopes increases soil instability.

Mitigation measures include reforestation, soil stabilization projects, slope protection structures, and stricter land-use zoning regulations to prevent settlement in high-risk areas.

3.15.3 Typhoons and Strong Winds

As part of the typhoon belt of the Philippines, Mulanay experiences frequent tropical storms that bring heavy rainfall, storm surges, and strong winds. These typhoons damage crops, infrastructure, and residential areas, significantly impacting the livelihoods of farmers and fisherfolk in the watershed communities.

Effects of Typhoons on the Watershed Communities:

- Destruction of coconut, banana, and vegetable plantations, leading to loss of income.
- Damage to fishing boats, fish ponds, and coastal infrastructure.

- Disruptions in transportation, power supply, and water systems.
- Collapse of weak structures, including schools and health centers.

Strengthening disaster preparedness programs, improving early warning systems, and enforcing climate-resilient infrastructure standards are critical in minimizing typhoon-related damages.

3.15.4 Coastal Erosion and Sea Level Rise

Mulanay's coastal barangays are susceptible to coastal erosion and rising sea levels, which threaten mangrove forests, fisheries, and coastal settlements. The loss of mangroves due to illegal cutting and land conversion further weakens the natural defense of the area against storm surges.

Adaptation Strategies:

- Mangrove reforestation and marine protection programs to serve as natural barriers.
- Regulation of shoreline development to prevent erosion-related damages.
- Sustainable fishing practices to protect marine biodiversity and livelihoods.

3.15.5 Drought and Water Scarcity

Periods of prolonged dry spells affect agricultural productivity in the Mulanay River Watershed, as many farming communities depend on rain-fed irrigation systems. Water shortages reduce crop yields, affect livestock production, and increase competition for limited water resources.

Key Drought Adaptation Measures:

- Promotion of climate-resilient crops that require less water.
- Construction of small-scale irrigation systems for sustainable water use.
- Implementation of water conservation programs in agriculture and households.

The Mulanay River Watershed is a critical resource that sustains the municipality, but it remains highly vulnerable to natural disasters. The LGU of Mulanay, in coordination with the Department of Environment and Natural Resources (DENR), National Disaster Risk Reduction and Management Council (NDRRMC), and local stakeholders, must prioritize integrated watershed management, disaster preparedness, and climate adaptation initiatives to protect both the environment and the communities dependent on it.

Chapter 4. Convergence Area Profile (CAP) Analysis

4.1 Current/Existing Status

The convergence area, declared as a protected landscape, faces numerous environmental, cultural, and socio-economic challenges. Invasive and destructive species threaten the local ecosystem, while the depleting land area for mangroves is exacerbated by illegal logging and poor awareness among the community. Additionally, the Kamhantik Archaeological Site, recognized as a National Cultural Treasure, is at risk due to human encroachment. Tourism development is hindered by the absence of an existing ecotourism site, a lack of accredited tour guides, and other permits and clearance are pending approvals from regulatory bodies such as the DENR and other concern agencies. Infrastructure deficiencies, including an incomplete tourism road and a poor road network, further restrict access and economic opportunities. Waste management issues persist, with no Material Recovery Facility (MRF) in the Buenavista Protected Landscape (BPL) and cultural challenges related to solid waste management, particularly from potential tourist-generated waste.

Environmental sustainability remains a concern, with poor planning and implementation of programs, an absence of personnel such as forest guards to monitor illegal activities, and the lack of an updated environmental management plan. The poor condition of the sanitary landfill, coupled with insufficient manpower and limited funding, adds to the challenge. Research and development efforts are also lacking, as no government funds have been allocated for studies that could support conservation and sustainable practices. Furthermore, economic constraints, including the absence of private investment and no existing farm tourism initiatives, hinder the area's potential for sustainable development.

The convergence area is also highly vulnerable to natural hazards, including typhoons, rain-induced landslides, and flooding, yet no safe evacuation centers have been established. Limited funding from the municipal government prevents the implementation of livelihood programs for local communities, contributing to the persistence of poverty and the selling or mortgaging of landholdings. Capacity development and training programs are not conducted, further limiting the community's ability to engage in sustainable economic activities. Overall, the combination of environmental degradation, weak infrastructure, insufficient funding, and poor governance poses significant challenges to the long-term sustainability and development of the convergence area.

Goals and Objectives	Component	Current/ Existing Status	Issues and Constraints	Target Year	Targeted in CADP or Additional	Source of Funds	Other agencies involved	Programs, Activities, Projects	Key Performance Indicator	Unit of measurement	Target						Justification / Remarks, if any	COMMODITY
											Quantity	Beneficiaries		Allocated Amount (PHP '000)	Location			
												Individual	Group		Barangay			
Protect, conserve, and promote sustainable use of ecosystems, sustainably manage forest and enhance biodiversity	Environment development, protection and ecosystem management	The convergence area is declared as a protected landscape	Invasive and destructive species	2026	Targeted in CADP	DENR	DA	Environment protection ecosystem and natural resources management conservation and development Program	Planting materials / seedlings provided	pieces	3000	1000	3	500	Buenavista, Cambuga, Latangan		Assorted fruit bearing and native trees (1,000 native trees, 1000 fruit-bearing, 1000 Pili)
Archaeological sites within BPL are conserved and promoted through sustainable ecotourism	Environment development, protection and ecosystem management activities	Kamhantik Archaeological Site is declared as a "National Cultural Treasure"	Human encroachment	2028	Targeted in CADP	DOT	National Museum of the Philippines	Development of Infrastructure and Facilities	Eco-park / marine sanctuary established	number	1		1	50,000	Buenavista		Construction materials for Resting Areas, Tourist Reception Area, View Deck, Eco-Trail
	Environment development, protection and ecosystem management activities	No existing farm tourism site	Sustainability and use of synthetic fertilizers	2026	Targeted in CADP	DA	DOT, MLGU	Agricultural and Fishery Equipment Support	Technology demonstration established	number	1	50	3	450	Buenavista, Cambuga, Latangan		Farm Inputs, Trainings
	Environment development, protection and ecosystem management activities	Not yet open to public pending approval from REC	No accredited tour guides in the community	2026	Targeted in CADP	DOT	MLGU	Support to Operations	Trainings/workshops / capacity building activities conducted	number	3	60	3	300	Buenavista, Cambuga, Latangan		Trainings

Goals and Objectives	Component	Current/ Existing Status	Issues and Constraints	Target Year	Targeted in CADP or Additional	Source of Funds	Other agencies involved	Programs, Activities, Projects	Key Performance Indicator	Unit of measurement	Target			Allocated Amount (PHP '000)	Location	Justification / Remarks, if any	COMMODITY
											Quantity	Beneficiaries					
												Individual	Group		Barangay		
	Physical Characteristics and Infrastructure	Tourism road is not complete	Climate change and hazards	2026	Targeted in CADP	DA	DOT, DA-Phil Mech, DPWH, DAR	Development of Infrastructure and Facilities	Length of Farm-to-market road constructed	kilometers	9.2	1508	3	470,000	Buenavista		FMR with Bridge Component
			Infrastructure and facilities are limited in the BPL subject to recommendations of the National Museum and approval of DENR	2027	Targeted in CADP	MLGU	DENR	Development of Infrastructure and Facilities	Gazeebos constructed	number	3	150	3	600	Buenavista		Construction materials
			-do-	2027				Development of Infrastructure and Facilities	Comfort room provided	#N/A	2	150	3	1,000	Buenavista		Construction materials
			-do-	2028				Development of Infrastructure and Facilities	Site Museum	#N/A	1	150	1	2,000	Buenavista		Construction materials
Implement programs pertaining to proper solid waste management in accordance with RA 9003 and with local ordinances	Environment development, protection and ecosystem management activities	No MRF installed in the BPL	Culture-related issues on SWM, Wastes generated from tourists	2026	Targeted in CADP	MLGU	DENR	Development of Infrastructure and Facilities	MRF constructed	#N/A	2	150	1	300	Buenavista		Construction materials

Goals and Objectives	Component	Current/ Existing Status	Issues and Constraints	Target Year	Targeted in CADP or Additional	Source of Funds	Other agencies involved	Programs, Activities, Projects	Key Performance Indicator	Unit of measurement	Target			Allocated Amount (PHP '000)	Location	Justification / Remarks, if any	COMMODITY
											Quantity	Beneficiaries					
												Individual	Group		Barangay		
protecting public, safety and the environment																	
BPL is promoted as an area for various research studies	Investment requirements based on value chain and market study	No research studies have been undertaken	No government fund is alloted for research	2027	Additional	DOST	DENR	Research Development Support	Technologies developed	number	3			450	All barangays		Data-base and IEC, Value-Chain Analysis, Market Study, Research & Development on Archaelogy
Strengthen local institutions and encourage their full and active participation in and cooperation in ecotourism development	Socio-economic	No livelihood PAPs are undertaken to communities in the convergence areas	Limited MLGU fund to support livelihood	2027	Targeted in CADP	DA	DSWD	Market Development and Logistics Support	Production, display, food and trading centers and other agri-business related facilities established	number	1	600	3	300	Buenavista, Cambuga, Latangan		Livelihood projects in agribusiness ventures
	Socio-economic	No cap dev and trainings are conducted in the convergence area	Sustainability	2027	Additional	DA	DTI	Market Development and Logistics Support	Product development activities conducted	number	4	600	3	300	Buenavista, Cambuga, Latangan		CapDev and Trainings conducted
Archelogical sites within BPL are conserved and promoted through sustainable ecotourism	Physical Characteristics and Infrastructure	No existing eco-tourism site	Infrastructure and facilities are limited in the BPL subject to recommendations of the	2028	Targeted in CADP	DA	DPWH	Development of Infrastructure and Facilities	Botanical Garden constructed	number	1	600	3	500	Buenavista		Construction materials

Goals and Objectives	Component	Current/ Existing Status	Issues and Constraints	Target Year	Targeted in CADP or Additional	Source of Funds	Other agencies involved	Programs, Activities, Projects	Key Performance Indicator	Unit of measurement	Target			Allocated Amount (PHP '000)	Location	Justification / Remarks, if any	COMMODITY
											Quantity	Beneficiaries					
												Individual	Group		Barangay		
			National Museum and approval of DENR														
	Physical Characteristics and Infrastructure	No existing eco-tourism site	Infrastructure and facilities are limited in the BPL subject to recommendations of the National Museum and approval of DENR	2026	Targeted in CADP	DA	DENR	Development of Infrastructure and Facilities	Nurseries established	number	1	600	3	500	Buenavista		Construction materials and planting materials
	Physical Characteristics and Infrastructure	No existing eco-tourism site	Infrastructure and facilities are limited in the BPL subject to recommendations of the National Museum and approval of DENR	2028	Targeted in CADP	DOT	DPWH	Development of Infrastructure and Facilities	Livelihood training center established/ maintained	number	1	600	3	8,000	Buenavista		Construction materials

Goals and Objectives	Component	Current/ Existing Status	Issues and Constraints	Target Year	Targeted in CADP or Additional	Source of Funds	Other agencies involved	Programs, Activities, Projects	Key Performance Indicator	Unit of measurement	Target			Allocated Amount (PHP '000)	Location	Justification / Remarks, if any	COMMODITY
											Quantity	Beneficiaries					
												Individual	Group		Barangay		
Implement programs pertaining to proper solid waste management in accordance with RA 9003 and with local ordinances protecting public, safety and the environment	Environment development, protection and ecosystem management activities	No MRF installed in the BPL	Culture-related issues on SWM, Wastes generated from tourists	2026	Additional	DENR	MLGU	Development of Infrastructure and Facilities	Sanitary Landfill developed	number	1	54068		30,000	Cambuga		Construction Materials
Protect, conserve, and promote sustainable use of ecosystems, sustainably manage forest and enhance biodiversity	Environment development, protection and ecosystem management	Depleting land area for mangrove		2026	Targeted in CADP	DENR	DA	Environment protection ecosystem and natural resources management conservation and development Program	Mangrove seedling distributed	number	1,530	1530	1	1,000	Latangan		Planting Materials/Propagules for Mangrove and Bamboo; Construction Materials and utility support
				2027	Targeted in CADP	DENR	DA	Environment protection ecosystem and natural resources management conservation and development Program	Rainwater catchment and production well / reservoir constructed	number	2	1530	1	500	Latangan		IEC materials, Logistics for Policy Formulation
Regulate the population of tenured migrants	Socio-economic		Selling and mortgaging of CLOA	2027	Targeted in CADP	DAR	DA	Agrarian Reform Beneficiaries Development and	Trainings/workshops / capacity building	number	4	1057	2	400	Cambuga, Buenavista		Training Materials and Logistics

Goals and Objectives	Component	Current/ Existing Status	Issues and Constraints	Target Year	Targeted in CADP or Additional	Source of Funds	Other agencies involved	Programs, Activities, Projects	Key Performance Indicator	Unit of measurement	Target			Allocated Amount (PHP '000)	Location	Justification / Remarks, if any	COMMODITY
											Quantity	Beneficiaries					
												Individual	Group		Barangay		
								Sustainability Program	activities conducted								
				2026		DA	DAR	Crops and Fishery Production Support	Organic agriculture	number	2	60	2	200	Cambuga, Buenavista		Training Materials and Logistics
				2026		DA	DAR	Crops and Fishery Production Support	Technology demonstration established	number	2	60	2	400	Cambuga, Buenavista		Training Materials and Logistics
				2027		DAR	DA	Livestock Production Support	Beef Cattle distributed	heads	50	50	2	2,000	Cambuga, Buenavista		Beef Cattle dispersed
				2027				Agricultural and Fishery Equipment Support	Pump and engine installed	number	4	82	1		Buenavista		4 units pump and engine provided
Protect Public Health, Safety and Environment	Physical Characteristics and Infrastructure	Convergence areas are prone to hazards (typhoon, rain-induced landslide and flooding)	No safe evacuation Center in the convergence areas;	2027	Additional	NDRRMC	OCD	Development of Infrastructure and Facilities	Evacuation Center	#N/A	1	3835	1	10,000	Cambuga		Construction Materials
				2027	Additional	DENR	MLGU	Development of Infrastructure and Facilities		number	1	54068		10,000	Cambuga		Construction Materials
				2027	Additional	DENR	BLGU, MLGU	Environment protection ecosystem	Forest guard	number	15	54068		1,700	Cambuga, Buenavista, Latangan		Employment

Goals and Objectives	Component	Current/ Existing Status	Issues and Constraints	Target Year	Targeted in CADP or Additional	Source of Funds	Other agencies involved	Programs, Activities, Projects	Key Performance Indicator	Unit of measurement	Target			Allocated Amount (PHP '000)	Location	Justification / Remarks, if any	COMMODITY
											Quantity	Beneficiaries					
												Individual	Group		Barangay		
								and natural resources management conservation and development Program	deployed/ hired								
				2028	Additional	DENR	BLGU, MLGU	Environment protection ecosystem and natural resources management conservation and development Program	Forest guard deployed/ hired	number	15	54068		1,700	Cambuga, Buenavista, Latangan		Employment
				2028	Additional	DENR	MLGU, BLGU	Environment protection ecosystem and natural resources management conservation and development Program	Agroforestry and watershed management	number	1	54068		1,500	Cambuga, Buenavista, Latangan		Policies, IECs and Development Plans

4.2 Development Issues and Problems

Development Constraints:

Inefficiencies with micro-economy. Imbalances in farmer sectors are evident in the convergence area as the poverty incidence and poverty threshold are evident. Additionally, farmers should be extensively encouraged to adopt multiple cropping, off-season farming, and related technologies in order to maximize their income. Also, farmers lack the capacity to maximize the area for production.

Lack of Financial Capital. Farmers in the convergence area have limited access to credit and financial support to venture into enterprise development. Insurance coverage to crops during disaster and calamities are meager and not even enough to restart.

Missing Markets. The convergence areas lack the FMR infrastructure to deliver produce to markets. Although, just recently, PRDP Scale Up has been on-going for its 15.33 km Bagupaye to San Pedro FMR with Bridges, spanning the barangays of Bagupaye, Cambuga, Mabini, and San Pedro. The copra traders usually monopolized the buyers in the town who later sold copra as determined by Chinese businessmen in Lucena City.

Over-Exploitation of Environment Capital. The convergence area consists of forestry, agroforestry, and grassland ecosystems. Although, in reality, the areas are already production areas of coconut, banana, corn, and other crops. The mangrove area has continuously depleted, thus, the interventions locally and institutionally (by DENR) have to be implemented. Moreso, there are farmers who practice the use of synthetic fertilizers that are detrimental to the environment and future yield.

Development Potentials of the Convergence Area:

- Protect, conserve, and promote sustainable use of ecosystems, sustainably manage forest and enhance biodiversity.
  This is possible through forest and fruit bearing trees and crops are planted, hence increasing productivity without dwindling effects to the ecosystem. Possible watershed areas (for study by DENR) will also be protected thereby sustaining the flora and fauna in Mt. Kamhantik and improving water quality to Mulanay River that is eyed as the main source of the proposed PPP water system project of the municipality. Increasing the area planted with mangrove sustains marine resources and the conservation and protection of sea turtles and marine biodiversity.
- Conserve and promote the Archaeological sites within Bondoc Peninsula through sustainable ecotourism and conduct of research studies.
  Mt. Kamhantik as an Archaeo-Ecotourism Site is unique. It has been declared as a ***"national cultural treasure".*** It is therefore imperative that conservation and promotion of Mt. Kamhantik as an archaeological site for ecotourism and conduct of research studies should be encouraged.
- Strengthen local institutions and encourage their full and active participation and cooperation in ecotourism development.
  Consequently, stakeholders and other institutions will be provided proactive participation in the convergence area from planning to implementation and monitoring and evaluation to let them embrace the principles/policies of NCI-SRD. This leads to more environmental awareness, including solid waste management, ecosystem preservation and conservation, and marine resources management. Ecotourism development also opens opportunities for job creation and entrepreneurial activities from product development strengthened from market/feasibility studies.

To prepare Watershed Characterization and Vulnerability Assessment (WCVA), Integrated Management Plan (IWMP) and Watershed Management Council, Registration and mapping of water resources areas, and Tree- growing activity to increase forest cover

- To prepare Watershed Characterization and Vulnerability Assessment (WCVA), Integrated Management Plan (IWMP) and Watershed Management Council, Registration and mapping of water resources areas, and Tree- growing activity to increase forest cover

A comprehensive watershed management initiative was implemented, starting with the Watershed Characterization and Vulnerability Assessment (WCVA) to identify risks and guide planning. Based on the assessment, an Integrated Watershed Management Plan (IWMP) was developed to ensure sustainable use and protection of resources. A Watershed Management Council was formed to oversee implementation and stakeholder coordination. Key activities included the registration and mapping of water resource areas and a tree-growing initiative to restore forest cover and enhance ecosystem resilience.

- To capacitate local eco tour guiding accredited by DOT

To support sustainable tourism and enhance visitor experience, a capacity-building program was conducted for local eco-tour guides accredited by the Department of Tourism (DOT). The training aimed to strengthen their knowledge of environmental conservation, cultural heritage, and safety protocols, while improving their communication and guiding skills. This initiative empowers local communities, promotes responsible tourism, and ensures quality service for tourists.

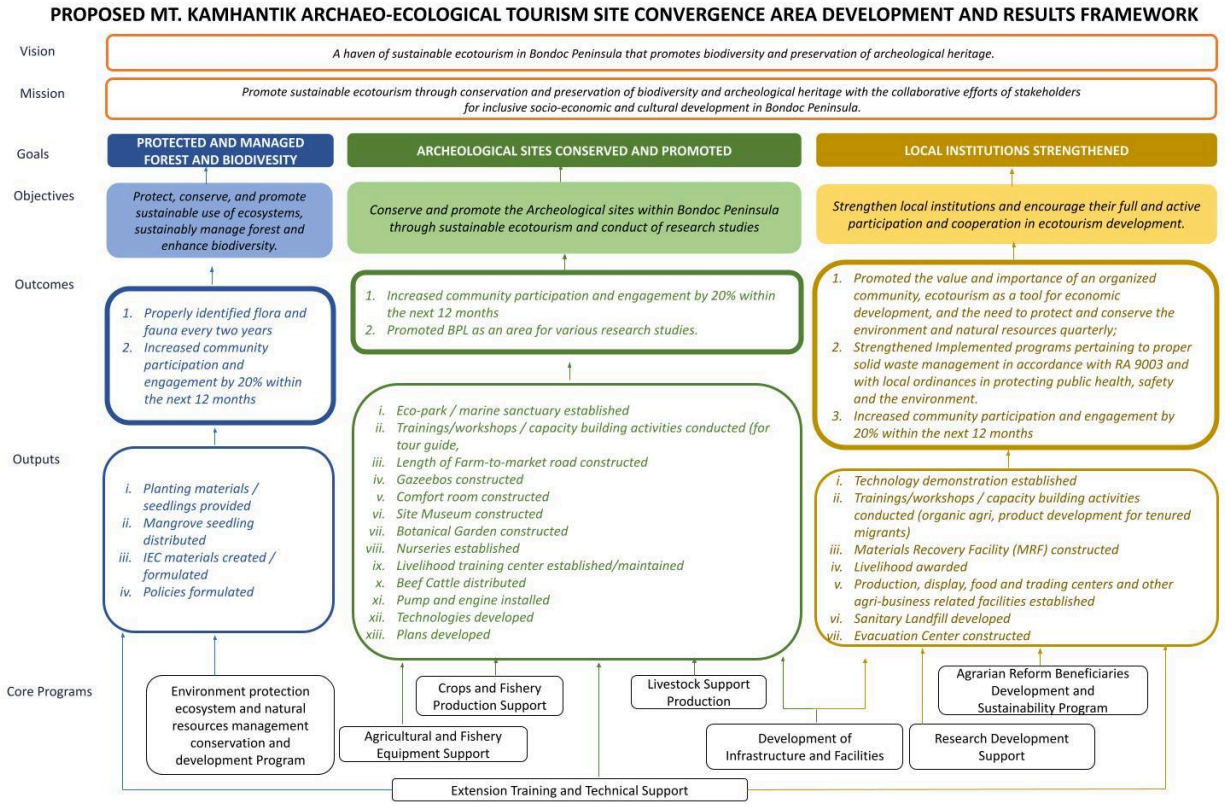
4.3 Proposed Inputs / Activities / Intervention

Component	Current/ Existing Status	Issues and Constraints	Proposed Interventions	Proposed Funding Agency/ies
Environment development, protection and ecosystem management	The convergence area is declared as a protected landscape	Invasive and destructive species	Coordinate with DENR on the forest trees and other fruit trees appropriate to the area. Through PAMB of the DENR, the Ecotourism Management Plan has to be crafted without sacrificing environment development and protection and ecosystem management as well as species site matching.	DENR
	Depleting land area for mangrove	The area becoming less sustainable for biodiversity and less natural mitigation for natural hazards	Designate more areas for mangrove reforestation and to conduct reforestation of appropriate species per zones of mangrove forest	DENR
	Kamhantik Archaeological Site is declared as a "National Cultural Treasure"	Human encroachment	IEC on biodiversity and environmental management	DENR LGU DILG

Component	Current/ Existing Status	Issues and Constraints	Proposed Interventions	Proposed Funding Agency/les
	No existing farm tourism site	Sustainability and use of synthetic fertilizers	Institute and develop more Organic Agriculture and Demo Farms.	DA
	Not yet open to public pending approval from REC	No accredited tour guides in the community	With DOT, cap dev for local tour guides.	DOT
	No MRF installed in the BPL	Culture-related issues on SWM, Wastes generated from tourists	IEC on SWM; Barangay and Sitio-level dialogs on SWM	DENR, MENRO and SWM Focal Person
	Depleting land area for mangrove	Illegal logging and poor awareness	Mangrove replanting	DENR, MLGU
	Poor condition of Sanitary Landfill (SLF)	insufficient manpower and lack appropriation of funds	replanning of SLF and full implementation	DENR, LGU
	No existing and expired plan for environmental management	Poor planning and implementations of program, project and activities	proposed and create plans and policies	DENR, DA, DAR, DILG MLGU, BLGU
	No personnel hired as forest guard	no monitoring at forest land for illegal activities	hire personnel and conduct capacity development	DENR LGU BLGU
Investment requirements based on value chain and market study	No research studies have been undertaken	No government fund is allocated for research	Encourage research & feasibility/market studies by providing incentives.	DTI, DA, DOST and LGU
	No available investor	No proposed investment from private sector	LGU investment program	DTI, DA, DOT, DENR and LGU
Physical Characteristics and Infrastructure	Tourism road is not complete	Poor road network and other lifeline utilities	Completion of tourism road and construction of FMR	DAR, DA DOT, LGU, DENR
	No existing ecotourism site	Infrastructure and facilities are limited in the BPL subject to recommendations of the National Museum and approval of DENR	Construction of: Ecopark Gazeebo Nurseries Site Museum Botanical Garden	DOT, National Museum, DENR
	Convergence areas are prone to hazards (typhoon, rain-induced landslide and flooding)	No safe evacuation Center in the convergence areas;	Construction of a climate resilient Evacuation Center at Brgy. Cambuga	OCD
Socio-economic	No livelihood PAPs are undertaken to communities in the convergence areas	Limited MLGU fund to support livelihood	Livelihood Training Center	DOT, DPWH
	No capacity development and trainings are conducted in the convergence area	Sustainability	Training Workshops/Capability Building Activities Technology Demonstration Organic Agriculture	DA, MLGU

Component	Current/ Existing Status	Issues and Constraints	Proposed Interventions	Proposed Funding Agency/les
	Poor tenurial landholdings	Selling and mortgaging of CLOA due to poverty	Livelihood Support through: Training Workshops/Capability Building Activities Beef Cattle dispersal Pump and engine installed	DAR, DA,LGU

Chapter 5. Vision, Mission, Goals and Objective Statements



Vision

A haven of sustainable ecotourism in Bondoc Peninsula that promotes biodiversity and preservation of archeological heritage.

Mission

Promote sustainable ecotourism through conservation and preservation of biodiversity and archeological heritage with the collaborative efforts of stakeholders for inclusive socio-economic and cultural development in Bondoc Peninsula.

Goals

- Protect, conserve, and promote sustainable use of ecosystems, sustainably manage forest and enhance biodiversity.
- Archeological sites within BPL are conserved and promoted through sustainable ecotourism
- Implemented programs pertaining to proper solid waste management in accordance with RA 9003 and with local ordinances in protecting public health, safety and the environment.
- BPL is promoted as an area for various research studies
- Strengthen local institutions and encourage their full and active participation in and cooperation in ecotourism development

Objectives

1. Properly identify other flora and fauna every two years as a basis for conservation and protection as per Biodiversity Monitoring System (BMS)
    - Comprehensive biodiversity inventory updated every two years.
    - Strengthened conservation and protection measures for identified species.
    - Formulation of policies based on biodiversity assessments.
    - Enhanced ecosystem management through scientific data.

2. Increase community participation in the conservation and protection of BPL by sustaining awareness and activities, achieving a 20% growth in engagement within the next 12 months
    - Increased community involvement in conservation activities.
    - Strengthened collaboration between stakeholders and local communities.
    - More community-led environmental initiatives.
    - Enhanced awareness of the importance of biodiversity protection.

3. Develop a cultural heritage plan for the next five years for the conservation of the archaeological site with collaboration with national cultural agencies
    - Development and implementation of a cultural heritage conservation plan.
    - Protection and restoration of significant archaeological sites.
    - Increased community and stakeholder engagement in heritage conservation.
    - Recognition of BPL as a significant cultural and historical site.

4. Educate the local community on solid waste management laws, including RA 9003, and effectively implement solid waste management schemes with measurable progress within the next year
    - Strengthened implementation of solid waste management programs.
    - Increased awareness and compliance with RA 9003.
    - Reduction in waste pollution and improved environmental conditions.
    - Construction of Materials Recovery Facilities (MRFs) for efficient waste management.

5. Encourage academic institutions, researchers, and other agencies to conduct research studies on biodiversity, ecosystems, and other aspects of BPL yearly
    - Designation of BPL as a research area for biodiversity and ecological studies.
    - Increased partnerships with academic institutions and research agencies.
    - Integration of research findings into conservation and tourism policies.
    - Development of scientific-based approaches for ecosystem protection.

6. Initiate continuous archaeological studies of the heritage site within BPL every two years
    - Regular archaeological documentation and preservation activities.
    - Strengthened research partnerships with national cultural agencies.
    - Increased local and international recognition of BPL's historical significance.
    - Integration of archaeological findings into tourism development plans.

7. Provide orientation with local communities on the value and importance of an organized community, ecotourism as a tool for economic development, and the need to protect and conserve the environment and natural resources quarterly
    - Increased community participation in ecotourism and conservation efforts.
    - Strengthened ecotourism initiatives as a sustainable livelihood option.
    - Enhanced local economic opportunities through responsible tourism.
    - Development of infrastructure and facilities to support ecotourism activities.

Chapter 6. Development Framework

6.1 Convergence Area Framework and Results Indicators (to be based on the NCI-SRD Theory of Change Model and Results Indicators, convergence area goals and objectives)

Theory of Change (ToC) Analysis

The Mt. Kamhantik CADP adopts a structured Theory of Change (ToC) framework to translate its strategic vision into concrete, measurable results. This framework, aligned with the National Convergence Initiative for Sustainable Rural Development (NCI-SRD), maps out how multi-sectoral inputs and activities will lead to desired outputs, short- to long-term outcomes, and eventual impact.

The ToC captures cross-cutting interventions in the areas of infrastructure, materials, policy, technical capacity, equipment, and human resources, which are crucial for transforming Mt. Kamhantik into a resilient and inclusive eco-tourism destination.

Key Highlights by Component

- Infrastructure Investments (e.g., farm-to-market roads, eco-trails, comfort rooms, evacuation centers) are expected to improve mobility and safety in the short term and boost tourism and economic services in the long term.
- Materials and Inputs such as seedlings, mangrove propagules, and plant nurseries directly contribute to forest rehabilitation and increased biodiversity coverage.
- Policy Interventions support sustainable site management and institutional strengthening.
- Technical Support and Training empower farmers and community members with knowledge and practices in organic farming, disaster response, and ecotourism services.
- Machinery, Funds, and Human Resources including pump engines, cattle dispersal, and forest guards enhance productivity, protection, and service delivery.

Each component contributes to intermediate outcomes such as improved farming practices, community participation, marketing of local products, and institutional effectiveness, all of which ultimately support the long-term impacts of:

- Improved governance and eco-tourism services
- Increased forest and mangrove cover
- Sustainable agricultural productivity
- Strengthened community resilience

Inputs	Activities	Output	Key Result Areas		
			Short-Term	Medium-Term	Long-Term
Infrastructure	Concreting of FMR	9.2 km FMR constructed	Improved road network within the convergence areas	Expanded opportunities for Tourism Development	Improved governance
	Plan for Development and Activities in Mt. Kamhantik	Eco-trails constructed	Efficient transport of goods and services	Boost in economic activities within the tourism site	Improved Tourism services
		Tourist Resting Area			
		Souvenir Shop			
		Comfort Rooms			
		View Deck			
		Site Museum			
	Development and Construction of Sanitary Landfill	Sanitary Landfill developed and constructed	Improved waste management in the Municipality	Increased community participation in	Improved Environment and

Inputs	Activities	Output	Key Result Areas		
			Short-Term	Medium-Term	Long-Term
				efficient waste management	ecosystem services
	Installation of MRF in the convergence area	Materials Recovery Facility installed	Improved waste management in the Municipality	Increased community participation in efficient waste management	Improved Environment and ecosystem services
	Construction of Evacuation Center	Evacuation Center constructed	Improved LGU capacity for disaster preparation and response		Resilient Municipality
Materials and Supplies	Provision/Distribution of planting materials/ seedlings	Planting materials/seedlings provided:	Increase in population of fruit and forest trees within the convergence area	Expanded opportunities for marketing of produce	Improved environment and ecosystem services
		Vegetables, corn and other crops distributed to 60 farmers in the convergence area			
		Planted fruit bearing trees: Pili, etc.			
		Planted 1,800 forest trees (convergence area of 90/quarter X 4 quarters X 5 years)			
	Mangrove seedlings/propagules distributed	Planting of 1,000 mangrove propagules every year	Increased population of mangrove within the convergence area	High survival rates (70%) of mangrove planted	Increased mangrove area by 30%
	Establishment of 1 Plant Nursery in Barangay Buenavista	1 Plant Nursery in Barangay Buenavista established	increased seedling production	Sustained supplies of seedlings	Improved ecosystem services
		IEC Materials created/ formulated			
Policies	Policy Formulation for Sustainable Archeo-Ecotourism of Mt. Kamhantik Convergence Area	Policies formulated	Improved Policies for Sustainable Archeo-ecotourism of Mt. Kamhantik	Enhanced Institutional Dynamics	Improved Policy on Sustainable Archeo-Ecotourism of Mt. Kamhantik Convergence Area
Technical Expertise	Trainings/Workshops/ Capacity Development conducted:		Improved technical capability of farmer-beneficiaries in crop/ livestock production	Improved Farming Practices	Improved Crop Yield
	Technology Demonstration for farmers of 3		Improved technical capability of farmer-beneficiaries	Improved Farming Practices	Improved Crop Yield

Inputs	Activities	Output	Key Result Areas		
			Short-Term	Medium-Term	Long-Term
	barangays of convergence area		in crop/ livestock production		
	Training on Organic Agriculture for the farmer associations of 3 Brgys		Improved technical capability of farmer-beneficiaries on organic farming	Improved Organic Farming Practices	Organic Agriculture practiced by 50% of farmers in the convergence area
Machinery and Equipment	Provision of pump engine	pump engine installed	Improved water supply	Improved farming efficiency	Sustained agricultural production
Funds	Beef Cattle Dispersal	50 heads of beef cattle dispersed	Increased livestock population	Improved cattle production	sustained supply of beef cattle in the municipality
Human Resources	Hiring of 15 Forest Guards from 2027 onwards	15 Forest Guards hired from 2027 onwards	Increased facility security	Improved Forest Protection	Improved Environment and ecosystem services
					Improved governance
					Improved Tourism Services

6.2 Spatial Strategy and Integration

The Mulanay River Watershed outlines the spatial strategy for the Mt. Kamhantik Archaeo-Ecological Tourism Site Convergence Area Development Plan (CADP). The Spatial Structure Plan integrates land-use planning, conservation efforts, and sustainable development strategies, ensuring that natural resources, biodiversity, and local communities benefit from a balanced approach to environmental protection and economic progress.

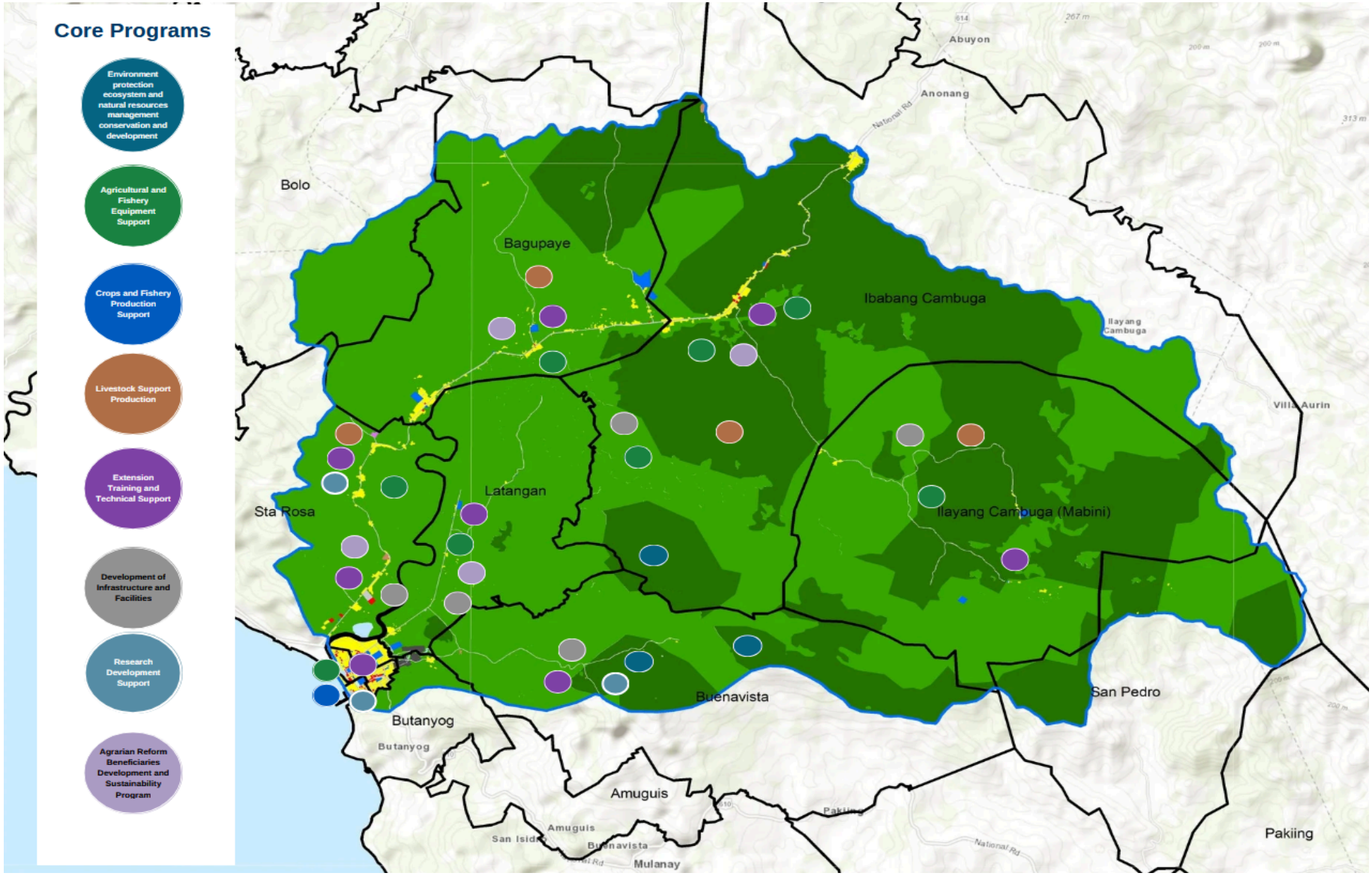
1. Watershed Protection and Environmental Conservation
    - The Mulanay River Watershed, as depicted in green and dark green, signifies a critical ecological zone where conservation and biodiversity management are prioritized.
    - Core programs such as environmental protection, reforestation, and natural resource management are implemented to preserve forest cover and prevent land degradation.
    - Specific sites for agricultural and fishery support, livestock production, and eco-friendly livelihood programs are identified to maintain ecological balance while supporting local economic activities.

2. Sustainable Land Use and Development Zones
    - Different land-use categories, including agricultural, agro-industrial, residential, and infrastructure zones, ensure a well-planned spatial distribution of development.
    - The integration of solid waste management initiatives and climate resilience projects aligns with the sustainable land management objectives of the CADP.
    - Key infrastructure such as eco-tourism facilities, training centers, and livelihood hubs are strategically placed to support community-based tourism and cultural heritage conservation.
    -

3. Cultural and Archaeological Site Preservation
    - The Mt. Kamhantik Archaeological Site, located within the watershed, is a central feature of the CADP.
    - The plan includes protection measures for heritage sites, ensuring that archaeological resources are safeguarded while promoting responsible and sustainable tourism.
    - Research and development support is mapped out to encourage academic institutions and agencies to conduct further studies on the historical and cultural significance of the area.

4. Community-Based Development and Institutional Strengthening
    - The map highlights barangay-level participation in environmental protection and tourism-related initiatives.
    - Core programs such as agrarian reform sustainability, infrastructure development, and capacity-building workshops ensure that local communities benefit from the economic and social opportunities provided by the CADP.
    - The integration of extension training and technical support aligns with the Aangat Aasenso advocacy, ensuring that inclusive growth and community empowerment remain at the heart of development efforts.

The spatial strategy embedded in the Mt. Kamhantik Archaeo-Ecological Tourism Site Convergence Area Development Plan (CADP) ensures a harmonized approach to conservation, heritage preservation, and socio-economic development. By integrating ecological protection, sustainable tourism, and inclusive governance, the CADP sets a strong foundation for the long-term resilience and prosperity of Mulanay and the Bondoc Peninsula.



Map 9 Spatial Structure Planning Map

6.3 Physical (Programs and Projects) and Financial Plan

Target Year	Targeted in CADP or Additional	Source of Funds	Other agencies involved	Programs, Activities, Projects	Key Performance Indicator	Unit of measurement	Quantity	Target Beneficiaries		Allocated Amount (PHP '000)	Location	Justification / Remarks, if any	COMMODITY
								Individual	Group		Barangay		
2026	Targeted in CADP	DENR	DA	Environment protection ecosystem and natural resources management conservation and development Program	Planting materials / seedlings provided	pieces	3,000	1000	3	500	Buenavista, Cambuga, Latangan		Assorted fruit bearing and native trees (1,000 native trees, 1000 fruit-bearing, 1000 Pili)
2026	Targeted in CADP	DA	DOT, MLGU	Crops and Fishery Production Support	Technology demonstration established	number	1	50	3	450	Buenavista, Cambuga, Latangan		Farm Inputs, Trainings
2026	Targeted in CADP	DOT	MLGU	Extension Training and Technical Support	Trainings/workshops / capacity building activities conducted	number	3	60	3	300	Buenavista, Cambuga, Latangan		Trainings
2026	Targeted in CADP	DA	DOT, DA-PhilMech, DPWH, DAR	Development of Infrastructure and Facilities	Length of Farm-to-market road constructed	kilometers	2	16783	3	150,000	Latangan, Buenavista		FMR with Bridge Component
2027	Targeted in CADP	MLGU	DENR	Development of Infrastructure and Facilities	Gazebos constructed	number	3	150	3	600	Buenavista		Construction materials
2027	Targeted in CADP	DOT	MLGU	Development of Infrastructure and Facilities	Comfort room constructed	number	2	150	3	1,000	Buenavista		Construction materials
2028	Targeted in CADP	DOT	MLGU	Development of Infrastructure and Facilities	Site Museum constructed	number	1	150	1	2,000	Buenavista		Construction materials
2028	Targeted in CADP	DA	DPWH	Development of Infrastructure and Facilities	Botanical Garden constructed	number	1	600	3	500	Buenavista		Construction materials
2026	Targeted in CADP	DA	DENR	Development of Infrastructure and Facilities	Nurseries established	number	1	600	3	500	Buenavista		Construction materials and planting materials
2028	Targeted in CADP	DOT	DPWH	Development of Infrastructure and Facilities	Livelihood training center established/maintained	number	1	600	3	8,000	Buenavista		Construction materials

Target Year	Targeted in CADP or Additional	Source of Funds	Other agencies involved	Programs, Activities, Projects	Key Performance Indicator	Unit of measurement	Quantity	Target Beneficiaries		Allocated Amount (PHP '000)	Location Barangay	Justification / Remarks, if any	COMMODITY
								Individual	Group				
2026	Targeted in CADP	DENR	DA	Environment protection ecosystem and natural resources management conservation and development Program	Mangrove seedling distributed	number	3,000	1530	1	1,000	Latangan		Planting Materials/Propagules for Mangrove and Bamboo; Construction Materials and utility support
2026	Targeted in CADP	DENR	DA	Environment protection ecosystem and natural resources management conservation and development Program	IEC materials created / formulated (brochures, flyers, primers)	number	2	1530	1	500	Latangan		IEC materials, Logistics for Policy Formulation
2026	Targeted in CADP	DENR	DA	Environment protection ecosystem and natural resources management conservation and development Program	Policies formulated (i.e. resolutions)	number							
2026	Targeted in CADP	DAR	DA	Agrarian Reform Beneficiaries Development and Sustainability Program	Trainings/workshops / capacity building activities conducted	number	4	1057	2	400	Cambuga, Buenavista		Training Materials and Logistics
2026	Targeted in CADP	DA	DAR	Crops and Fishery Production Support	Organic agriculture	number	2	60	2	200	Cambuga, Buenavista		Training Materials and Logistics
2026	Targeted in CADP	DA	DAR	Crops and Fishery Production Support	Technology demonstration established	number	2	60	2	400	Cambuga, Buenavista		Training Materials and Logistics
2027	Targeted in CADP	DAR	DA	Livestock Production Support	Beef Cattle distributed	heads	50	50	2	2,000	Cambuga, Buenavista		Beef Cattle dispersed
2027	Targeted in CADP	DA		Agricultural and Fishery Equipment Support	Pump and engine installed	number	4	82	1		Buenavista		4 units pump and engine provided

Target Year	Targeted in CADP or Additional	Source of Funds	Other agencies involved	Programs, Activities, Projects	Key Performance Indicator	Unit of measurement	Quantity	Target Beneficiaries		Allocated Amount (PHP '000)	Location Barangay	Justification / Remarks, if any	COMMODITY
								Individual	Group				
2027	Targeted in CADP	MLGU	DENR	Development of Infrastructure and Facilities	Materials Recovery Facility (MRF) constructed	number	2	150	1	300	Buenavista		Construction materials
2027	Targeted in CADP	DOST	DENR		Technologies developed	number	3			450	All barangays		Data-base and IEC, Value-Chain Analysis, Market Study, Research & Development on Archaelogy
2027	Targeted in CADP	DA	DSWD	Extension Training and Technical Support	Livelihood awarded	number	1	600	3	300	Buenavista, Cambuga, Latangan		Livelihood projects in agribusiness ventures
2027	Targeted in CADP	DA		Market Development and Logistics Support	Production, display, food and trading centers and other agri-business related facilities established	number					Buenavista		Construction materials
2027	Targeted in CADP	DA	DTI	Extension Training and Technical Support	Trainings/workshops / capacity building activities conducted	number	4	600	3	300	Buenavista, Cambuga, Latangan		CapDev and Trainings conducted
2026	Targeted in CADP	DBM	MLGU	Development of Infrastructure and Facilities	Sanitary Landfill developed	number	1	54068		10,000	Cambuga		Construction Materials
2027	Targeted in CADP	NDRRMC	Office of Civil Defense	Development of Infrastructure and Facilities	Evacuation Center constructed	number	1	3835	1	10,000	Cambuga		Construction Materials
2027	Targeted in CADP	DBM	MLGU	Development of Infrastructure and Facilities	Sanitary Landfill developed	number	1	54068		10,000	Cambuga		Construction Materials
2028	Targeted in CADP	DBM	MLGU	Development of Infrastructure and Facilities	Sanitary Landfill developed	number	1	54068		10,000	Cambuga		Construction Materials
2028	Targeted in CADP	DOST	DENR, DA-BSWM	Research Development Support	Research facilities established	number	1	54068		3,000	All barangays		

Target Year	Targeted in CADP or Additional	Source of Funds	Other agencies involved	Programs, Activities, Projects	Key Performance Indicator	Unit of measurement	Quantity	Target Beneficiaries		Allocated Amount (PHP '000)	Location Barangay	Justification / Remarks, if any	COMMODITY
								Individual	Group				
2027	Targeted in CADP	DPWH	MLGU, DOST	Development of Infrastructure and Facilities	Rainwater catchment and production well / reservoir constructed	number	1			10,000	Latangan		Construction Materials
2027	Targeted in CADP	DA	DA	Extension Training and Technical Support	Technical assistance provided	number	1		3	300	Buenavista, Cambuga, Latangan		CapDev and Trainings conducted
2027	Targeted in CADP	DENR	MLGU, BLGU	Environment protection ecosystem and natural resources management conservation and development Program	Forest guard deployed/ hired	number	15	54068	3	1,700	Buenavista, Cambuga, Latangan		Employment
2028	Targeted in CADP	DENR	MLGU, BLGU	Environment protection ecosystem and natural resources management conservation and development Program	Forest guard deployed/ hired	number	15	54068	3	1,700	Buenavista, Cambuga, Latangan		Employment
2028	Targeted in CADP	DENR	MLGU, BLGU	Environment protection ecosystem and natural resources management conservation and development Program	Agroforestry and watershed management	number	1	54068		1,500	Buenavista, Cambuga, Latangan		Policies, IECs, and Development Plans

6.4 Risk Management Plan

Risk	Barangay	Description of Risk	Occurrence	Severity	Prioritization	Action	Assigned Agency	Remarks
Flood	Buenavista	Areas likely to experience flood heights of 1 meter up to 2 meters and/or flood duration of more than 3 days. Sites including active river channels, abandoned river channels and areas along riverbanks, are immediately flooded during heavy rains of several hours and are prone to flash floods. These may be considered not suitable for permanent habitation but may be developed for alternative uses subject to the implementation of appropriate mitigation measures after conducting site-specific geotechnical studies as deemed necessary by project engineers and LGU building officials.	1	Low	4	Implementation of Programs, Projects and Activities • Conduct studies/assessment on the elevation of the municipality as a factor of flood risk. • Consistent/Continuous turnover of project plan and implementation (political term) • Establishment of catchment or impounding facility of rainwater which can be used for irrigation and aquaculture • Strengthen the existing efforts of the LGU towards livelihood programs and social development projects • Design and implement appropriate early warning system and other non-structural mitigation measures like reforestation	MDRRMO, DAR, DENR, DA, MAO, MPDO, DOT and PLGU	

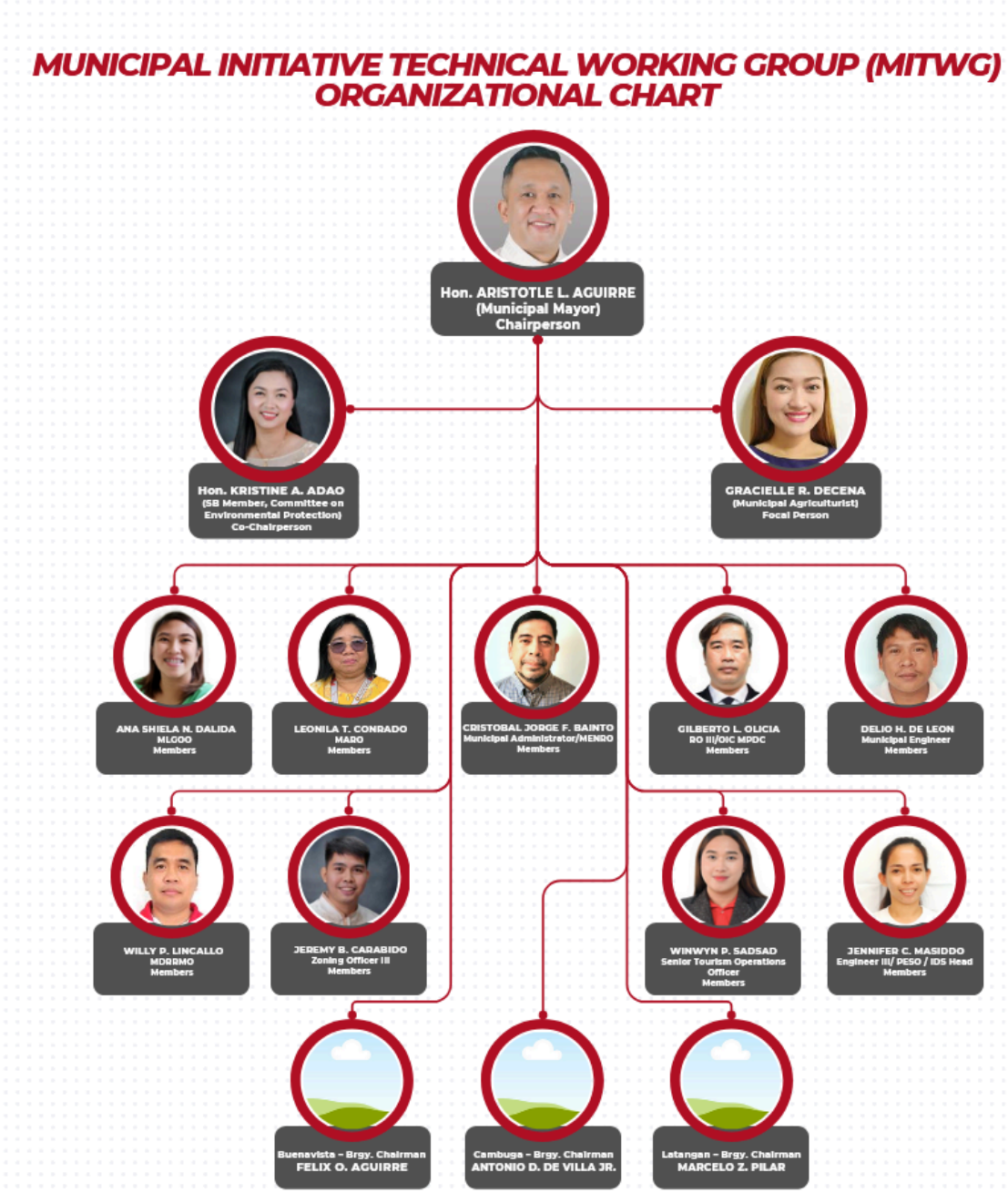
Risk	Barangay	Description of Risk	Occurrence	Severity	Prioritization	Action	Assigned Agency	Remarks
	Cambuga, Latangan	Areas likely to experience flood heights of 1 meter up to 2 meters and/or flood duration of more than 3 days. Sites including active river channels, abandoned river channels and areas along riverbanks, are immediately flooded during heavy rains of several hours and are prone to flash floods. These may be considered not suitable for permanent habitation but may be developed for alternative uses subject to the implementation of appropriate mitigation measures after conducting site-specific geotechnical studies as deemed necessary by project engineers and LGU building officials.	3	Moderate to High	2	Implementation of Programs, Projects and Activities • Conduct studies/assessment on the elevation of the municipality as a factor of flood risk. • Consistent/Continuous turnover of project plan and implementation (political term) • Establishment of catchment or impounding facility of rainwater which can be used for irrigation and aquaculture • Strengthen the existing efforts of the LGU towards livelihood programs and social development projects • Design and implement appropriate early warning system and other non-structural mitigation measures like mangrove reforestation	MDRRMO, DAR, DENR, DA, MAO, MPDO, DOT and PLGU	

Risk	Barangay	Description of Risk	Occurrence	Severity	Prioritization	Action	Assigned Agency	Remarks
Rain -induced Landslide	Buenavista	PHIVOLCS defines landslide as "the mass movement of rock, soil, and debris down a slope due to gravity." Rain-induced landslides are landslides triggered by intense rainfall.	3	Moderate to High	2	Implementation of Programs, Projects and Activities 1. Identify possible relocation site for high-risk households 2. Conduct of geologic study over the areas 3. Installation of coconets and revegetation in landslide prone areas to improve slope stability 4. Relocation and No build zone 5. Intensive study and continue preventive measures 6. The existing housing projects should come with livelihood programs effective for the relocation areas 7. Design financial assistance for retrofitting residential areas and implement housing design reconsiderations 8. Increase structural investments for infrastructure-related mitigation measures such as riprap to protect the residential areas at moderate risk	MDRRMO, DAR, DENR, DA, MAO, MPDO, DOT and PLGU	
	Cambuga, Latangan	PHIVOLCS defines landslide as "the mass movement of rock, soil, and debris down a slope due to gravity." Rain-induced landslides are landslides triggered by intense rainfall.	3	Moderate	2		MDRRMO, DAR, DENR, DA, MAO, MPDO, DOT and PLGU	
	Latangan, Mabini, Butanyog, San Pedro	Sloping terrain and deforested areas at risk of soil erosion and landslides, particularly during prolonged heavy rainfall and typhoons. Some residential areas and agricultural lands are at risk.	4	High	2	Implementation of slope stabilization measures, reforestation programs, and relocation of households in high-risk zones	MDRRMO, DENR, DPWH, LGU Mulanay, NHA	

Risk	Barangay	Description of Risk	Occurrence	Severity	Prioritization	Action	Assigned Agency	Remarks
Coastal Erosion & Storm Surge	Bagupaye, Bolo, Buenavista	Coastal communities face risks from rising sea levels, storm surges, and typhoons, which threaten infrastructure, livelihoods, and fisheries.	3	Moderate	3	Mangrove reforestation, construction of sea walls or breakwaters, and sustainable coastal management programs	DENR, DA-BFAR, MDRRMO, DOT	
Drought & Water Scarcity	Cambuga, Santa Rosa, Butanyog, Mabini	Extended dry seasons and deforestation contribute to reduced water availability, affecting agriculture and household water supply.	3	Moderate	4	Implementation of watershed rehabilitation projects, construction of rainwater harvesting systems, and promotion of climate-resilient agriculture	DA, DENR, LGU Mulanay, MENRO, NIA	
Deforestation & Illegal Logging	San Pedro, Latangan, Santa Rosa, Mabini	Unregulated logging and land conversion threaten biodiversity and increase the risk of landslides and reduced water retention in forest areas.	4	High	2	Strict enforcement of forest protection laws, community-based reforestation programs, and alternative livelihood programs for upland communities	DENR, MENRO, LGU Mulanay, PNP, NGP	

Chapter 7. Implementation Plan

7.1 Organizational Structure



7.2 Roles and Functions of the MCI-TWG

The Municipal Convergence Initiative Technical Working Group (MCI-TWG) shall have the following functions:

1. Propose and/or endorse convergence are/s to the RCI TWG based on the selection criteria;
2. Develop the Convergence Area Development Plan (CADP) of the approved convergence area/s, in collaboration with the RCI TWG;
3. Implement PAPs under the approved CADP and the NCI-SRD within the municipality, in collaboration with the RCI TWG; and
4. Update the CADP from time to time as may be necessary. *(Based on DA-DAR-DENR-DILG Joint Administrative Order No. 1, Series of 2020)*

7.3 Measures to augment capabilities

To systematically present the measures to enhance capabilities for the successful implementation of the Convergence Area Development Plan (CADP), the following table categorizes key strategies under six (6) major areas: Institutional Strengthening, Capacity Building, Financial Mobilization, Infrastructure Development, Research & Innovation, and Community Engagement.

Table 27 Institutional Strengthening and Governance Enhancement

Measure	Description	Responsible Agency
Formation of a Dedicated CADP Management Team	Establish a Municipal CADP Coordinating Office (MCCO) to oversee planning, execution, and monitoring.	LGU, DILG
Policy and Legal Framework Development	Strengthen local ordinances to institutionalize CADP programs.	LGU, Sangguniang Bayan
Inter-Agency Collaboration	Strengthen linkages with DENR, DA, DOT, NCIP, DTI, and DILG for technical and regulatory support.	LGU, National Government Agencies (NGAs)

Table 28 Capacity Building and Training Programs

Measure	Description	Target Beneficiaries	Implementing Partners
Technical Skills Training	Conduct training on sustainable agriculture, eco-tourism, biodiversity conservation, and disaster resilience.	Farmers, Fisherfolk, Entrepreneurs	DA, DENR, DOT, TESDA
Leadership and Governance Training	Equip LGU officials and community leaders with governance and policy advocacy skills.	LGU Officials, Barangay Leaders	DILG, Academe
Technology Transfer and Digital Skills Development	Train communities in GIS mapping, remote sensing, and digital marketing.	Local Communities, Entrepreneurs	DOST, Academe, Private Sector

Table 29 Financial and Resource Mobilization

Measure	Description	Funding Source
Local Government Investment	Increase budget allocation for CADP programs in the Annual Investment Plan (AIP).	LGU
Grant and Fund Sourcing	Apply for funding from GEF, UNDP, GCF, and other donors.	International Organizations, National Agencies
Public-Private Partnerships (PPP)	Engage private investors in eco-tourism, agribusiness, and infrastructure development.	Private Sector, Investors
Community-Based Financing Mechanisms	Promote cooperative-driven savings and microfinance for local entrepreneurs.	Cooperatives, NGOs, Microfinance Institutions

Table 30 Infrastructure and Logistics Improvement

Measure	Description	Priority Areas	Implementing Agencies
Sustainable Infrastructure Development	Invest in climate-resilient roads, eco-tourism facilities, and water systems.	Rural & Remote Areas	DPWH, LGU, DOT
Digital Connectivity Expansion	Improve internet access and mobile connectivity in remote areas.	Rural Barangays	DICT, Private Telcos
Transportation and Market Linkages	Enhance farm-to-market roads and trading centers to boost economic activities.	Agricultural Zones	DA, DPWH, LGU

Table 31 Research, Innovation, and Knowledge Management

Measure	Description	Research Partners
Partnerships with Universities and Research Institutions	Collaborate with UPLB, DOST, and SUCs on research for climate change adaptation and sustainable livelihoods.	UPLB, DOST, SUCs
Community-Based Monitoring & Evaluation (M&E)	Establish participatory M&E frameworks where local communities assess project impacts.	LGU, NGOs, Academe
Documentation and Knowledge Sharing	Develop case studies, knowledge products, and training manuals for replication.	Research Institutions, NGOs

Table 32 Strengthening Community Engagement and Participation

Measure	Description	Target Beneficiaries	Supporting Agencies
People's Organizations and Cooperatives Strengthening	Form cooperatives and eco-tourism associations to ensure community-led economic activities.	Local Cooperatives, Farmer Groups	CDA, DOT, DTI
Youth and Women Empowerment Programs	Encourage participation in environmental conservation, cultural heritage, and social enterprises.	Women, Youth Groups	LGU, NGOs, Academe
Regular Stakeholder Consultations	Organize annual CADP Summits to gather feedback and align programs with community needs.	General Public, LGU, Investors	LGU, National Agencies

7.4 Relevant post-implementation structure of the program

Ensuring the sustainability and long-term impact of the Convergence Area Development Plan (CADP) requires a well-defined post-implementation structure. This structure will focus on governance, monitoring, evaluation, and continuous stakeholder engagement to maintain and enhance the outcomes of the project. The post-implementation framework will involve the following key components:

1. Institutional and Governance Framework

- Lead Implementing Body: A designated Local Development Council (LDC) - CADP Oversight Committee will be established under the Municipal Government. This committee will be responsible for ensuring that all projects under the CADP continue to align with national and local development priorities.

- Stakeholder Coordination Mechanism: The CADP Oversight Committee will work closely with barangay officials, government agencies, NGOs, academic institutions, and private sector partners to sustain and expand initiatives.

- Policy and Legislative Support: The Local Government Unit (LGU) will develop ordinances and policies to institutionalize key aspects of the CADP, such as environmental conservation, ecotourism management, and heritage site preservation.

2. Monitoring and Evaluation (M&E) System

- Performance Metrics: A CADP Performance Monitoring Team will be created to track key indicators such as biodiversity conservation, economic benefits from ecotourism, and community engagement levels.

- Annual Review and Assessment: Regular multi-stakeholder reviews will be conducted to assess the progress of the CADP implementation and recommend adjustments as needed.

- Digital Monitoring Tools: Geographic Information Systems (GIS), remote sensing, and other digital tools will be utilized to track land-use changes, ecosystem health, and infrastructure development.

3. Community Involvement and Capacity Building

- Sustainability Training: Continuous education programs will be offered to local communities, cooperatives, and business groups on topics such as responsible ecotourism, biodiversity conservation, and solid waste management.

- Local Enterprise Support: The LGU will provide business development assistance and financial support to local cooperatives involved in eco-friendly tourism, sustainable agriculture, and handicrafts production.

- Public-Private Partnerships (PPP): Strategic partnerships with private sector companies, universities, and NGOs will ensure that necessary expertise and financial resources are available for long-term sustainability.

4. Financial and Resource Mobilization

- LGU Budget Allocation: The local government will allocate a portion of its Annual Investment Plan (AIP) to fund CADP-related programs and infrastructure.

- Grant and Funding Mechanisms: The LGU, in partnership with national agencies such as DENR, DOT, and DA, will actively seek funding opportunities from both government and international organizations.

- Revenue Generation from Ecotourism: Sustainable tourism activities, such as guided heritage tours, eco-parks, and cultural events, will generate revenue to fund conservation and community development initiatives.

5. Adaptive Management and Continuous Improvement

- Feedback Mechanism: The establishment of a CADP Feedback and Grievance Redress System will allow local communities and stakeholders to report concerns and suggest improvements.

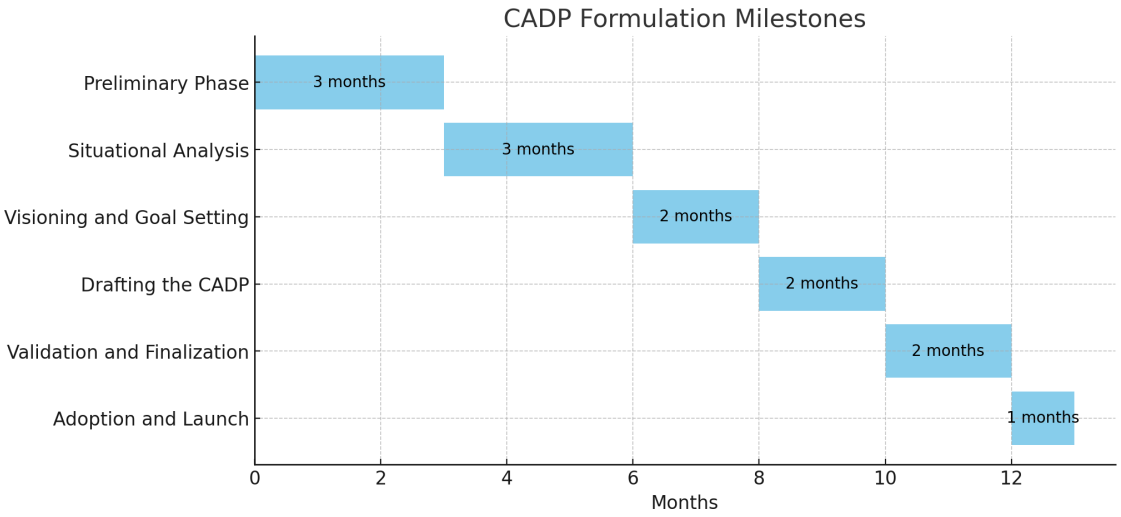
- Research and Innovation: Collaboration with academic institutions and research organizations will enable ongoing studies on biodiversity conservation, sustainable tourism, and climate resilience.

- Scalability and Replication: Best practices from the CADP implementation will be documented and shared with neighboring municipalities to promote replication and expansion of the model.

7.5 Harmonized Work Plan in the Preparation of the Convergence Area Development Plan (CADP)

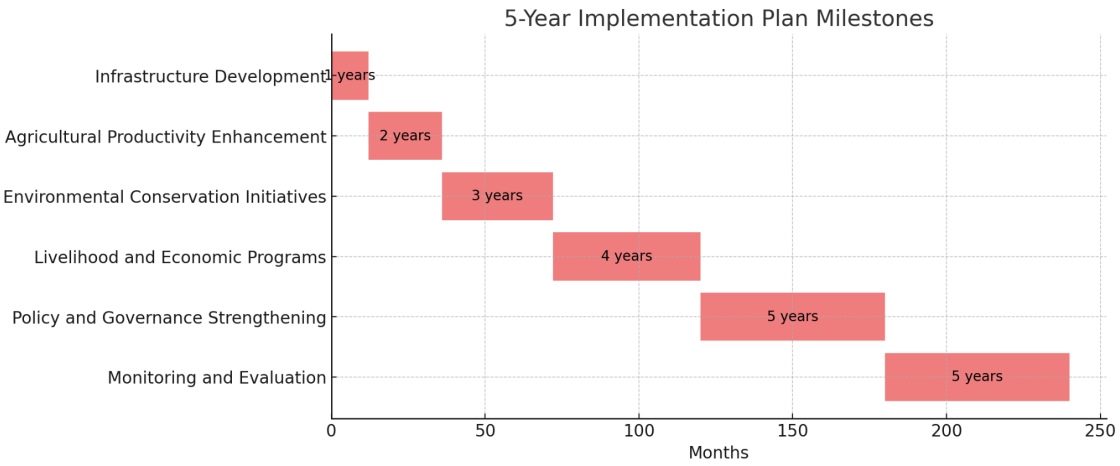
1. CADP Formulation Milestones

Milestone	Activities	Timeframe
Preliminary Phase	Stakeholder consultations, initial site assessment, and data gathering.	Month 1–3
Situational Analysis	Conduct environmental, socio-economic, and cultural assessments. Identify key constraints and opportunities.	Month 4–6
Visioning and Goal Setting	Define development goals, objectives, and expected outcomes based on consultation findings.	Month 7–8
Drafting the CADP	Develop the initial draft, integrate sectoral plans, and validate with stakeholders.	Month 9–10
Validation and Finalization	Conduct public hearings, refine the plan based on feedback, and secure approvals.	Month 11–12
Adoption and Launch	Official adoption of the CADP by the local government and implementation partners.	Month 13



2. 5-Year Implementation Plan Milestones

Year	Key Focus Areas	Major Activities
Year 1	Institutional Strengthening and Capacity Building	Formation of committees, training for LGUs and stakeholders, policy integration, and mobilization of initial resources.
Year 2	Infrastructure and Livelihood Development	Construction of eco-tourism sites, livelihood training centers, and basic infrastructure (e.g., farm-to-market roads).
Year 3	Ecological Protection and Conservation	Implementation of forest restoration, biodiversity conservation, and solid waste management programs.
Year 4	Tourism and Research Development	Promotion of Mt. Kamhantik as a heritage and eco-tourism destination, conduct of archaeological and environmental studies.
Year 5	Sustainability and Monitoring	Institutionalization of sustainable practices, continuous assessment, and improvement of CADP initiatives.



3. Leveraging Mechanism

1. Conduct of Investment Forums, Business Conferences, Joint Planning Workshops, and/or Interagency Convergence activities
    - These events will be organized to present investment opportunities, funding requirements, and project benefits to potential investors and funding agencies. Funding sources may include National Government Agencies (NGAs), Local Government Units (LGUs), private investors, and international donors such as KOICA and JICA. The Built-Operate-Transfer (BOT) Law, Joint Venture Agreements (JVA), and Public-Private Partnerships (PPP) will also be explored to attract funding.

2. Endorsement of the CADP to the Provincial and Regional Development Councils (PDC/RDC) in collaboration with NEDA CALABARZON
    - This endorsement will ensure that the CADP aligns with regional development priorities and funding allocations. The PDC and RDC provide a platform to integrate local plans into national development strategies, ensuring broader resource mobilization and coordination among different stakeholders.

3. Participation in Annual Joint Planning Exercises (JPEs) by National Government Agencies (NGAs)
    - The LGU will actively engage in the JPEs conducted by NGAs to integrate its proposed projects into the agencies' Annual Plan and Budget Proposals. Presentations will include detailed annual physical and financial requirements to secure funding from NGA banner programs and projects.

4. Endorsement of the CADP to the Provincial Local Government Unit (PLGU) through the Provincial Planning and Development Office (PPDO)
    - This step ensures the integration of the CADP into the Provincial Commodity Investment Plan (PCIP) and the Collaborative Provincial Agriculture and Fishery Extension Program (CPAFEP), leveraging additional funding and technical support from provincial initiatives.

5. Preparation of Letters of Intent and Comprehensive Project Proposals for funding under the Philippine Rural Development Project (PRDP)
    - Project proposals will be developed for submission to PRDP under the I-BUILD Component (infrastructure and logistics support, including farm-to-market roads) and the I-REAP Component (agriculture and fishery enterprise development). These funding opportunities will strengthen agricultural productivity and rural economic growth within the convergence area.

6. Engagement with Corporate Social Responsibility (CSR) Programs
    - The LGU will collaborate with private companies to tap into their CSR initiatives, particularly those focused on environmental sustainability, livelihood programs, and community development. Partnerships with large corporations and foundations will provide additional resources for capacity-building, infrastructure, and conservation efforts.

7. Integration with Climate Change and Disaster Risk Reduction Programs
    - The CADP will align with national and international climate adaptation and disaster risk reduction programs to secure funding and technical support. Programs such as the People's Survival Fund (PSF) and Green Climate Fund (GCF) will be explored for financing initiatives related to climate resilience, reforestation, and sustainable agriculture.

8. Establishment of a Local Conservation Fund
    - A dedicated conservation fund will be created through local revenue generation measures such as eco-tourism fees, environmental taxes, and voluntary contributions from businesses operating in the area. This fund will ensure a steady source of financing for conservation efforts, biodiversity protection, and sustainable livelihood programs.

Chapter 8. Results-Based Monitoring and Evaluation

The RBME Performance Framework for the Mulanay River Watershed establishes key monitoring and evaluation mechanisms to ensure sustainable environmental conservation, cultural heritage preservation, and ecotourism development. The framework includes short-, medium-, and long-term goals, focusing on biodiversity protection, community engagement, solid waste management, research collaboration, and ecotourism promotion. Each key result area (KRA) is structured with specific indicators, baseline data, target milestones, and responsible agencies, ensuring a comprehensive and data-driven approach to implementation and monitoring.

For biodiversity conservation, the RBME outlines strategies such as regular biodiversity monitoring, species identification, and conservation initiatives. The framework sets progressive targets for reforestation, watershed rehabilitation, and pollution reduction. Similarly, the cultural heritage conservation plan focuses on partnerships with national cultural agencies and local stakeholders to document, protect, and maintain historical and archaeological sites in the Buenavista Protected Landscape and surrounding areas.

The framework also promotes sustainable livelihoods and ecotourism, ensuring that local communities actively participate in conservation efforts while benefiting economically. Through awareness campaigns, solid waste management training, and support for community-led ecotourism projects, the RBME ensures that the environmental and economic aspects of Mulanay's development remain balanced. The inclusion of research collaboration with academic institutions further strengthens the scientific basis for conservation and policy-making.

By tracking progress through measurable indicators, such as the number of new species identified, frequency of conservation initiatives, and economic benefits from ecotourism, the RBME Performance Framework aligns Mulanay's environmental and cultural priorities with national sustainability goals. The structured approach ensures continuous improvement, with annual, biannual, and five-year assessment cycles supporting long-term resilience for the Mulanay River Watershed and its communities.

KRA	Statement	Indicator	Means of Verification (MOV)	Definition	Type of Data (Primary or Secondary and New or Existing)	Critical Assumptions	Data Disaggregation	Data Source	Data Collection Methods	Who Collects	Frequency	Who Analyzes	Who Reports	Who Uses	Baseline	Target Year 1	Target Year 3	Target Year 5
Medium Term	1. Properly identify other flora and fauna every two years as a basis for conservation and protection as per Biodiversity Monitoring System (BMS).	Number of new flora and fauna species identified in biodiversity monitoring	Biodiversity monitoring reports, species inventories	Number of newly identified species within the watershed	Primary - New	Availability of biodiversity survey teams and funding	By species, category (flora/fauna)	DENR, LGU, Academe	Field surveys, camera trapping, DNA analysis	DENR, Academe	Biennial	DENR, Academe	DENR	DENR, LGU, NGOs	TBD	5 species	15 species	30 species
Medium Term	1. Properly identify other flora and fauna every two years as a basis for conservation and protection as per Biodiversity Monitoring System (BMS).	Frequency of biodiversity monitoring activities conducted	Monitoring activity logs, field survey reports	Number of biodiversity surveys conducted	Primary - New	Availability of trained personnel and logistics	By year, geographic area	DENR, LGU, Academe	Surveys, satellite imaging	DENR, LGU	Biennial	DENR, LGU	DENR	DENR, LGU, NGOs	TBD	2 surveys	4 surveys	6 surveys
Medium Term	1. Properly identify other flora and fauna every two years as a basis for conservation and protection as per Biodiversity Monitoring System (BMS).	Percentage of identified species assessed for conservation status	Conservation assessment reports, IUCN Red List classification updates	Percentage of newly identified species assessed for conservation priority	Primary - New	Availability of scientific expertise and classification frameworks	By conservation status (endangered, vulnerable, least concern)	DENR, Academe	Ecological assessments, expert validation	DENR, Academe	Biennial	DENR, Academe	DENR	DENR, LGU, NGOs	TBD	30%	60%	100%
Medium Term	1. Properly identify other flora and fauna every two years as a basis for conservation and protection as per Biodiversity Monitoring System (BMS).	Number of conservation initiatives developed based on identified species	Project reports, program documentation	Conservation programs initiated for identified species	Primary - New	Funding availability and policy support	By type (reforestation, protection, breeding)	DENR, LGU, NGOs	Project implementation reviews	DENR, LGU, NGOs	Biennial	DENR, LGU	DENR	DENR, LGU, NGOs	TBD	2 initiatives	5 initiatives	10 initiatives
Short Term	2. Increase community participation in the conservation and protection of BPL by sustaining awareness and activities, achieving a 20% growth in	Percentage increase in community members participating in conservation activities	Attendance records, surveys, community reports	Measures the growth in the number of individuals engaging in conservation-related activities	Primary - New	Willingness of community members to	By barangay, gender, age group	LGU, NGOs, Community Organizations	Surveys, community meetings, attend	LGU, NGOs	Quarterly	LGU, NGOs	LGU	LGU, DENR, NGOs	TBD	20%	50%	80%

KRA	Statement	Indicator	Means of Verification (MOV)	Definition	Type of Data (Primary or Secondary and New or Existing)	Critical Assumptions	Data Disaggregation	Data Source	Data Collection Methods	Who Collects	Frequency	Who Analyzes	Who Reports	Who Uses	Baseline	Target Year 1	Target Year 3	Target Year 5
	engagement within the next 12 months.					participate			ance tracking									
Short Term	2. Increase community participation in the conservation and protection of BPL by sustaining awareness and activities, achieving a 20% growth in engagement within the next 12 months.	Number of community awareness campaigns and training sessions conducted	Training reports, event documentation, attendance lists	Tracks the number of sessions aimed at educating the community on biodiversity conservation	Primary - New	Availability of trainers and funding	By type of session, barangay	LGU, NGOs, DENR	Event reports, training documentation	LGU, NGOs	Quarterly	LGU	LGU	LGU, NGOs	TBD	10	25	50
Short Term	2. Increase community participation in the conservation and protection of BPL by sustaining awareness and activities, achieving a 20% growth in engagement within the next 12 months.	Percentage of local households engaged in conservation projects	Household surveys, project reports	Measures the proportion of households actively participating in conservation efforts	Primary - New	Community willingness and availability of resources	By barangay	LGU, Barangay Units	Surveys, field inspections	LGU, Barangay Officials	Annual	LGU	LGU	LGU, DENR	TBD	15%	40%	70%
Short Term	2. Increase community participation in the conservation and protection of BPL by sustaining awareness and activities, achieving a 20% growth in engagement within the next 12 months.	Number of community-led initiatives for biodiversity conservation	Project documentation, funding records, implementation reports	Tracks the number of initiatives undertaken by the community without external intervention	Primary - New	Community interest and leadership capacity	By barangay	LGU, NGOs, Community Leaders	Reports, field validation	LGU, NGOs	Annual	LGU	LGU	LGU, DENR, NGOs	TBD	5	15	30
Long-term	3. Develop a cultural heritage plan for the next five years for the conservation of the archaeological site with collaboration with national cultural agencies.	Completion and approval of the cultural heritage conservation plan	Official approval documents, signed agreements	Ensures a structured plan for heritage conservation efforts	Secondary - New	Cooperation among agencies and funding availability	By site and category	LGU, National Cultural Agencies	Documentation review, stakeholder consultations	LGU, National Agencies	Every 5 years	LGU, National Agencies	LGU	LGU, National Agencies	None	Drafting phase	Approved Plan	Implemented Plan

KRA	Statement	Indicator	Means of Verification (MOV)	Definition	Type of Data (Primary or Secondary and New or Existing)	Critical Assumptions	Data Disaggregation	Data Source	Data Collection Methods	Who Collects	Frequency	Who Analyzes	Who Reports	Who Uses	Baseline	Target Year 1	Target Year 3	Target Year 5
Long-term	3. Develop a cultural heritage plan for the next five years for the conservation of the archaeological site with collaboration with national cultural agencies.	Number of partnerships established with national cultural agencies	MOUs, partnership agreements, meeting records	Tracks collaboration efforts with cultural institutions	Secondary - New	Willingness of agencies to collaborate	By agency type	LGU, National Cultural Agencies	Partnership records, meeting minutes	LGU	Annual	LGU	LGU	LGU, National Agencies	0	2 partnerships	5 partnerships	8 partnerships
Long-term	3. Develop a cultural heritage plan for the next five years for the conservation of the archaeological site with collaboration with national cultural agencies.	Number of preservation and documentation activities conducted	Reports, photo documentation, research publications	Ensures heritage sites are documented and preserved	Primary - New	Availability of funding and technical expertise	By site and documentation type	LGU, Cultural Agencies	Field documentation, research studies	LGU, Academe	Annual	LGU	LGU	LGU, National Agencies	0	3 activities	7 activities	12 activities
Long-term	3. Develop a cultural heritage plan for the next five years for the conservation of the archaeological site with collaboration with national cultural agencies.	Percentage of identified heritage sites protected and maintained	Inspection reports, site maintenance records	Measures protection and maintenance of cultural sites	Primary - New	Local government enforcement and funding support	By heritage site	LGU, National Cultural Agencies	Site inspections, maintenance logs	LGU	Annual	LGU	LGU	LGU, National Agencies	TBD	30%	60%	90%
Short Term	4. Educate the local community on solid waste management laws, including RA 9003, and effectively implement solid waste management schemes with measurable progress within the next year.	Number of community members trained on RA 9003 and solid waste management practices	Training attendance records, pre/post-training assessments	Measures the number of individuals trained on proper waste management practices	Primary - New	Community willingness to participate	By barangay, gender, age group	LGU, NGOs, DENR	Training sessions, surveys	LGU, NGOs	Quarterly	LGU, NGOs	LGU	LGU, DENR	TBD	500	1,200	2,500
Short Term	4. Educate the local community on solid waste management laws, including RA 9003, and effectively implement solid waste management schemes with measurable	Percentage reduction in improperly disposed waste	Waste audit reports, community surveys, visual assessments	Tracks reduction in improperly disposed waste	Primary - New	Proper enforcement of waste disposal regulations	By waste type, barangay	LGU, DENR	Field assessments, waste audits	LGU, DENR	Annual	LGU, DENR	LGU	LGU, DENR	TBD	10%	30%	50%

KRA	Statement	Indicator	Means of Verification (MOV)	Definition	Type of Data (Primary or Secondary and New or Existing)	Critical Assumptions	Data Disaggregation	Data Source	Data Collection Methods	Who Collects	Frequency	Who Analyzes	Who Reports	Who Uses	Baseline	Target Year 1	Target Year 3	Target Year 5
	progress within the next year.																	
Short Term	4. Educate the local community on solid waste management laws, including RA 9003, and effectively implement solid waste management schemes with measurable progress within the next year.	Number of solid waste management initiatives implemented	Program reports, project documentation	Monitors the number of waste management initiatives (e.g., recycling programs, composting)	Primary - New	Availability of funding and community participation	By type of initiative	LGU, NGOs, Private Sector	Reports, interviews, field visits	LGU, NGOs	Biannual	LGU	LGU	LGU, DENR	TBD	5	15	30
Short Term	4. Educate the local community on solid waste management laws, including RA 9003, and effectively implement solid waste management schemes with measurable progress within the next year.	Percentage of households following proper waste segregation	Household waste audits, surveys	Tracks households complying with waste segregation policies	Primary - New	Community adherence to policies and enforcement mechanisms	By barangay	LGU, DENR	Household surveys, inspections	LGU, Barangay Officials	Biannual	LGU	LGU	LGU, DENR	TBD	25%	60%	90%
Medium Term	5. Encourage academic institutions, researchers, and other agencies to conduct research studies on biodiversity, ecosystems, and other aspects of BPL yearly.	Encourage academic institutions, researchers, and other agencies to conduct research studies on biodiversity, ecosystems, and other aspects of BPL yearly.	Number of research studies conducted on biodiversity and ecosystems	Published research papers, institutional reports	Measures the level of research activity related to biodiversity and ecosystems	Primary - New	Availability of research funding and institutional support	By research type and institution	Academe, Research Institutions, LGU	Research reports, publication tracking	LGU, Academe	Annual	LGU, Academe	LGU	LGU, DENR, Academe	TBD	5 studies	15 studies
Medium Term	5. Encourage academic institutions, researchers, and other agencies to conduct research studies on biodiversity, ecosystems, and other aspects of BPL yearly.	Encourage academic institutions, researchers, and other agencies to conduct research studies on biodiversity, ecosystems, and	Number of academic institutions and researchers engaged in studies	Memorandums of Agreement (MOA), collaboration records	Tracks the number of institutions and researchers contributing to biodiversity studies	Primary - New	Interest and willingness of institutions to collaborate	By institution type (public/private) and individual	Academe, LGU, DENR	MOA records, researcher surveys	LGU, Academe	Annual	LGU, Academe	LGU	LGU, DENR, Academe	TBD	3 institutions	10 institutions

KRA	Statement	Indicator	Means of Verification (MOV)	Definition	Type of Data (Primary or Secondary and New or Existing)	Critical Assumptions	Data Disaggregation	Data Source	Data Collection Methods	Who Collects	Frequency	Who Analyzes	Who Reports	Who Uses	Baseline	Target Year 1	Target Year 3	Target Year 5
		other aspects of BPL yearly.						researcher										
Medium Term	5. Encourage academic institutions, researchers, and other agencies to conduct research studies on biodiversity, ecosystems, and other aspects of BPL yearly.	Encourage academic institutions, researchers, and other agencies to conduct research studies on biodiversity, ecosystems, and other aspects of BPL yearly.	Number of research-based recommendations integrated into conservation plans	Review of conservation plans, policy documents	Measures the extent to which research findings influence conservation strategies	Secondary - Existing	Research findings are applicable and align with conservation goals	By recommendation type (species, ecosystem, community impact)	LGU, DENR, Academe	Conservation plan evaluation	LGU, Academe	Annual	LGU, DENR	LGU	LGU, DENR, Academe	TBD	5 recommendations	12 recommendations
Medium Term	5. Encourage academic institutions, researchers, and other agencies to conduct research studies on biodiversity, ecosystems, and other aspects of BPL yearly.	Encourage academic institutions, researchers, and other agencies to conduct research studies on biodiversity, ecosystems, and other aspects of BPL yearly.	Amount of funding or grants secured for research initiatives	Grant approval documents, funding agreements	Tracks financial resources allocated for biodiversity research	Secondary - Existing	Availability of funding sources and successful grant applications	By funding source (government, private, international)	Funding agencies, LGU, Academe	Financial reports, grant records	LGU, Academe	Annual	LGU, Academe	LGU	LGU, Academe, DENR	TBD	₱1M	₱5M
Long-term	6. Initiate continuous archaeological studies of the heritage site within BPL every two years.	Number of archaeological studies conducted within the timeframe	Study reports, research documentation	Tracks frequency of archaeological studies in heritage sites	Primary - New	Availability of research funding and experts	By study type and site	Academe, Cultural Agencies	Field research, documentation review	Researchers, Academe	Biennial	Academe	Academe, LGU	Cultural agencies, LGU	TBD	2	5	10
Long-term	6. Initiate continuous archaeological studies of the heritage site within BPL every two years.	Number of new archaeological findings documented	Research papers, excavation reports	Measures discoveries of artifacts, structures, or historical elements	Primary - New	Successful excavation and documentation efforts	By artifact type	Academe, Cultural Agencies	Field research, documentation review	Researchers, Academe	Biennial	Academe	Academe, LGU	Cultural agencies, LGU	TBD	5	15	30

KRA	Statement	Indicator	Means of Verification (MOV)	Definition	Type of Data (Primary or Secondary and New or Existing)	Critical Assumptions	Data Disaggregation	Data Source	Data Collection Methods	Who Collects	Frequency	Who Analyzes	Who Reports	Who Uses	Baseline	Target Year 1	Target Year 3	Target Year 5
Long-term	6. Initiate continuous archaeological studies of the heritage site within BPL every two years.	Percentage of heritage artifacts properly preserved and documented	Preservation reports, conservation records	Evaluates efforts in artifact preservation and restoration	Secondary - Existing	Availability of preservation facilities and techniques	By artifact classification	Cultural Agencies, Museums	Condition assessment, expert evaluation	Cultural agencies, Museums	Annual	Cultural agencies	LGU, Cultural agencies	Cultural agencies, LGU	TBD	50%	70%	90%
Long-term	6. Initiate continuous archaeological studies of the heritage site within BPL every two years.	Number of community and stakeholder engagement activities in heritage conservation	Event records, training reports	Measures involvement in heritage-related conservation efforts	Primary - New	Community interest and funding availability	By stakeholder type	LGU, Cultural Agencies, NGOs	Surveys, interviews, event documentation	LGU, NGOs	Annual	LGU	LGU	LGU, Cultural agencies	TBD	4	10	20
Short Term	7. Provide orientation with local communities on the value of an organized community, ecotourism as a tool for economic development, and the need to protect and conserve the environment and natural resources quarterly.	Number of orientation sessions conducted annually	Training logs, attendance records	Tracks engagement in ecotourism awareness programs	Primary - New	Availability of facilitators	By barangay, participant type	LGU, NGOs	Community training, workshops	LGU, NGOs	Quarterly	LGU	LGU	LGU, NGOs	TBD	4	12	20
Short Term	7. Provide orientation with local communities on the value of an organized community, ecotourism as a tool for economic development, and the need to protect and conserve the environment and natural resources quarterly.	Percentage of community members who demonstrate increased awareness of ecotourism benefits	Pre- and post-training surveys, interviews	Measures increase in community knowledge on ecotourism	Primary - New	Community willingness to participate	By demographic group	LGU, NGOs, Tourism Offices	Surveys, FGDs	LGU, NGOs	Annually	LGU	LGU	LGU, NGOs	TBD	30%	50%	70%

KRA	Statement	Indicator	Means of Verification (MOV)	Definition	Type of Data (Primary or Secondary and New or Existing)	Critical Assumptions	Data Disaggregation	Data Source	Data Collection Methods	Who Collects	Frequency	Who Analyzes	Who Reports	Who Uses	Baseline	Target Year 1	Target Year 3	Target Year 5
Short Term	7. Provide orientation with local communities on the value of an organized community, ecotourism as a tool for economic development, and the need to protect and conserve the environment and natural resources quarterly.	Number of community-led ecotourism initiatives developed	Reports from community groups, LGU endorsements	Number of ecotourism projects initiated by locals	Primary - New	Community members actively engage in ecotourism planning and business	By initiative type, barangay	LGU, NGOs, Community Organizations	Field reports, direct monitoring	LGU, NGOs	Annually	LGU	LGU	LGU, NGOs, Entrepreneurs	TBD	2	5	10
Short Term	7. Provide orientation with local communities on the value of an organized community, ecotourism as a tool for economic development, and the need to protect and conserve the environment and natural resources quarterly.	Percentage increase in local economic benefits from ecotourism activities	Business registration records, tourism revenue reports, household income surveys	Growth in local income and business activity due to ecotourism	Secondary - Existing	Ecotourism activities attract visitors and generate income for locals	By business type, household income level	LGU, Tourism Offices, Business Groups	Surveys, economic monitoring	LGU, Tourism Offices	Annually	Economic Analysts	LGU, NGOs	LGU, Entrepreneurs	TBD	10%	25%	40%

Chapter 9. Sustainability

The sustainability of the Convergence Area Development Plan (CADP) relies on the active participation and commitment of various stakeholders, including the local government, community organizations, and development partners. Ensuring long-term success requires structured mechanisms for governance, financial stability, and continuous monitoring.

A key strategy for sustainability is the institutionalization of the plan within the local governance framework. This includes the integration of CADP objectives into the Municipal Development Plan and aligning local policies with national development priorities. Additionally, capacity-building initiatives will be implemented to empower local communities in managing and maintaining the interventions introduced through the CADP.

Another critical aspect is resource mobilization. The local government, in collaboration with national government agencies (NGAs) and private sector partners, will explore funding opportunities through grants, public-private partnerships, and other financial mechanisms. The establishment of a dedicated local fund for CADP initiatives will help ensure continuous implementation beyond the initial five-year period. Forging of Memorandums of Agreement (MOAs) with concerned NGAs, NGOs, and other stakeholders will be pursued to secure partnerships and support for the long-term sustainability of the project.

Furthermore, monitoring and evaluation (M&E) systems will be institutionalized to track progress, assess impacts, and make necessary adjustments to the plan. Data-driven decision-making will be emphasized to ensure that interventions remain responsive to the evolving needs of the convergence area.

Additionally, organization development and institutional strengthening of key players within the convergence area—such as farmers, fisherfolk, agrarian reform beneficiaries (ARBs), and other stakeholders—will be carried out. These groups will be responsible for sustaining individual components of the plan's programs, activities, and projects. Strengthening these organizations will ensure that they can effectively participate in decision-making, implementation, and long-term management of the CADP initiatives.

Sustainability Strategies

1. Institutional Framework: Institutional strengthening and governance enhancement ensure the sustainability of CADP implementation. This LGU is set to establish a Municipal CADP Coordinating Office (MCCO) to oversee planning, execution, and monitoring. Strengthen local ordinances to institutionalize CADP programs. Also, policy and legal framework development will be prioritized through strengthening of local ordinances for the institutionalization of CADP programs. An inter-agency collaboration will encourage technical and financial support from various agencies for the realization of the CADP programs.
2. Forging of MOA with concerned agencies and stakeholders is substantial to support the project continuity. This strategy will strengthen linkages with DENR, DA, DOT, NCIP, DTI, and DILG for technical and regulatory support.
3. Operation and maintenance of the facilities established through the project is continued, thus it is important to set aside a reserve fund for project operation and maintenance.
4. Securing funding through grants and counterparts, and generating revenues through product sales is crucial for the financial sustainability of the convergence programs. The LGU may apply for funding from GEF, UNDP, GCF, and other donors.
5. Capability Building: Training and technical assistance must be continued for the community members. Leadership and governance training will equip LGU Officials and community leaders with governance and policy advocacy skills. Another strategy is training for communities in GIS mapping, remote sensing, and digital marketing.

6. Monitoring and Evaluation: Community based Monitoring and Evaluation will help track significant indicators i.e. waste management, better community engagement and data collection through surveys, observations and financial records. Established participatory M&E frameworks is a significant measure for local communities in assessing project impacts.
7. Reporting: Report findings to stakeholders, including the FCAs, Sangguniang Barangay, Sanggunian Bayan, partner agencies and the public. This will strengthen community engagement and encourage participation in environmental conservation, cultural heritage, and social enterprises. The LGU will arrange for regular Stakeholders Consultation through annual CADP Summits to gather feedback and align programs with community needs.
8. Vision Mapping of future developmental activities with integration of ecological protection, sustainable tourism, and inclusive governance as the CADP setting a strong foundation for the long-term resilience and prosperity of Mulanay and the Bondoc Peninsula.