Gender and Social Inclusion in the Mindanao River Basin, the Philippines, and the Sangker River Basin, Cambodia

(Draft)

Investing in Climate Change Adaptation through Agroecological Landscape Restoration: A Nature-Based Solution for Climate Resilience (Technical Assistance 6539)

March 2024

Community engagement. Participants in focus group discussions in the Manupali River Basin (photo by Project Team).

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Photo credit	Cover page: **Community engagement.** Participants in focus group discussions in the Manupali River Basin (photo by Project Team). Back page: **Seedling planting.** Community member planting seedlings in degraded land in the Sangker River Basin, Cambodia (photo by Project Team).

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Abbreviations

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
ASMP	Agriculture Sector Master Plan
ASPIRE	Agricultural Services Programme for Innovation, Resilience and Extension
BUKUMA	Bugcaon Kulasihan Manupali Irrigators' Association, Philippines
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CF	Community Forestry
CHAIN	Cambodia Horticulture Advancing Income and Nutrition
CSOs	Civil society organizations
DENR	Department of Environment and Natural Resources
DMPI	Del Monte Philippines, Inc
FGD	Focus group discussions
FLR	Forest landscape restoration
GESI	gender and social inclusion
GMAP	Gender Mainstreaming Action Plan
IBA	Important Bird Area
ICEM	International Centre for Environmental Management
ICRAF	World Agroforestry
IPCC	Intergovernmental Panel on Climate Change
IPOs	Indigenous people's organizations
IPRA	Indigenous Peoples' Rights Act, Philippines
IPs	indigenous peoples
KBA	Key Biodiversity Area
KII	Key informant interview
LFPI	Landcare Foundation of the Philippines, Inc.
LGU	Local Government Unit
MAFF	Ministry of Agriculture, Forestry and Fisheries
MENRO	Municipal Environment and Natural Resources Office
MFI	Micro Finance Institute
MLMUPC	Ministry of Land Management, Urban Planning and Construction
MJP	Maddox Jolie-Pitt
MKADC	Mt. Kitanglad Agri-ventures Development Corporation
MKAVI	Mt. Kitanglad Agri-Ventures, Inc.
MKRNP	Mt. Kitanglad Range Natural Park
MOE	Ministry of Environment

MoME	Ministry of Mines and Energy
MoWA	Ministry of Women's Affairs
NRM	Natural resources management
PDAFF	Provincial Department of Agriculture, Forestry and Fisheries
PFD	Participatory focused discussion
PHP	Philippines Peso
POs	People's organizations
PSA	Philippines Statistics Authority
RBCO	River Basin Control Office
SDGs	Sustainable Development Goals
TA	Technical Assistance
USD	United States Dollar
UNDRIP	UN Declaration on the Right of Indigenous Peoples
WAT4CAM	Water Resource Management and Agro-Ecological Transition in Cambodia
4Ps	Pantawid Pamilyang Pilipino Program

Weights and Measures

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1 Introduction

The ADB project *TA 6539 REG: Investing in climate change adaptation through agroecological landscape restoration* supports governments and communities in Cambodia and the Philippines to restore and manage forest landscapes by following ecological principles and promoting climate-resilient agricultural livelihoods. The project promotes forest restoration, agroforestry, and agroecology measures that build climate change resilience, offer improved livelihood options for communities, and enhance biodiversity. A crucial component of the project is to identify measures to mitigate the impacts of climate change and promote the restoration of forest ecosystems and biodiversity. In both the Philippines and Cambodia, the project has established sites where restoration techniques are demonstrated. At the sites, the project works closely with local communities and with local non-government organizations that have extensive expertise and experience in the area – the Maddox Jolie-Pitt Foundation in Cambodia and the Landcare Foundation of the Philippines.

Central to the project is supporting local communities who live in the uplands of the target river basins as they confront the challenges that come with a changing climate. Communities will need to find ways to secure new livelihoods or adapt existing activities as the impacts of climate change are realized. Flooding and drought are likely to become more extreme and longer-lasting in both countries. Landscape restoration also tends to require the adoption of alternative, more sustainable agricultural and agroforestry techniques that may place short to medium-term demands on local people, both in terms of acquiring new skills and potentially establishing new sources of income.

The two reports in this volume are gender and social inclusion (GESI) analyses of communities in the target landscapes in Cambodia and the Philippines. The reports document the results of surveys of local communities, particularly women and vulnerable groups. The studies assess the ways in which groups are affected by climate change and the barriers that may prevent them from fully participating in the landscape restoration program established as part of the project.

In the Sangker River Basin, agriculture dominates livelihoods, with a significant gender division in labor and decision-making. The study finds that women play crucial roles in agriculture, community activities, and household management but face challenges in accessing finance and land ownership. The community is also exposed to various climate hazards, and women tend to be particularly vulnerable due to their roles and responsibilities. Targeted adaptation strategies are required to mitigate the community's and particularly vulnerable members' vulnerability to climate change. However, social norms tend to limit women's participation in decision-making bodies, particularly in conservation efforts. The report recommends enhancing community awareness of climate risks and adaptation, promoting gender equity in conservation and agriculture cooperatives, and providing targeted support to improve women's technical skills, access to markets, and participation in community organizations.

Similarly, in the Manupali River Basin, smallholder farmers, including women and indigenous peoples, have distinct roles in agriculture and forestry. Gender influences perceptions of farming practices and vulnerabilities to climate change. The report identifies specific vulnerable groups within the farming community and their exposure to climate-related hazards. Strategies to adapt to climate change are explored, with a focus on inclusive participation in forest landscape restoration. Particular, barriers to participation in efforts to restore landscape and mitigate the impacts of climate change include the remoteness of the location, limited access to education, and lack of organizational support. Recommendations include the implementation of targeted interventions to reduce smallholders' vulnerability to climate shocks; the encouragement of inclusive planning and decision-making to incorporate the perspectives and needs of marginalized and vulnerable groups; and support for skills development, access to finance, and strengthening of community organizations.

Both sections of the report stress the importance of gender equity and social inclusion in climate change adaptation and landscape restoration efforts. They recommend practical strategies to empower women and vulnerable groups, enhance their resilience to climate change, and ensure their active participation in decision-making processes related to environmental conservation and sustainable livelihoods.

2 Gender assessment in climate change risk and adaptation in Samlout, Battambang province, Cambodia

2.1 Introduction

In Cambodia, the TA project operates at four demonstration sites in Battambang province. At the sites, the project team demonstrates how to plan and implement nature-based solutions to improve landscape resilience and train local communities in practical agroecology techniques and principles. The team has mapped and assessed all sites, and in the process, they have demonstrated the role and use of new technology and more established techniques. Using various approaches, including participatory mapping, surveys and consultations the team has established restoration needs and developed restoration plans. In Cambodia, the team has supported the local community in the planting of several thousand seedlings and begun to work with the community and stakeholders to build and improve the infrastructure (including nurseries and water infrastructure) to maintain and develop the sites over time. At all sites, the team has also provided training courses on the principles and techniques of agroecology and agroforestry. Participants were all local community members and responsible government officials, and over 30% of participants were women.

This report summarises an initial assessment of gender issues in the Samlaut district in Battambang. The assessment had two broad objectives. The first was to identify gender-related issues and assess the needs of the community and relevant stakeholders engaged in forest restoration within the Samlaut district of Battambang province. The Second was to evaluate the gender division of labor and decision-making among women, men, and other vulnerable groups impacted by climate change in the local community, focusing on its effects on livelihoods and the environment.

2.2 International and National Gender Policies and Frameworks In Cambodia

In 1991 Cambodia ratified and adopted the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), the Beijing Declaration and Platform for Action, the UN Declaration on the Right of Indigenous Peoples (UNDRIP), and the Sustainable Development Goals (SDGs).

The Neary Rattanak V (2019-2024) Strategy 6 pushes for policies and programs that empower women economically and build resilience to climate change. Two key objectives (Objectives 3 and 8) of the strategy aim to ensure policies, plans, and programs across economic development and entrepreneurship embrace gender equality, foster transformative approaches, and equip women with the tools and knowledge they need to adapt to climate change, build resilience, and advocate for gender inclusion in relevant policies and initiatives.

In the agriculture sector, the Agriculture Sector Master Plan 2030 (ASMP 2030) is in its final stages of development, with technical assistance from the Food and Agriculture Organization. The plan aims to modernize Cambodian agriculture with a focus on gender equality.

The Rectangular Strategy, specifically Goal 1 on promoting and developing the Cambodian agricultural sector, also has a gender element mainstreamed in its planned activities:

- Improved Productivity, Diversification and Commercialization
- Promotion of Livestock Farming and Aquaculture
- The reform and Clearance of Mines and unexploded ordnance
- Sustainable Management of National Resources.

The Ministry of Agriculture, Forestry and Fisheries (MAFF) has a Gender Mainstreaming Strategy for 2023-2026. The strategy outlines MAFF's commitment to an agriculture sector that is viable, attractive, and profitable for both women and men and in which women benefit equitably.

Cambodia's Climate Change Strategic Plan 2014-2023 aims to integrate gender considerations into climate change response measures, including existing policies and laws, to ensure all government agencies, development partners, and other stakeholders support this cross-cutting issue.

In addition, the Cambodian Climate Change Strategic Plan for Gender and Climate Change 2013-2023 outlines a strategy to actively engage relevant ministries and partners in addressing gender considerations in both climate change adaptation and mitigation efforts, with a focus on environmental sustainability. The plan highlights the importance of addressing the needs of particularly vulnerable groups, such as women, children, and the elderly, through capacity building initiatives in policy making, leadership development, livelihood development, and green growth activities.

The National Strategic Plan on Green Growth (2013-2030) seeks to achieve economic stability and environmentally sustainable growth, propelling Cambodia towards developed nation status. Its 'Objective 9' champions good governance in green growth, integrating gender equality and women's empowerment.

Women often play key roles in decision-making on the use of energy within the families in the rural areas. The Climate Change Action Plan in Energy Sector 2021-2023 of the Ministry of Mines and Energy (MoME) aims to ensure (i) access to energy in rural area; and (ii) diversification of energy resources for households and community in order to reduce the reliance on biomass.

The Ministry of Land Management, Urban Planning and Construction (MLMUPC) has included a chapter on gender and land in its White Paper, which was approved in 2012. The chapter aims to promote gender equality in land management, urban planning, and construction. MLMUPC also has a Gender Mainstreaming Action Plan 2019-2023 supported by a budget from development partners and the national budget to promote gender equality within the Ministry. Even so, the Gender Mainstreaming Action Plan (GMAP) compiled by the Ministry of Women's Affairs (MoWA) to track the progress of gender mainstreaming efforts across government, found that although the MLMUPC's Action Plan was well-designed, it lacked financial resources and the capacity to implement it.

2.3 Methodology

2.3.1 Study Site

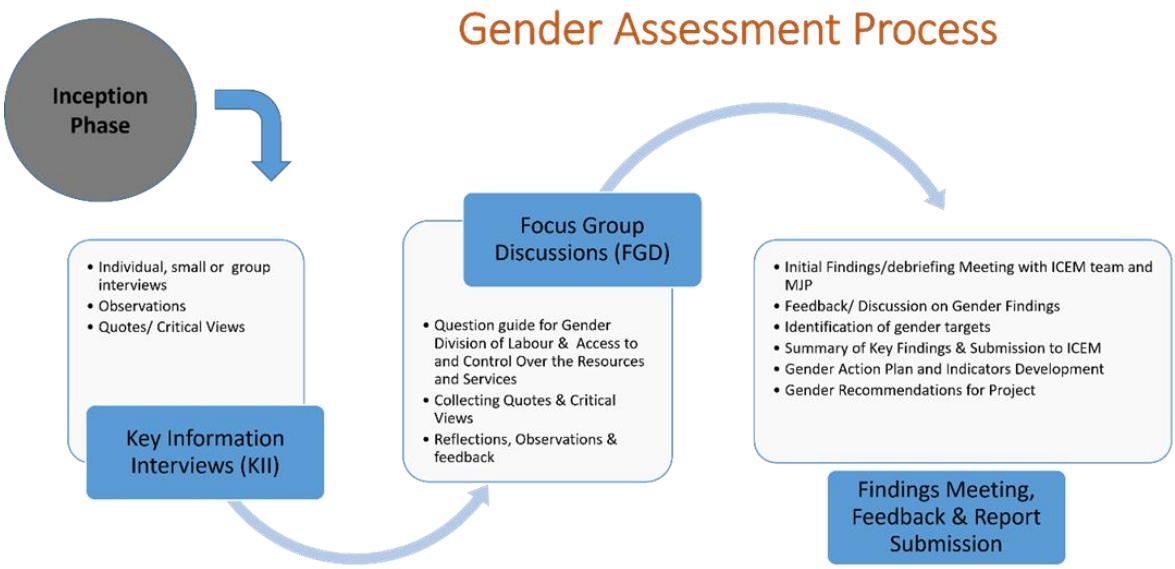
The study was conducted in Samlout of Battambang Province, Cambodia, from May 8 to May 21, 2022. Samlout is a district in the southwest of Battambang province. Its population is 43,715, including 21,601 females and 10,531 households. The average household size is 4.2 members[1].

2.3.2 Data Collection

The study collected primary data from four focus group discussions (FGD), and key informant interviews (KIIs).

[1] National Institute of Statistics. 2019. General Population Census of the Kingdom of Cambodia 2019. Provisional Population Census 2019_English_FINAL.pdf (nis.gov.kh). Accessed April 2022.

Figure 1: Gender assessment methodology



A diverse range of individuals and institutions engaged in the data collection process. Of the 54 respondents interviewed, 27 (50%) were women. Of the 44 focus group participants, 26 (59%) were women. Participants represented:

- Seven community forests
- Two Agricultural cooperatives
- Smallholder farmers
- The Maddox Jolie-Pitt Foundation
- The Provincial Department of Agriculture, Forestry and Fisheries (PDAFF), including the gender focal point,
- The Forestry Administration.

A focus group discussion in Samlout

Photo Credit: Project team

2.4 Findings

2.4.1 Livelihoods

The primary source of income is agriculture. Dominant crops include mango, cashew nuts, cassava, and seasonal crops such as rice, soybeans, and bananas. Over 70% of households grow vegetables for their consumption, while 5-10% do so commercially. Many people also raise livestock, including chickens, pigs, ducks, geese, cows and buffalo.

Land tenure varies. Some residents have land certificates and titles, while others farmland for cashew nuts and cassava without formal titles. In the majority of a household, both spouses are typically named on land certificates and titles.

In addition to agriculture, approximately 30% of the community members migrate to Thailand, Malaysia, Japan, and Korea for work. Many find employment in construction, the textile industry, or casinos near the border. Thirty percent of laborers from poor households, of which 30-40% are females, migrate for work to the district or province nearby, where they can earn significantly more than they could locally, with wages ranging from 20,000 to 30,000 Riel per day (equivalent to $5-$7.5 USD). A small number of people in the community are involved in microenterprises, such as grocery stores or food and snack sellers.

Several organizations are active in the area, providing support and development assistance to the community. These include Water Resource Management and Agro-Ecological Transition in Cambodia (WAT4CAM), Agricultural Services Programme for Innovation, Resilience and Extension (ASPIRE), World Vision, GIZ, Cambodia Horticulture Advancing Income and Nutrition (CHAIN), CARITAS, HEKS, Asian Development Bank (ADB), and private sector companies such as AMRU.

2.4.2 Participation by gender in economic and community activities

Women play a critical role in all aspects of community life in Samlout. As well as unpaid household work, women play a significant role in most agricultural sectors and comprise the largest share of the workforce in many. Women also participate in market activities, providing them with access to information and networks as well as sources of income. Women also participate substantially in community activities and play important roles in a wide range of community committees. However, participants revealed that despite legal equality in access to land and finance, women still tended to be less likely to access finance and gain ownership of land.

2.4.2.1. Domestic work

Women play a significant role in unpaid and reproductive labor within the household. In most households, women cook and care for children, the elderly, and the sick. However, 20-40% of men also work unpaid jobs, performing tasks like water fetching, collecting firewood, taking children to school, and providing and preparing food. Women typically manage the household's cash, savings, and expenditures, although they usually consult their husbands before purchasing valuables or property.

2.4.2.2. Agriculture

Women contribute substantially to income-generating activities, with 50-70% of their income derived from resources and livelihood activities like agriculture and livestock rearing. Eighty-five percent of women participate in agricultural activities, and of the remainder, at least 80% engage with livestock, poultry, and horticulture. However, there is a clear gender dimension to participation in different agricultural activities, with some generally the preserve of men.

Table 1: Female participation in agricultural activities

Activity	Female participation	Nature of activity
Unpaid household work	80-90%	Caring for children and the elderly, cooking, and household chores.
Community activities	60-70%	Committee membership, training, and knowledge exchange, organizing village events.
Plant nurseries	30-40%	Seed collection, planting, and maintenance
Rice farming	40-50%	Women contribute significantly to rice farming, with 60-70% of women interviewed involved in planting, weeding, watering, pest control, harvesting, and selling the rice. More than 70% of men are involved in rice farming in some capacity. Notably, men take sole responsibility for pesticide application to reduce the potential risks to women.
Cassava	60-70%	Farms tend to be far from the village. Women typically share the work with their husbands. Their primary tasks are seed broadcasting, carrying produce, weeding, and harvesting.
Cashew	50-60%	Farms tend to be a distance from the village. Weeding, fertilizing, seed collection.
Seasonal plants	50-60%	Planting, tending, and harvesting of peanuts, soya beans, sesame, sweet corn, durian, longans, rambutans, pepper, and mangos.
Vegetable farming	70-80%	Women comprise 5-10% of smallholders and 50-60% of household farms.
Animal husbandry	70-80%	70-80% of women's involvement is in production for the household. 5-10% is for commercial sale.

2.4.2.3. Access to markets

Eighty percent of women interviewed have some involvement in product markets. Many access markets for information, price negotiations, and to connect with traders and intermediaries. Many play a key role in price negotiations, although this typically takes place after consultation with husbands.

2.4.2.4. Land ownership

The Land Law establishes gender equality with regard to the ownership of land, and land can be registered in the name of both husband and wife. To some degree, this is evident in Samlout: many land certificates and titles are in the name of both spouses. However, in the Samlout district, women's land ownership is lower than men's. Although women own 50% of residential land titles, many, particularly, heads of households, struggle to secure land certificates or titles for other land classes, particularly farmland. Group discussions revealed that, in many cases, the major barrier was access to land tenure information, including the cost and complexity of requesting land titles. Never, land certificates and titles, when available, are typically owned by both spouses.

2.4.2.5. Access to finance

Women have equal access to loans and credit, available through banks, the Micro Finance Institute (MFI), or private lenders. Bank loans require collateral documents but have lower interest rates (0.85–

1.2%). MFI loans tend to be better suited to the community and farmers, as they only require land certificates or similar collateral. MFI loans have an interest rate between 1.5 and 2%, including loan administration fees and customer officer's visits. Private loans have higher interest rates, starting at 3 to 10% of the total loan value.

Respondents revealed, however, that predominantly poor, female-headed households, and other vulnerable groups lacked information on land rights and land titling processes, how to access loans, and also to assess their ability to pay off loans. As a result, such groups tend to own less land, and access fewer and smaller loans, sometimes at higher than necessary costs, and often struggle to pay both interest and principle.

2.4.2.6. Participation in community activities

Women make up 60-80% of attendees at village meetings, including committee meetings for saving groups and community forestry. Such activities help women to develop networks, creating space for learning, building confidence, and exchanging information within community networks. However, younger people are less involved, with only 20-30% of youth attending. This reflects the high proportion of young people who migrate to other countries or cities for better income opportunities.

2.4.3 Vulnerability to climate change and natural hazards

Battambang faces numerous risks from natural and anthropogenic hazards, including floods, droughts, storms, landmines, industrial activities, deforestation, fires, and chemical spills. These hazards pose significant threats to the well-being and economic stability of the local population.

Landmines, remnants of Cambodia's civil conflict, present a severe risk of injury or death. Deforestation and land clearing contribute to soil degradation, loss of biodiversity, and increased vulnerability to natural disasters. A critical issue in Battambang is the widespread use of chemical fertilizers and pesticides in agriculture, with up to 90% of cassava and cashew nut farms relying on these substances, leading to significant chemical pollution.

The repercussions of these hazards are extensive, impacting community health, livelihoods, and the environment. Natural disasters like flash floods damage crops and housing, exacerbating food security issues and causing economic strain. The health of vulnerable groups, including pregnant women, the elderly, and individuals with disabilities, is especially at risk due to inadequate access to clean water and sanitation, compounded by the increased prevalence of disease.

Water scarcity during dry seasons and the poor quality of available water pose challenges to meeting essential needs. Such disasters also lead to land degradation, adversely affecting agricultural productivity and escalating the costs of farming inputs.

Cambodia is also highly susceptible to climate change. climate hazards, such as flooding, including flash, droughts, storms, and unpredictable rainfall patterns.

The impact of climate hazards extends deeply into Cambodia's economy and the livelihoods of its people. Agricultural sectors, particularly smallholder farmers, can face devastating losses ranging from 40 to 100% of their production due to these events. The ensuing financial strain can make it challenging for farmers to manage loans and sustain their livelihoods.

Droughts and dry seasons exacerbate water scarcity, affecting drinking, sanitation, and irrigation needs. Climate-induced land degradation further diminishes agricultural viability, increasing reliance on chemical inputs. Infrastructure damage, alongside the potential for injuries or fatalities from climate events, imposes additional burdens on communities.

Moreover, climate change accelerates the spread of infectious diseases like malaria and dengue fever, and induces health issues related to heat stress. The combined effects of these challenges underscore the significant toll on human life and the economic fabric of the region.

2.4.3.1. Gender dimensions to climate change

Interviews revealed that women and men experience the impacts of climate change and natural disasters differently, and that a number of factors tend to increase women's vulnerability. As a result, women are recognized as being more remarkably impacted by natural disasters and led into more burdens in the household while smallholder farmers are aware of climate change, they still have few capacities to cope with natural disasters due to their limited knowledge of climate resilience, which they are vulnerable to differently to those impacts.

- **Limited mobility and access to information:** Women are often confined to their homes due to childcare and domestic responsibilities, making it difficult for them to take preventative measures or seek help during disasters. Additionally, and to some degree as a result, they may have less access to crucial climate information compared to men.
- **Increased workload and burdens:** Climate disasters can significantly increase women's workload, who are often responsible for fetching water, collecting firewood, and caring for family members. This can limit their time for income-generating activities or participation in community development.
- **Fewer savings:** The financial impact of climate disasters can also fall disproportionately on women, as they often have fewer savings to fall back on when their homes or farms are damaged.
- **Water scarcity and sanitation issues:** Women and girls are primarily responsible for water collection, which becomes even more challenging during droughts or floods. The health and safety of women and children are also at risk during climate disasters, as they are more vulnerable to hygiene and sanitation issues caused by a lack of clean water. Floods can bring diseases and pests, while droughts limit access to water for basic needs and farming.
- **Social stigma and safety concerns:** In the aftermath of disasters, women and girls may face increased risks of gender-based violence and exploitation. The social stigma surrounding women who leave their homes or communities to seek help can further exacerbate their vulnerability.
- **Economic hardship:** Men, as breadwinners and caregivers, also face economic and social challenges due to crop failures and the need to rebuild their livelihoods. The impact on their ability to provide causes some men to migrate to find alternative sources of income, leaving their families behind. This can lead to increased pressure on women to contribute to the household income, despite facing their own challenges.

2.4.3.2. Potential initiatives to mitigate the impacts of climate change on women

In summary, women are less resilient in times of disaster than men due to unstable and insecure sources of income, insufficient accessibility to structural protection from natural hazards, limited access to shelters or safe places and early warning information, poor housing, and weak social safety nets and networks.

Potential initiatives that might alleviate the negative impacts of climate change on women in Samlout include:

- **Raising awareness among communities about climate risks and mitigation and adaptation strategies.** This can be done through practical guides and exercises accessible to people of all ages and abilities, including women, the elderly, children, and people with disabilities. Guides should help people identify safe zones.
- **Developing and distributing awareness-raising materials on climate risks and disaster preparedness.** These materials should be simple and visual and include key messages, emergency contact information for the community disaster response committee, and information about local authorities and duty bearers.

- **Recognizing the urgency of addressing climate change and the link between gender and climate issues.** This can create opportunities to empower women and encourage them to take on leadership roles in areas such as climate-resilient agriculture and community enterprises like nurseries, honey production, vegetable farming, and livestock raising.
- **Collaborating with relevant organizations to identify climate change mitigation and green growth as strategic priorities for women's economic empowerment.** This could involve working with the Maddox Jolie-Pitt (MJP) Foundation, Provincial Department of Women's Affairs, and Provincial Department of Agriculture, Forestry and Fisheries, the Department of Agriculture, Forestry and Fisheries, the Ministry of the Environment, Provincial Departments of Water Resources and Meteorology, especially, and Gender Focal Points in the relevant provincial departments.

2.5 Gender And Conservation

Interviews and focus groups revealed that prevailing social attitudes and cultural norms continue to prioritize men for leadership, protection, and income-generating roles, assigning women to tasks such as homemaking and caregiving. This dynamic extends to governance and the organization of community forestry efforts, where women's participation in decision-making is minimal. Decisions about resource management and community involvement are typically made by men, based on cultural, value-driven, and gender-specific norms, leaving women with limited influence over community meetings, patrols, and reforestation projects.

Despite crucial contributions to many community initiatives, including forest work and resource management, women in the community encounter significant obstacles to achieving equal representation and authority within the Community Forest Committee. Women constitute only twenty to thirty percent of the committee's membership, and, while a few attain high-ranking roles such as deputy chief, the majority are confined to administrative or advocacy positions focused on environmental education.

Moreover, although women are actively involved in conservation advocacy and efforts to promote biodiversity, their contributions are often undervalued by male counterparts, who offer minimal support and acknowledgment of women's abilities and perspectives.

Nevertheless, women are indispensable in managing community natural resources within the Community Forestry (CF) context. They primarily gather food resources such as vegetables, mushrooms, and bamboo shoots, while men tend to focus on collecting wild honey, herbs, and timber. This division of labor highlights the gender-specific roles in resource management yet underscores the integral role of women in sustaining their communities' environmental and nutritional needs.

2.6 Gender dimensions and agricultural cooperatives

Agricultural cooperatives are valuable for promoting gender equality and empowering women in rural communities. In Battambang, cooperatives can help women improve their livelihoods, increase their incomes, and contribute meaningfully to their communities by providing access to resources, training, and opportunities for participation.

One key benefit of agricultural cooperatives for women is the improved access to loans they provide. Cooperatives often offer affordable interest rates and allow for flexible loan uses, making them more accessible to women than traditional banks. This enables women to invest in their farms or businesses, contributing to their economic empowerment.

Women play significant roles in agricultural cooperatives, particularly in savings and loan groups, vegetable farming groups, and livestock groups. Women are often more proactive in these areas, taking on tasks like monitoring and collecting savings, facilitating meetings, and sharing income. They also make significant contributions to biodiversity conservation efforts and are well-represented in committee roles and as members of savings groups.

Furthermore, support programs provided by organizations such as ASPIRE, ADB, and MJP provide crucial capital, skills training, and facilitation services that help women become more active and engaged members of cooperatives. This can create a safe space for women to participate in decision-making and leadership roles, further amplifying their voices and roles within the cooperatives.

2.6.1 Challenges facing women in agricultural cooperatives

Despite the generally positive impact of agricultural cooperatives on women's participation and empowerment, many women still face significant barriers, limiting women's ability to benefit from the opportunities offered by agricultural cooperatives, such as access to loans, training, and markets. Addressing these challenges is crucial for promoting gender equality and empowering women in rural communities. Interviews and focus groups revealed some of the key challenges to be:

- ***Trust and applying the rules of saving policies:*** Many agricultural cooperatives include savings groups, in which members pool savings to create a fund, which is used to provide loans to members. However, several participants indicated that trust, or a lack of trust between members, often prevented the group from saving money effectively. Additionally, groups often find it difficult to enforce agreed rules, such as when members cannot make their contributions on time.
- ***Lack of leadership and monitoring skills:*** In some cooperatives there are few women in leadership roles, again reflecting prevailing gender norms. Groups also lacked some of the skills required to effectively monitor and manage the group's activities.
- ***Less saving due to external factors:*** Droughts, commitments outside the cooperative, and low income due to poor production can all make it difficult for members to save money.
- ***Lack of financial literacy and loan management skills:*** Members may not have the financial literacy or skills to manage loans effectively, which could lead to problems such as loan defaults.
- ***Need for support and expertise:*** The cooperative may need support from outside organizations, such as government agencies or NGOs, to provide training and technical assistance. This could be in financial management, leadership development, and marketing.
- ***Dishonesty and phasing out of support programs:*** The cooperative may be vulnerable to dishonesty from members or outside actors. Additionally, when supporting programs from civil society organizations (CSOs) end, cooperatives may not be ready to operate independently, hindering their effectiveness.

Addressing these challenges facing cooperatives and other similar groups, that in many respects alleviate some of the constraints on women's participation in agricultural, economic and community affairs, can go a long way to promoting gender equality and empowering women in rural communities.

2.7 Potential initiatives to improve women's participation in economic and decision-making realms

Women in Samlout play an important role across the community and play the lead role in key agricultural sectors such as cashew, vegetable production, and livestock, as well as traditionally gendered domains such as housekeeping and care provision. However, discussions in interviews and focus suggested several issues that limit the degree to which women can fully participate in community activities, some of which can potentially be addressed with outside support.

- **Women lack technical skills in various agricultural areas:** Many interviewees and participants felt that they, and other women in the community, lacked some of the key technical skills required to be sufficiently productive. Many still rely heavily on traditional farming techniques and haven't adopted newer practices. The lack of skills precludes participation in some male-dominated activities and limits the productive potential of agricultural land and animal husbandry. In particular, interviewees highlighted skills in vegetable planting, chicken raising,

seed sorting, making organic fertilizers and pesticides, land preparation, planting, farm care, harvesting, product processing, enterprise management, and developing and accessing markets for their products.

- **Women's market participation is limited:** While some women are taking the lead in price negotiations and market access, many female smallholders generally still require additional training and support in areas like farming, food processing, and product development.
- **Organizational weaknesses hinder collective action:** There are weaknesses in community organization and information sharing, making it difficult for women to collaborate effectively. This includes a lack of effective meeting and reflection practices, limited information-sharing planning and facilitation, and inadequate support for farmer-to-farmer knowledge exchange.
- **Low rice production and limited income:** Due to climate change and human-made disasters, rice production in the Samlout area is low, at around 20-30%. This limits incomes and makes it harder for women to save and invest in their livelihoods.
- **Limited access to capital and equipment:** Lack of financial resources constrains women's ability to invest in agricultural inputs and equipment, such as fertilizers, beehives, and irrigation systems. Reliance on high-interest loans can further burden their finances.
- **Insufficient support from development agencies:** Interventions and support from development agencies like PDAFF could be more effective in facilitating farmer markets, matching skillsets with product development opportunities, and strengthening market linkages.
- **Unequal representation and leadership in committees:** Unclear or imbalanced leadership within committees, including a lack of women's voices and perspectives, can hinder decision-making and resource allocation.
- **Limited participation in natural resource management:** Few women are involved in activities like natural resources management (NRM) conservation and climate resilience agriculture awareness. This suggests a potential need for more inclusive strategies to engage women in environmental protection and adaptation efforts.

2.8 Conclusion and summary

Women play an important and expansive role in Samlout's economic and social life. They work with men in the field and forest and are the majority workforce in some key activities, including vegetable farming. Women are active in local markets, buying and selling goods, accessing information, and developing networks. They also make important contributions to the organization of the local community, assuming critical, although mainly administrative, roles in key committees. Women also benefit from agricultural cooperatives, which provide an institutional structure that supports members who want to acquire skills, organize themselves, and access finance.

However, gendered social norms and limited skills and capacity set a limit to the extent of women's participation. Although the law does not discriminate against women, many still struggle to access finance and acquire land. Many women also lack the skills to fully realize the potential of their own and community resources. Women are also effectively excluded from full participation in some activities.

Women also struggle to contribute to important decisions that determine the allocation of resources within the community. They generally assume junior roles in decision-making bodies, and their participation in many activities depends on men's decisions.

The combination of constraints on the acquisition of skills, knowledge, and information and barriers to participation in decision-making bodies is inequitable and increases women's vulnerability to climate change and other natural hazards. Women will tend to have fewer resources with which to adapt to the impacts of climate change and ensure their physical safety in the event of damaging floods or drought. They also have limited opportunities and voice to express the needs of women and other more vulnerable groups. They also lack the means and opportunity to contribute their own

experience and perspective to key discussions and decisions, potentially limiting the true potential of the wider community.

There are several potential initiatives that can be pursued to address the issues identified in this report. These include training in key skills and technologies, promoting institutions such as agricultural cooperatives and supporting women who participate in them, supporting access to finance, creating social security nets for the most vulnerable, and implementing community-wide education programs to address social stigmas that limit women's participation in key decision-making groups and organizations.

3 Towards gender equity and social inclusion in forest landscape restoration amidst climate change: an appraisal in Manupali watershed, southern Philippines

3.1 Introduction

Degradation of upland watersheds remains an important environmental issue as it continues to affect many developing countries in the tropics in the past decades. The adverse effects of deforestation and land degradation on biodiversity, water, farm productivity, food security, and the overall well-being of forest communities are especially pronounced in these upland watersheds[2]. Smallholder farmers are mostly affected by many factors, including their inherent characteristics, limited livelihood capitals, and capacities to adjust and address changing economies and the environment[3]. This is particularly the case in the Philippines, where smallholder upland farmers, especially women farmers and other vulnerable groups, largely depend on farming and natural resources for their livelihood and to survive climate change's negative impacts. The need for more sustainable land use and management production systems is inevitable, as amidst changing climate, upland watersheds are expected to provide for the growing demand for food, timber, and other resources.

Forest landscape restoration (FLR) recently emerged as an alternative approach to addressing deforestation and land degradation. It emphasizes the importance of approaching forest protection and its sustainability by considering both biodiversity and the livelihoods of farming communities. Among others, it works on restoring the multiple functions of forests depending on the landscapes, including site characteristics and local contexts – the farming communities living there. Considering sites and contexts is important in making interventions or providing options that effectively address socio-economic, environmental, and climatic changes. This includes the participation of smallholder upland farmers and other vulnerable groups.

In the Magna Carta of Small Farmers[4] in the Philippines, smallholder upland farmers, generally those with landholdings of three hectares and below. In upland watersheds, smallholder farmers are commonly composed of indigenous peoples (IPs) and migrants, women and men farmers, young and elderly farmers, and others. They are key players in FLR implementation. They are considered the stewards of natural resources in the uplands. Their collective actions make up much of the workforce and play prominent roles in agriculture and forestry in the uplands[5]. However, their roles are limited to implementing field activities and are often marginalized in planning and decision-making processes. They remain poor and insecure because of their different challenges, including low productivity, poor infrastructure, and insufficient social and marketing support services.

The Intergovernmental Panel on Climate Change (IPCC) considers smallholder farmers as the most at risk of the negative impacts of climate change. In the Philippines, these impacts are manifested through various climate-related hazards such as typhoons, floods, landslides, and droughts. Climate variability and these extreme events have affected the agriculture and forestry sectors, but the marginalized smallholder farmers are expected to be more vulnerable due to inherent factors. For example, the vulnerability of smallholder farmers in the Greater Mekong area is affected by their dependence on rainfed agriculture and non-timber forest products, primarily climate-sensitive natural

[2] Giam, Xingli. 2017. *Global biodiversity loss from tropical deforestation*. PNAS, 114 (23), 5775-5777.
[3] Pinon, Caroline. 2022. *Achieving sustainable landscapes and livelihoods in the Philippine uplands: the role of farmer and stakeholders aspirations and actions*. PhD thesis, Australian National University. Accessed in https://openresearch-repository.anu.edu.au/bitstream/1885/266796/1/PhD_thesis_cdpinon_final_revised_2022.pdf (15 Aug 2023).
[4] Republic Act 7607, which was signed into law on 4 June 1992, aimed at improving the lives of the small farmers by empowering them and harnessing their potentials and abilities.
[5] Feurer, M., I. Caillard, E. Geisler, L. Damnyag, and K. Kokou. 2020. *Integrating smallholders into forest landscape restoration.* Tropical Forest Update, 30 (3/4) 3-9.

resources[6]. In the Philippines, the level of vulnerability of smallholders varies depending on their inherent or internal priorities and capacities, as well as their external or biophysical environment[7]. Understanding the dynamics and complexity of these relations and the interaction of vulnerable groups in landscape restoration and climate change requires a holistic and systems approach.

This report aims to identify practical strategies to improve the GESI of smallholder farmers and other vulnerable groups in Philippine upland watersheds to adapt to the impacts of climate change through FLR. It uses the case study site of the Manupali watershed in Lantapan, Bukidnon of southern Philippines. It is currently experiencing climate change, whose impacts were unknown to its constituents decades ago. Its specific objectives are to (1) identify the stakeholders in the watershed that have a stake in farming livelihood and forest landscape restoration; (2) determine the vulnerable groups in the watershed and discuss the factors that characterize them; (3) analyze the ways they are affected by climate-related hazards; and (4) elicit barriers that prevent them from full access and participation to FLR and ways to overcome these. It also discusses the policy and institutional environment of GESI for the identified vulnerable groups in the watershed.

This study forms part of the two-year project of the International Centre for Environmental Management and the World Agroforestry entitled "Technical Assistance 6539: Investing in Climate Change Adaptation through Agroecological Landscape Restoration: A Nature-based Solution for Climate Resilience", which explores, assesses and promotes innovative interventions on agroecology for climate change adaptation from national, at watershed, to community levels. It applies frameworks tailored to issues and needs relevant to the Manupali watershed, the project site in the Philippines, and facilitates evidence-based, inclusive planning and decision-making. As such, findings from this GESI study are important to the project to inform how specific perspectives and needs of marginalized and vulnerable groups can be incorporated into the design and implementation of capacity building and demonstration activities and how the agroecological landscape restoration measures can be designed to be inclusive and positively benefit them.

3.2 Methodology

3.2.1 Study site

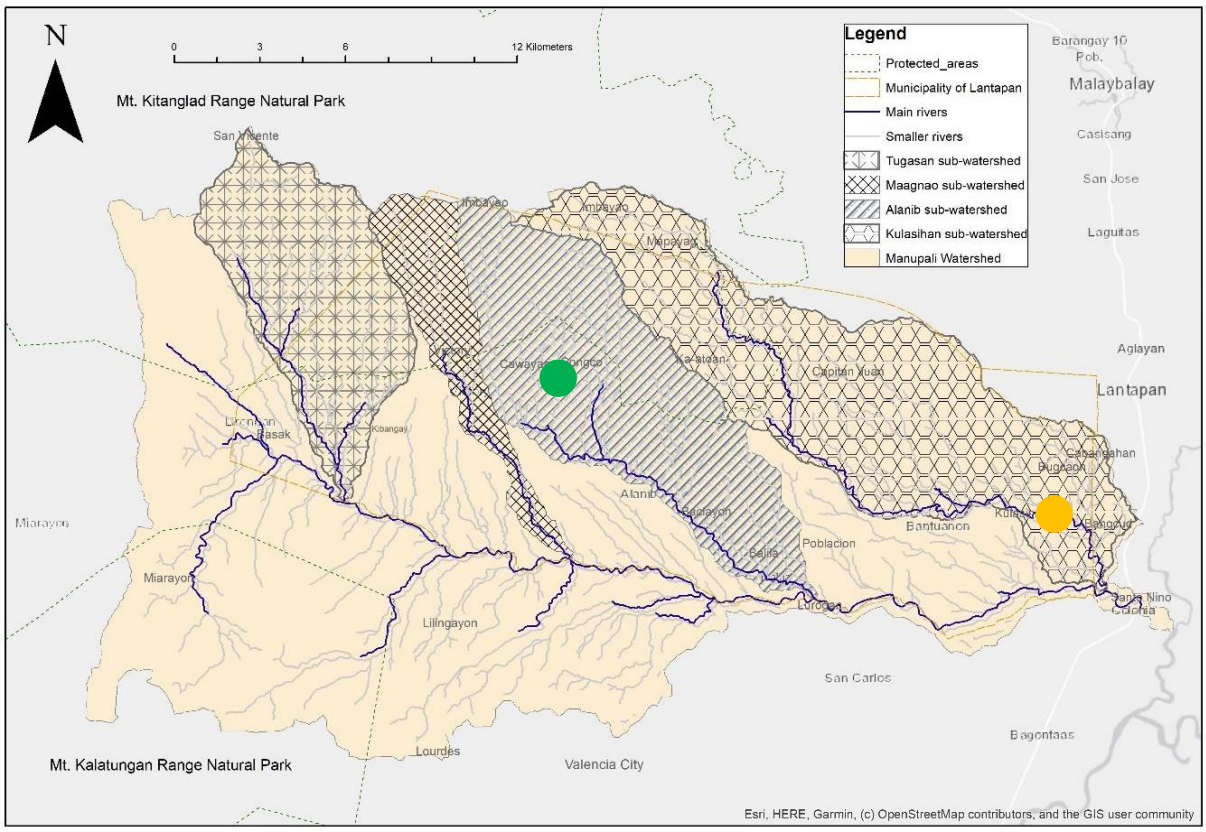
The study was conducted in the Manupali Watershed (Figure 3) in the Municipality of Lantapan, Province of Bukidnon in southern Philippines. It lies at the foothills of Mt. Kitanglad Range Natural Park[8] (MKRNP), an important landscape and protected area in the country being identified as a Key Biodiversity Area (KBA), an Important Bird Area (IBA), and an ASEAN Heritage Park. While water is its primary ecosystem service as the headwater source of several rivers in the province, some of which extend to other provinces and regions in Mindanao, the Park also serves as a carbon sink, harbors rich floral and faunal biodiversity, and promotes landscape beauty for mountaineers, bird watchers, and nature enthusiasts.

[6] Manuamorn, O. 2014. Climate Change and Rural Communities in the Greater Mekong Subregion: A Framework for Assessing Vulnerability and Adaptation Options Climate Change and Rural Communities in the Greater Mekong Subregion. ADB. file:///C:/Users/Jago/Downloads/ClimateChangeRuralCommunitiesintheGMS-AFrameworkforAssessingVulnerabilityAdaptation Options.pdf

[7] Saldajeno, P. B., Florece, L. M., Lasco, R. D., & Velasco, M. T. H. (2012). *Vulnerability Assessment of Upland Communities in Sibalom Natural Park, Antique, Using Capitalbased Approach*. Journal of Environmental Science and Management, 15, 1-12.

[8] A legislated protected area based on Republic Act 8978 otherwise known as the Mt. Kitanglad Range Protected Area Act of 2020

Figure 2: The case study sites in Alanib (primary site in green dot) and Kulasihan (secondary site in orange dot) sub-watersheds within the Manupali Watershed in the Municipality of Lantapan, Bukidnon Province of southern Philippines



Source: ICEM

The fourteen *barangays*[9] of the municipality share 32,526 hectares of Manupali's total land area. Lantapan has a Type IV climate, characterized by more or less evenly distributed rainfall throughout the year and indistinct dry and wet seasons[10]. The period from November to April is relatively dry, while more rain is experienced for the rest of the year. Its elevation ranges from 320 to 2,938 meters above sea level (masl), with generally rugged and steep topography upstream and gently sloping land downstream. The soil composition of mainly Adtuyon and Kidapawan clay in Lantapan is highly suitable for agriculture. Because of its contribution to the food security of the entire region, it has been considered as the 'vegetable basket' of the south[11].

The two largest sub-watersheds of the Manupali watershed were selected in this study, namely the Kulasihan and Alanib (Table 2), but focusing more on the latter, where the project's demonstration farms are being established. These sub-watersheds drain into the Manupali River through the irrigation canals of the National Irrigation Administration-Bukidnon Irrigation Management Office, which then ends up in the Pulangui IV Reservoir for the hydroelectric power generation of the National Power Corporation (Rola et al., 2004). Aside from watershed services, these sub-watersheds are also important in agricultural production, and farming remains the primary livelihood of the residents.

[9] Village, the smallest political unit in the Philippines
[10] Based on the Modified Corona's Classification of Climate
[11] Catacutan, D. & Pinon, C. 2006. Challenges and opportunities in managing Philippine Watersheds: The case of Manupali watershed in the southern Philippines. Conference Paper.
https://www.researchgate.net/publication/237291792_Challenges_and_opportunities_in_managing_Philippine_Watersheds_The_case_of_Manupali_watershed_in_the_southern_Philippines

Multi-national companies likewise operate within these areas, particularly banana and pineapple[12]. Some private companies also manage livestock, such as swine[13], in Barangay Songco within the Alanib sub-watershed.

Table 2: Characteristics of the selected sub-watersheds

Characteristics	Alanib	Kulasihan
Biophysical		
Area (hectares)	6,595.83	10,075.52
% forest land	48	27
% A&D land[14]	52	73
Elevation (masl)	500-2900	300-2700
Villages covered	Songco, Alanib, Kaatuan, Baclayon, Balila, Poblacion	Alanib, Kaatuan, Capt. Juan, Poblacion, Bantuanon, Kulasihan, Bugcaon
Socio-economic		
Ethnicity	Talaandig and migrants	Mainly migrants
Main livelihood	Mainly farming	Mainly farming while others work as laborers in agri-industrial companies
Major crops	Vegetables, maize, banana, pineapple	Maize, irrigated rice, coffee, banana, pineapple, sugarcane

Source: Project team.

3.2.2 Data collection and analysis

The study collected both secondary and primary data utilizing the following qualitative methods: (1) review of the literature and secondary statistics; (2) participatory focused discussion (PFD); and (3) key informant interviews (KIIs), as well as quantitative means through (4) farming household survey. The most recent local statistics were obtained from the records and related plans of the Barangay Government Unit of Songco, the Municipal Planning and Development Office, the Municipal Environment and Natural Resources, and the Municipal Disaster Risk Reduction Management Office, as well as from the Protected Area Management Office of the MKRNP.

A total of 24 farmer leaders participated in the two PFDs conducted in Songco (upstream) who were composed of farmer leaders, purok leaders, and representatives from tribal and Barangay Government Unit, while those from Kulasihan (downstream) were members from the Bukuma (Table 3). During the discussion, the participants were grouped according to gender to ensure they had space to express and share their thoughts. The discussion was guided by ICRAF's Talking Toolkit, which includes participatory exercises to better understand farmers' exposure to climate change and variability, its impacts on them and their farming livelihood, and their strategies to adapt (Simelton et al., 2013). The exercises were adjusted based on the site's context and the study's objectives.

[12] Del Monte Philippines, Inc. for pineapple and DOLE-Skyland Philippines, Mt. Kitanglad Agri-Venture, Inc. and Lapanday, Inc. for cavendish bananas are among the multi-national companies operating in Lantapan.
[13] Montes Claros Farm in Songco
[14] Alienable and Disposable (A&D) lands refers to those lands of the public domain that have been the subject of the present system of classification and declared as not needed for forest purposes

Table 3: Participants of the participatory focused discussions and key informant interviews by gender and by village

Village	Participatory focused discussion			Key informant interviews		
	Women	Men	Total	Women	Men	Total
Songco	6	6	12	4	2	6
Kulasihan	6	6	12	1	2	3
Lantapan	-	-	-	-	3	3
Total			24	5	7	12

Source: Project team

Meanwhile, the KIIs were purposely identified following at least two of these criteria: (1) a local leader or representative of government/non-government agencies in the area; (2) knowledgeable about or involved in FLR; and (3) among the identified vulnerable groups. The interviews were targeted such that the informants provided insights based on their affiliation or representations and inclusive of vulnerable groups, climate risks, challenges, and opportunities in the context of FLR.

3.3 The smallholders in Manupali: their gendered roles, perceptions, and vulnerability to climate change

The smallholder farmers in the Manupali watershed generally consist of marginalized migrants and indigenous populations who depend mainly on subsistence farming, vegetable gardening, and small-scale marketing to support their households. Regarding actual farm holding, studies show that this decreased from 3.24 ha in 1994, 2.95 in 2002, to 1.25 in 2006[15]. In Songco, the average farm size was 1.6 ha in 2007[16]. As to land ownership, the indigenous farmers belonging to the Talaandig tribe who have a historical affinity with and tenurial rights over forest lands and resources in the watershed are recognized by the government, particularly those within the buffer zones of MKRNP. Their claims are not based on written documents but on actual land occupancy and physical improvements.

The investigation of Javier et al. (2012) on the linkages between smallholder farmers and the markets in Lantapan revealed the importance of gender considerations in driving a sustainable vegetable-agroforestry system[17]. Despite growing modernization influences, the productive and market roles of women and men in farming households remain distinct and gender-differentiated, varying by crop but reflecting a persistently traditional pattern. Although they share in many of the activities relating to vegetable production, the husbands still assume the lead role and do the heavier or more laborious tasks; in contrast, wives are responsible for less strenuous work but do the marketing of vegetable commodities either on-farm or at the marketplace in Malaybalay City, Cagayan de Oro City, and others. Wives help maintain trees on farms, but husbands harvest and market timber.

In the context of payments for ecosystem services, Javier et al., 2010 furthered their gender analysis on the division of labor[18]. Results showed that these were differentiated only in the productive and reproductive spheres, as male farmers control agricultural production and monopolize access to external assistance. On the other hand, women farmers dominate in marketing and reproductive activities but hardly receive external assistance. However, there were no dominant gender differences

[15] Rola, Agnes C. 2011. *An Upland Community in Transition: Institutional Innovations for Sustainable Development in Rural Philippines*. Singapore: Institute of Southeast Asia Studies.
[16] Nguyen, M.R., J.P.A. De Mesa, A.C. Rola. 2007. *Vegetable Agroforestry System: Baseline Survey Results in Songco, Lantapan, Bukidnon, Philippines, 2006.* Working Paper No. 05-07. SANREM-CRSP and OIRED, Virginia Tech.
[17] Javier, MEC, GRD Armercin, DJS Martinez, EP Abasolo, and CD Piñon. 2010. *Gender and Natural Resources Management: Implications for Rewarding Environmental Services in the Philippines*. ICRAF-SEA, Bogor, Indonesia. Unpublished Report.
[18] Chiong-Javier et al., 2010. Gender and Natural Resource Management: Implications for Rewarding Environmental Services in the Philippines. ICRAF.

in community and environmental management, where activities are managed collaboratively based on gender attributes. In the last dimension, their roles resulted from past externally initiated environmental projects, which targeted community participation in reforestation, agroforestry, soil and water conservation, and many others. It is important to note that women and men farmers recognized that this role relates to the outcomes of their productive, marketing, and community roles. Their capacity to protect and conserve the resources on their farms and their environment affects their ability or inability to provide for their household's basic needs or reproductive necessities, including those of their communities. Finally, when it comes to perceptions about watershed benefits, men farmers view these in more economic or material terms such as income or forest products, while women farmers think about these in more intangible terms like enjoyment of clean air and water or being free of flooding. However, women tend to think, more than men, that downstream communities that benefit from watershed services should contribute to upstream environmental protection.

While these gender roles and functions are influenced by culture and contexts in Manupali, local perceptions also affect farmers' land use decisions and management actions[19]. Ureta et al. (2016) studied the gendered motivations of smallholders on farming practices and tree species in Lantapan[20]. They found that both women and men farmers prioritize the economic benefits of farming practices and tree species, such that both preferred agriculture-based over tree-based farming systems. Specifically, women farmers from the Alanib sub-watershed preferred farming systems that provide 'food for consumption' and 'high income.' In contrast, male farmers preferred farming systems that produce products that have 'shorter growing periods' for 'high income.' In Kulasihan sub-watershed, women and men farmers both preferred production systems that generate 'high income' and produce products that are 'easy to market.'

Interestingly, with these criteria, only the women farmers from the Alanib sub-watershed preferred different tree-based farming systems, including multiple cropping (coffee+banana+corn). Regarding tree species, women farmers prefer plantation crops and timber trees, while men prefer fruit trees. Specifically, women farmers from the Alanib and Kulasihan sub-watershed valued the regulatory services of trees, particularly 'flood prevention' and 'environmental protection.' Women farmers from Alanib prefer coffee and timber trees, such as Brazilian Fire tree and Eucalyptus, while those in Kulasihan prefer rubber and coffee. It was different for male farmers where those from the Alanib sub-watershed preferred the usefulness of trees as 'building material' while in the Kulasihan sub-watershed, it was 'high income'. The male farmers from Alanib preferred Mahogany and Gmelina, while those from Kulasihan chose fruit trees such as Rambutan and Durian. Relating these findings to designing the project's demonstration farms, it is important to consider farming systems, especially tree species, that provide financial benefits to the farmers, not just environmental services and biodiversity conservation. Women tend to consider trees' multiple benefits based on their gender roles and participate more in community activities; hence, their perspectives are more diverse and inclusive.

Using the IPCC framework on vulnerability, Evangelista et al. (2017) assessed the vulnerability of smallholder farmers in Lantapan to climate-related shocks, including their exposure, sensitivity, and adaptive capacity[21]. Considering the indicators used, the smallholder farmers in the Kulasihan sub-watershed ranked the highest regarding exposure to climate-related shocks and disasters, such as flooding, landslides, pests, and diseases. The sensitivity of their farming livelihood was similar for all sites. Still, the smallholder households in the Tugasan sub-watershed were more vulnerable to

[19] Pinon, Caroline. 2022. *Achieving sustainable landscapes and livelihoods in the Philippine uplands: the role of farmer and stakeholders aspirations and actions*. PhD thesis, Australian National University. Accessed in https://openresearch-repository.anu.edu.au/bitstream/1885/266796/1/PhD_thesis_cdpinon_final_revised_2022.pdf (15 Aug 2023).
[20] Ureta J, Evangelista KP, Habito CM and Lasco R. 2016. *Gender perspectives in smallholder farming practices in Lantapan, Philippines.* Journal of Environmental Science and Management, Issue 1, 43-56
[21] Evangelista RJ, Evangelista KP, Ureta J and Lasco R. 2017. *Vulnerability of smallholder farmers in Lantapan, Bukidnon. Smart Tree-Invest Working Paper 216.* Philippines: World Agroforest Centre Southeast Asia Regional Program.

climate-related shocks due to limited financial and physical assets. Another factor is their farming systems, which are generally monocropping. Without trees on their farms, they are more susceptible to climate impacts. Considering their livelihood capitals, the smallholder farmers in the Kulasihan sub-watershed ranked highest in adaptive capacity except in natural capital. These results are essential in designing interventions that are aimed at reducing the smallholders' vulnerability to climate shocks, and that these should focus on improving farming systems and initiating livelihood activities that are more climate resilient and can help provide both financial and environmental benefits.

Pulhin et al. (2016) assessed the effectiveness of and barriers to adaptation of smallholder farmers to climate variability[22]. There were few variations in adaptation strategies across different crops grown by farmers. Although a few were assessed as ineffective adaptation strategies, other strategies were perceived to be generally effective, albeit some barriers exist in their implementation. Among these barriers include high cost, limited adaptation options, and difficulty in implementation. These barriers should be overcome to address future uncertainties as climate variability was expected to worsen.

While these related studies provide necessary grounding about smallholder farmers in the Manupali watershed, their gendered roles in four different dimensions, and gendered perspectives on farming systems and tree crops, vulnerability conditions of its sub-watersheds, and effective adaptation practices, there remains information gaps on the specific vulnerable groups amongst smallholder farmers, their exposures to climate-based hazards, and barriers and ways for them to actively participate in FLR and adapt to climate change. This study aims to fill these data gaps in this watershed.

3.4 Towards gender equity and social inclusion in Manupali Watershed

With the Manupali watershed progressing economically, balancing this with sustainable environmental management and inclusive social development remains challenging. It is essential to give equal access and opportunities to all farmers – including specific groups within – and remove the barriers so they can actively participate in development. Recognizing who they are and their current conditions is the key first step towards that GESI.

3.4.1 The stakeholders

Stakeholders were identified and defined relative to their locations in the Manupali watershed and their corresponding interests and impacts on ecosystem services, farming livelihoods, environmental protection, and climate change adaptation. In Songco and Kulasihan, vegetable and rice farmers were considered the key stakeholders as they comprise the majority of the population in the watershed. They depend largely on land, water, and other natural resources for their farming livelihoods. This aligns with stakeholder analysis studies conducted on previous projects in the watershed. For example, individual farmers or 'gardineros' and local farmer organizations were specifically identified as the direct stakeholders in vegetable-agroforestry systems[23], whereas farmers across the landscape were identified as stakeholders based on water demand, including those indigenous peoples and migrant farmers cultivating in buffer zones, vegetable, tree and agroforestry farmers in agricultural lands, and rice farmers or irrigators in the lower section of the Manupali watershed[24].

These farmers are collectively referred to as smallholder upland farmers, considering their rather small landownership and cultivated areas as well as their farming income. In the baseline assessment

[22] Pulhin, J.M., R.J. Peras, F.B. Pulhin, and D.T. Gevana. 2016. *Farmers' Adaptation to Climate Variability: Assessment of Effectiveness and Barriers Based on Local Experience in Southern Philippines. Farmers' Adaptation to Climate Variability: Assessment of Effectiveness and Barriers Based on Local Experience in Southern Philippines.* Journal of Environmental Science and Management, Issue 1, 1-14.

[23] Catacutan, D. et al. 2008. The Policy Environment of Vegetable-Agroforestry in the Philippines and Vietnam: A scoping study. USAID. https://pdf.usaid.gov/pdf_docs/Pnadu401.pdf

[24] Catacutan, D., and C. Piñon. 2010. Local incentive-based policy for vegetable-agroforestry (VAF): A locally-appropriate adaptation and mitigation action (LAAMA) to climate change. Policy Brief, Issue No. 3. Philippines: World Agroforestry Centre (ICRAF).

conducted for this project (June 2022), the majority of the farmers surveyed claim that they are farming 'within subsistence' (47%) with a farm size of >1.0 ha but < 3.0 ha and a monthly income of above PHP 12,000 but < PhP 20,000. This was closely followed by those who considered themselves farming 'below subsistence' (42%) with < 1.0 ha and a monthly income of > PhP 12,000. According to the Philippines' latest Poverty Census of 2021, the National Economic Development Authority (2021) reported that a family of five with a monthly income of less than PhP 12,082 is classified below subsistence level in terms of standard of living. This reflects on the persistence of poverty issues in the Philippines uplands; being resource-poor makes smallholder farmers generally risk-averse and less flexible when adopting change and innovations.

Table 4: Key stakeholders in Songco and Kulasihan, Lantapan

Stakeholders	Songco		Kulasihan	
	Female group	Male group	Female group	Male group
Farmers	P	P	P	P
Municipal Water District	P	P		
Tree planters	P			
Binahon Agroforestry Farm	S	S		
Banana plantations		P	P	S
Pineapple plantations	S	S		P
Poultry/livestock owners	S	S	P	S
Schools		S		
Quarry			S	P
Transports			S	S
Barangay government unit			S	S

Source: Project team

Other stakeholders identified were the Municipal Water District, banana and pineapple plantations, and poultry and swine businesses. The Municipal Water District25 sources water from springs and surface water, particularly Malinurog, Alanib, and Kulasihan rivers, to serve 5,009 households. Malinurog and Alanib rivers in Songco have a combined total of 2,150 cubic meters per day of water production. On the other hand, three banana plantations operate within the watershed, namely Mt. Kitanglad Agri-Ventures, Inc. (MKAVI), DOLE-Skyland Philippines, and MAI. MKAVI has a total of 997 hectares of banana plantations.

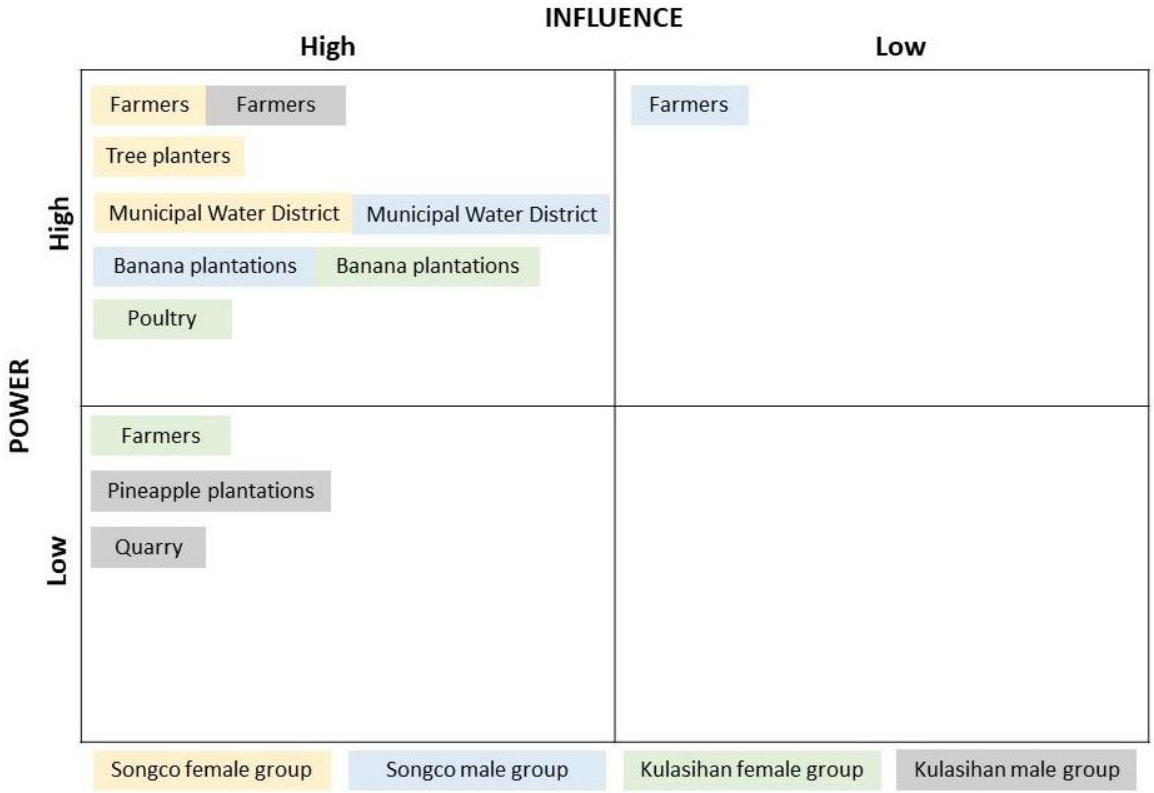
Meanwhile, there are four pineapple companies in the area such as SUMIFRO (Philippines) Corporation, Lapanday Foods Corp., Mt. Kitanglad Agri-ventures Development Corporation (MKADC), and Del Monte Philippines, Inc (DMPI). DMPI has the widest pineapple plantation, with a total of 263 hectares. As for poultry and swine, there are 22 operational livestock and poultry production in Lantapan.

These stakeholders vary in terms of their interests and power regarding resource use, farming livelihood, environmental protection, and climate change adaptation. According to PFD participants, many were considered to have high power and influence (Figure 3). For example, farmers are considered to belong to this quadrant because of their number; they compose most of the population

[25] Operated and managed by the Lantapan Municipal Government Unit.

in the Watershed. They produce important commodities that support agricultural development on the site. They believe farmers can influence the development course to their advantage. The Municipal Water District is another institution under this high-power-and-influence because of the demand for water in everyday farming and agribusiness activities. Meanwhile, the banana plantations and poultries have been operating in the Watershed since the early 2000s, providing employment to the locals. The diversity of stakeholders and their interests and power can make collaborative work complex and challenging; success depends on their understanding of fundamental issues and cooperation.

Figure 3: Power-influence matrix of stakeholders in Manupali watersheds



3.4.2 The vulnerable groups

While Songco and Kulasihan are largely farming communities, they consist of various social groups – all of which have different needs and problems, resources and assets, challenges and opportunities. To be inclusive in forest landscape restoration, these groups and their diversity must be considered in the designing and planning of programs and projects. The first key step is identifying groups within the communities that are disadvantaged and/or marginalized from actively and meaningfully participating in these processes. Often, the same groups are the ones vulnerable to the effects of economic and climate change.

Although there are differences between the vulnerable groups identified in Songco and Kulasihan that can be attributed to their contexts and locations in the Watershed, there are general similarities. They ranked the smallholder farmers, senior citizens, and the youth as the most vulnerable groups. As pointed out earlier, smallholder farmers are a collective term of diverse groups within this specific farming community; the other identified groups are part of smallholder farmers. For example, senior citizens used to be farmers; in fact, many are still farming even though they have already reached the age of 65. Although declining, some of the rural youths are likewise farming. Republic Act 8044, or the Youth in Nation-Building Act, defined Filipino youth as those aged 15-30. Other groups identified,

namely, indigenous peoples, women, surrenders, and the rice farmers in Purok 6 who are prone to flooding are, to different extents, also smallholder farmers (Table 5).

Table 5: Identified marginalized and/or vulnerable groups based on ranking in Songco and Kulasihan, Lantapan

Marginalized, disadvantaged and/or vulnerable groups	Songco		Kulasihan	
	Female	Male	Female	Male
Smallholder farmers	1	1	1	1
Senior citizens	2		5	4
Indigenous peoples	3	4		
Women	4	2		
Youth	5	3		3
Single parents			2	
People with disabilities (inc. children with special needs)			3	5
Surrenderers (former insurgents)			4	
Purok 6 residents – prone to flooding				2

Source: Project team

In Songco, farmers located in remote areas were identified as the most marginalized by both men and women farmers. Accordingly, their location limits them from participating in training events and accessing aids. In many cases, information does not reach them, or if this comes, the events or opportunities for aid have already passed. If these are materials in kind (*ayuda*), these will have to wait until they come down in the village to be picked up by themselves. Their location likewise exposes them to more significant risks when there are continued heavy rains as they are vulnerable to landslides. For instance, their houses are situated along the steep riverbanks of the Maagnao River; some are damaged during continued heavy rainfall. Landslides also occur on steep slopes along their routes from the village to their farms; hence, they can be isolated in their remote areas until the landslides are cleared. The farmers are the most vulnerable groups, followed by the indigenous people and women, who are also smallholder farmers.

Downstream in Kulasihan, the most vulnerable groups identified were the rice farmers, followed by people with disabilities, including children with special needs, while senior citizens, youth, and residents in Purok 6 came in next. Rice farmers have been challenged in recent years due to water scarcity, which has prompted them to change to crops that do not require so much water (e.g., corn, banana, rubber). However, this land conversion has an impact on local rice production and, consequently, food security in the area. This water scarcity and land conversion was already shared by irrigators ten years ago but seemed to intensify in recent years[26]. Flooding with heavy rainfall is another contributing factor to the rice farmers' vulnerability. While the river's water gets big, the eroded soil from pineapple farms in the adjacent village, Bantuanon, floods and damages their rice paddies. This is particularly the case in Purok 6, where some of the rice fields cannot be cultivated because of eroded soil from the adjacent pineapple farms in sloping areas during Typhoon Odette in 2021. Other factors mentioned are external to the site, namely expensive farm inputs (i.e., fertilizers)

[26] Piñon, C., Catacutan, D., Leimona, B., Abasolo, E., van-Noordwijk, M., & Tiongco, L. (2012*). Conflict, Cooperation, and Collective Action: Land Use, Water Rights, and Water Scarcity in Manupali Watershed, Southern Philippines.* CAPRi Working Paper, 104.

and the poor market price of rice. Income from rice farming has been decreasing with the cost of fertilizers doubling while the price of rice grain has dropped immensely.

It is important to note that rice farmers in Kulasihan are composed of different groups: (1) landowners-cultivators who depend on both household and hired laborers; (2) absentee landowners with rice fields cultivated by tenants; and (3) purely farm laborers who are landless (from other municipalities). Among them, the tenants and laborers are the most vulnerable when rice production is affected by climate change with water scarcity during summer, flooding during rainy season, and increased cost on farm inputs with reduced market price of rice grains.

Considering gender perspectives, both men and women acknowledged farmers in both villages as the most vulnerable group within the watershed. In Songco, there was a consensus on the vulnerability of certain groups, though with distinctions in their prioritization. Remote farmers were singled out as particularly vulnerable in the village, but the order of vulnerability varied otherwise. Female farmers identified the most vulnerable groups as farmers, senior citizens, and indigenous peoples, while male farmers pointed to farmers, women, and youth. In Kulasihan, there was a unanimous view that rice farmers faced the most vulnerability. However, the identification of other vulnerable groups showed greater variation. Women farmers listed farmers, single parents, and people with disabilities as most vulnerable, whereas male farmers identified farmers, residents of Purok 6, and youth as such. The groups recognized in Kulasihan represent a broad array, encompassing single parents, individuals with disabilities, surrenderers, and residents of flood-prone areas, highlighting subgroups within the village that are often overlooked in broader discussions as mere 'barangay constituents.'

3.4.3 Exposures affecting vulnerable groups

Different calamities and hazards are affecting vulnerable groups in the Manupali watershed. Among these are El Niño and flooding. El Niño events that bring severe drought are detrimental to farmers as agricultural production upstream is generally rainfed. While rice production downstream depends on irrigation, farmers are also affected as they must schedule and share water provided through irrigation due to scarcity. It negatively impacts their crop yield, household income, water availability for domestic and farm use, health, and livelihoods. This supports the previous study of Pulhin et al. (2016) that identified El Niño as among the major events experienced by upland farmers in Lantapan, Bukidnon, in terms of climate variability and extremes[27].

On the other hand, flooding results from typhoons and continuous heavy rainfall. Farms along riverbanks and those rice paddies and communities downstream are flooded. Related to this are flash floods that are becoming common in some rivers and streams that no longer maintain regular flows, like the Kulasihan River. Flooding and flash floods result in severe soil erosion, crop loss, and occasional loss of livestock and sometimes human lives. The participants shared cases of death due to fatal drowning from flash flooding. Other major climate-based hazards experienced are typhoons and tornadoes.

Table 6: Natural calamities and hazards affecting vulnerable groups in Manupali watershed

Climate-based hazards	Songco		Kulasihan	
	Female	Male	Female	Male
Landslides	✓			
Flooding	✓		✓	✓

[27] Pulhin, J.M., R.J. Peras, F.B. Pulhin, and D.T. Gevana. 2016. *Farmers' Adaptation to Climate Variability: Assessment of Effectiveness and Barriers Based on Local Experience in Southern Philippines. Farmers' Adaptation to Climate Variability: Assessment of Effectiveness and Barriers Based on Local Experience in Southern Philippines.* Journal of Environmental Science and Management, Issue 1, 1-14.

Climate-based hazards	Songco		Kulasihan	
	Female	Male	Female	Male
El Niño	✓	✓	✓	
La Niña	✓			
Payahan/Awos	✓			
Typhoon		✓	✓	
Flash flood		✓		
Famine		✓		
Buhawi/Tornadoes			✓	✓
Water shortage				✓
Black bug				✓

Source: Project team

The identified exposures affect the vulnerable groups at different locations in the Manupali watershed (Table 6). For example, the effects of El Niño are more pronounced to vegetable farmers in Songco, located upstream of the watershed. This result aligns with the project's baseline survey findings, where about 49% of the respondents also identified drought as the most destructive impact of climate change, followed by water shortage with 36%. The importance of water is reflected in the high number of respondents (92%) who consider water as their most important resource in farming. More than half of them (58%) rely on rainfall for water supply, while 28% draw water from rivers, creeks, or springs by gravity using a hose. When El Niño occurs (and during dry months), water competition is evident, which sometimes results in conflicts[28].

On the other hand, flooding and tornadoes severely affect the vulnerable groups in Kulasihan, which is downstream of the watershed. According to the participants, flooding is, at times, intensified by tornadoes. Several studies related to flood mapping and hydrologic modeling in Manupali have been conducted, which point to this lower part of the watershed as the most hazardous[29]. The impacts on the vulnerable groups in Songco and Kulasihan vary, particularly for women and men farmers, which in turn influence their perceptions regarding these hazards.

Based on the identified hazards by gender, there are commonalities in their responses, particularly on flooding and El Niño upstream and flooding and tornadoes downstream. The women farmers in Songco added landslides, La Niña and *'payahan'* or *'awos'*[30] while men farmers also mentioned typhoons and famine. In Kulasihan, women farmers shared about El Niño and typhoons (these were also mentioned by men and women farmers in Songco). In contrast, the male farmers recalled water shortage, a result of El Niño, and the attack of black bugs decades ago that damaged their crops and

[28] Piñon, C., Catacutan, D., Leimona, B., Abasolo, E., van-Noordwijk, M., & Tiongco, L. (2012*). Conflict, Cooperation, and Collective Action: Land Use, Water Rights, and Water Scarcity in Manupali Watershed, Southern Philippines.* CAPRi Working Paper, 104.

[29] See for example, Puno, G and Paringit E. 2017. LiDaAR surveys and flood mapping of Sawaga River. University of the Philippines. https://dream.upd.edu.ph/assets/Publications/LiDAR-Technical-Reports/CMU/LiDAR-Surveys-and-Flood-Mapping-of-Sawaga-River.pdf and Angelie, M. et al. 2020. Hydrologic Model for Flooding in Manupali Watershed and Its Implications to Land-Use Policies. Asia Pacific Journal of Social and Behavioral Sciences vol.18 https://www.researchgate.net/publication/348415539_Hydrologic_Model_for_Flooding_in_Manupali_Watershed_and_Its_Implications_to_Land-Use_Policies

[30] Observed strong winds at certain months of the year

resulted in famine. This result shows similarities in gender perceptions when it comes to natural disasters and hazards affecting them.

These natural disasters and hazards affect the vulnerable groups in Manupali differently (Table 7). Flooding washes away the crops of remote farmers planted in sloping areas in Songco, while those cultivations along creeks and rivers are also flooded. Rice in Purok 7 and 12 farmers in Kulasihan are often flooded. They again attributed it to the pineapple plantations adjacent to their rice fields. El Niño also affects all farmers in Songco, particularly those in remote areas. As their crops are rain-fed, they cannot grow and consequently die of drought; their livestock is also affected by the lack of water. This phenomenon also affects the rice farmers downstream as they need water for irrigation.

Meanwhile, typhoons affect everyone, including farmers, the IPs, women and youth. It damaged not just crops but also their houses. These are the same effects downstream in Kulasihan. Finally, based on experience, tornadoes affect those flood-prone areas in Purok 6 and 12. Rice farmers without digital access are at risk when a tornado happens. Tornadoes happen quickly and without digital access, they cannot communicate when a calamity is approaching.

Table 7: Effect of natural disasters and hazards to vulnerable groups in Manupali watershed

Climate-related hazards	Marginalized groups	How are they affected?
Flooding	Farmers in far-flung areas; those located near and along creeks (S) All farmers (K) Purok 6&12, which are flood prone areas (K)	Crops are washed away (S) All farmers are affected by floods because of the pineapple plantations (K) Easily affected by flood due to the pineapple plantation (K)
El Niño	All farmers (S) Remote farmers (S) Farmers (K)	Crops are not able to grow (S) Crops die (S) No water for livestock and crops (S) Limited availability of water for irrigated rice because trees are being cut in the uplands (K)
Typhoon	All (farmers, Lumad, women, youth (S) Everyone in the community (K)	Damaged crops (S) Damaged homes (roofs carried away by the winds) (S) Damaged crop and homes (K)
Buhawi/Tornado	Farmers with no digital access (K) Purok 6-12 – flood prone areas (K)	No means to communicate when there is a calamity approaching (K) Easily affected by flood due to the pineapple plantation (K)

Note: (S)- Sungco; (K)- Kulasihan

Source: Project team

3.4.4 Barriers to adapting to climate change and participation in forest landscape restoration and ways to overcome these

There are various barriers that limit smallholder farmers from adapting to climate change and participating in forest landscape restoration in the Manupali watershed (Table 9).

Barriers to adapting to climate change and participation in FLR

The barriers identified for smallholder farmers are mostly associated with their remote location, while those in Kulasihan pointed out the plight of laborers who are missing opportunities to be part of an organization. These barriers are discussed below:

- *Farms in remote locations.* The location of some smallholders in remote areas delimits them from promptly accessing important information, programs, and projects. This includes extension works related to climate change adaptation and mitigation. As such, they rely on their own local knowledge, skills, and capacities to cope with the effects of changing climate. Their remoteness also restricts them from participating in programs and/or projects unless they are deliberately enjoined by implementers where mechanisms are duly in place. For example, meetings were held in their sitios rather than in village centers, or pocket training events were conducted on farms with 3-5 farmer participants in Landcare activities. This extension strategy brought information and technologies to their farms, although it required time, effort, and commitment from the extension workers. Another instance is when these are environment-related and site-specific. For example, the National Greening Program of the DENR is being implemented in forestlands with some sites located within Mt. Kitanglad where some smallholders, especially those from the tribe, are farming[31].

- *Poor access to education.* Access to education is also challenging for those living in remote areas, contributing to their lack of education, knowledge, and confidence. With the government's Pantawid Pamilyang Pilipino Program (4Ps), selected indigents are provided with monthly financial assistance to ensure their children's education (up to 3) until high school. The same program is being implemented for indigenous peoples. Regardless, the distance of the elementary school in the village center of Songco remains far from distant sitios. In Sitio Mapawa, the Kayukayan Ta Siganlawan, a Talaandig Primary School, has been recently established to cater to the indigenous pupils in the area; however, the school and its pupils will benefit from better facilities. The public high school is in Balila, just before Poblacion, where the seat of the Municipal Government is located, while there are also two private high schools in Kibangay and Alanib. The Municipality has no vocational school; the closest state university and college is the Bukidnon State University in Malaybalay City and the Central Mindanao University in Maramag.

  Access to education in Manupali has improved compared to 20-30 years ago, considering the construction of more buildings and hiring of additional teachers, road improvements, government financial assistance like 4Ps, and others. However, the reality remains that during critical activities on the farm that require labor, such as planting and harvesting, children[32] opt to work instead of going to school to support their parents. This can be cultural, but the desire of children to help their parents with farming is strong. Aside from increasing their household income, some children also work to cover their school fees and necessities like notebooks, pens, and others. In 2021, Region X had the highest share of child laborers in the country at 14.8% or 15 in every 100 child laborers in the country in this region[33] (PSA, 2021). Within the region, many of them are from Bukidnon working on farms, who were mostly boys. As mentioned, Bukidnon is considered the region's food basket, where poverty is among the highest in the country.

  Another contributing factor to children working on farms is the lack of labor. This can be attributed to farmer-laborers for hire preferring to work in private companies nearby where the pay is higher, with benefits, and regular with six days of work per week although on a contractual basis every six months. Others opted to work in nearby cities like Malaybalay,

[31] Generally, farmers in Songco have houses in the village or sitio centers while they also maintain farmhouses (where they are farming); while there are some who only have one house situated right in their farms. However, some sitios are in remote areas; such that extension work can be challenging.
[32] 5-17 years old
[33] Philippines Statistics Authority. 2021. Working children and child labor situation. https://psa.gov.ph/content/working-children-and-child-labor-situation. Accessed 23 July 2023.

Valencia, and Cagayan de Oro. With limited education, they often do hard labor, such as laborers ('kargadors'), construction workers, domestic helpers, and others.

- *Limited access to communication platforms.* While some farmers have adapted to mobile phones, especially those involved in marketing farm produce (e.g., perishable produce), many in remote areas do not have this gadget. These smallholders are into subsistence farming; hence, using mobile phones is not a priority. Remote areas are also often not reached by strong communication signals. Extension services are often delivered in and around the village centers. Sharing key information is assigned to sitio leaders; however, some sites are so vast it is difficult to reach all constituents on time. Passing information by mouth is often the option, but can also be risky with the quality of information being passed on from one farmer to another and the usefulness of the information by the time it reaches them. With the increased use of social media in recent years, group chats in Messenger apps are used as another platform to share information; however, as mentioned, not all are connected digitally.
- *Unorganized smallholder farmers.* Many smallholder farmers are not organized or members of any organization. This was highlighted in Kulasihan, where many of the seasonal laborers in rice fields from other municipalities and nearby cities decided to stay in the village. They do not own lands. This limits them from joining organizations such as irrigators' associations and accessing assistance to improve their farming livelihood. Organizing farmers to form into collectives is important as projects from the government and non-government organizations are coursed through people's organizations (POs) and indigenous people's organizations (IPOs) to lessen transaction costs and ensure sustainability. For the farmers, being in a group assists them in getting better contracts from buyers and enables them to access resources and skill training.

  In Manupali, there are POs and IPOs in barangays, like the IAs in Kulasihan, which are federated at the municipal level into the Municipal Agriculture and Fishery Council. This Council, as well as the cooperatives, is being facilitated by the Municipal Agriculture's Office. As in cases across the country, maintaining the functionality of these organizations is challenging and is often associated with facilitation from assisting agencies (Ballesteros and Ancheta, 2020)[34]. Some of these have low levels of organizational maturity and are mainly formed to access funding, contributing to their seasonal functionality based on available support. As such, mismanagement issues result in low and declining membership.

For the elderly or senior citizens they are limited to many households, production, and community roles they used to perform mainly due to old age. Old age is also often associated with sickness. Accordingly, there are limited programs and projects for them aside from the usual membership to the village-level Barangay Senior Citizens Association, which is also federated at the municipal/city level. They were enlisted under the government PhilHealth healthcare program. They also receive a monthly pension amounting to P500 to augment their medical needs, although many elderlies in Songco claim that they have not received this yet. These are among the benefits they access as provided by the Republic Act 9994, known as the 2010 Expanded Senior Citizens Act.

Finally, for the rural youth, the barrier identified is their dwindling interest in farming. In Kulasihan, the youths are more interested in gadgets than in helping parents tend to rice fields. They have other priorities, such as spending time with their gangs ('barkada') and playing basketball. There are also limited youth organizations on the site that focus on farming livelihood or those that promote social enterprise based on farm products. There used to be 4H Clubs in every barangay that were facilitated

[34] Ballesteros, Marife M. & Ancheta, Jenica, 2020. The Role of Agrarian Reform Beneficiaries Organizations (ARBOs) in Agriculture Value Chain. Discussion Papers DP 2020-24, Philippine Institute for Development Studies. https://ideas.repec.org/p/phd/dpaper/dp_2020-24.html

by Agricultural Technicians, which is an organization of rural youth, primarily the out-of-school youth (15-30 years old), involved in education programs, including agriculture and income-generating projects for the four-fold development of the head, heart, hands, and health; however, only a few remain active. The Department of Agriculture, through the Municipal Agriculture's Office is facilitating the Young Farmers Program to provide opportunities for young farmers (18-30 years old) to develop a business model canvas and run agricultural businesses by providing financial assistance. This program needs to be extended to more youths so that many will know about it and can participate. At the moment, youths are loosely organized through the Sangguniang Kabataan (SK) (or Youth Council), which is the governing body of the youth assembly (*'Katipunan ng Kabataan'*) in every barangay. An SK official in Songco who is also from the tribe shared, *'... it is easy to mobilize basketball leagues as youths are interested in sports, compared to environmental activities like tree planting. Even then, we continue supporting the government's environmental endeavors.'*

Considering that many of the farmers are becoming elderly, the transition of the next generation is critical. However, as discussed, the interests of the rural youth are away from farming on one hand. On the other hand, farmers find farming livelihood difficult; they do not want their children to pursue farming[35]. This has serious implications for the future of farming, food systems, and food security.

Recommendations to address the barriers

- *Deliberate support to farmers in remote areas and those without lands*. On the poor access to information, it was suggested that sitio leaders should endeavor to inform them on key programs and projects, including warnings on typhoons and floods. Several capacitation activities were recommended for extension service delivery, such as seminars, training, and field visits. Facilitation is also needed to enable landless farmers to be organized and access government projects. For example, BUKUMA suggested organizing landless farmers so that they can be attached to the organization and hopefully assist them with their own rice farm in the village.
- *Respect for the elderly.* There was no specific suggestion for the elderly, but respecting them was highlighted in the discussion - making them feel valued and worthy of respect. Implementing a personal approach to organizing and encouraging senior citizens to participate in special community programs and projects is encouraged.
- *Organize young farmers* for farming livelihood**.** Before this, they must be involved in farming activities at a young age to appreciate the importance of this livelihood. As an organized rural youth in farming, a capacity-building program should be developed and implemented to educate them, including values formation, training events about farming, and others.

[35] Pinon, Caroline. 2022. *Achieving sustainable landscapes and livelihoods in the Philippine uplands: the role of farmer and stakeholders aspirations and actions*. PhD thesis, Australian National University. Accessed in https://openresearch-repository.anu.edu.au/bitstream/1885/266796/1/PhD_thesis_cdpinon_final_revised_2022.pdf (15 Aug 2023).

Table 8: Barriers and ways to access and participation in farming livelihoods and landscape restoration projects

Vulnerable groups	Barriers		Ways to access and participate in farming livelihoods	
	Songco	Kulasihan	Songco	Kulasihan
Farmers	● Located in remote areas ● No one informs those in remote areas about programs and projects ● Lack of knowledge ● Speak different dialect ● Lack of confidence	● No cellphones, radios; difficult to inform them (2) ● Lack of education; difficulty accessing programs from government ● Not updated on recent farming-related developments, programs and projects ● Many are not members of BUKUMA; they cannot access programs and projects ● Many do not own lands; cannot join in organizations (e.g., BUKUMA) and access assistance	● Conduct and organize training and seminars in their areas ● Conduct field visits ● Purok presidents or leaders should endeavor to inform them key programs and projects	● Personally inform them on important projects and activities ● Help landless farmers organize to access government projects ● Once landless farmers are organized, they can be attached to BUKUMA (2)
Senior citizens	● Difficulty to participate due to old age ● No projects specific for senior citizens	● Personally visit senior citizens to give them chance to participate	-	-
Youth	● Focus on gadgets ● Have other priorities than helping in the farm	● Not interested on farming ● Absence of a youth organization focused on farming livelihood	● Give them good education (e.g. farming, values) ● Encourage them to participate in trainings on farming ● Involve them in farming livelihood activities	● Organize youth for farming livelihood development (2)

Source: Project team

3.5 Policy and institutional environment on GESI for vulnerable groups in Manupali Watershed

Several policies mentioned in the preceding sections show the country's enabling policy environment for GESI. Table 9 presents some of the GESI-related policies in the country based on the identified vulnerable groups in the Manupali watershed. Some provide specific provisions for building their capacity to adapt to climate change. For example, Axis 4 in the Gender Equality and Women's Empowerment Plan details how opportunities for women's participation, leadership, and benefit in disaster resilience and humanitarian actions can be expanded. However, while these provide a national framework for promoting GESI in sustainable development, the challenge lies in their interpretation and enforcement at the local level by the Local Government Units (LGUs).

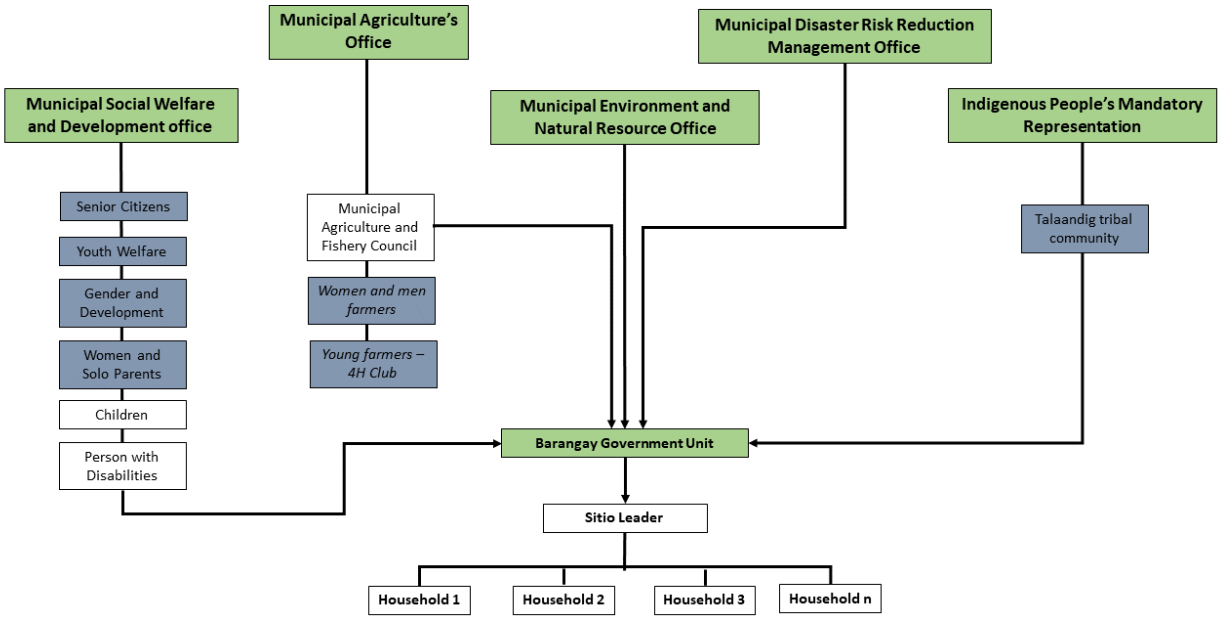
Table 9: GESI-related policies in the Philippines based on the identified vulnerable groups in the Manupali watershed

Policy	Title	Year enacted	Objective
RA 9710	Magna Carta of Women	2010	"to eliminate discrimination through the recognition, protection, fulfillment, and promotion of the rights of Filipino women, especially those belonging in the marginalized sectors of the society"
	Gender Equality and Women's Empowerment Plan (2019-2925)		"to increase opportunities for women and girls—especially for those from more marginalized and vulnerable communities—in the domains of social, economic, and human development"
RA 7607	Magna Carta of Small Farmers	1992	"to improve the lives of small farmers by empowering them and harnessing their potentials and abilities"
RA 9994	Expanded Senior Citizens Act	2010	"to give full support to the improvement of the total well-being of the elderly and their full participation in society…"
RA 8044	Youth in Nation-Building Act	1995	"to enable the youth to fulfill their vital role in nation-building… and establish the National Comprehensive and Coordinated Program on Youth Development…"
RA 8371	Indigenous People's Rights Act	1997	"to recognize and promote the rights of indigenous cultural communities and indigenous peoples in the Philippines."
RA 8972	Solo Parents' Welfare Act	2000	"to promote the family as the foundation of the nation, strengthen its solidarity and ensure its total development…. shall develop a comprehensive program of services for solo parents and their children…"

Source: Project team

In the Manupali watershed, some local offices were created to facilitate the enforcement of these national policies. For example, the Municipal Social Welfare and Development Office enforces the government's gender and development agenda for senior citizens, youths, and solo parents, among others. Some LGUs in the country have established separate Senior Citizen Affairs and Local Development Youth Offices. Meanwhile, as the Municipal Agriculture Office facilitates the smallholder farmers, the Municipal Disaster Risk Reduction Management Office ensures efficient and effective emergency response and disaster preparedness with active participation of the community, while MENRO is responsible for managing, conserving, preserving and protecting the environment and natural resources. There is also the Indigenous People's Mandatory Representation. which is a seat for IPs in local decision-making and planning bodies as provided by Indigenous Peoples' Rights Act (IPRA). Other local offices contribute to the promotion of GESI in the Municipality. Figure 4 presents the interrelations of the offices from the municipal level down to the barangay.

Figure 4: Local offices in the Municipality of Lantapan that works with the identified vulnerable groups in Manupali watershed



Source: Project team

3.6 Conclusions and recommendations

This GESI study has shown many stakeholders in Manupali, but their importance varies according to their location and interests in the watershed. The smallholder farmers are the primary stakeholders, particularly the vegetable farmers upstream and the rice growers downstream. They depend largely on land, water, and other natural resources for their farming livelihood. Other important stakeholders are the multinational companies operating within Manupali, such as the banana and pineapple plantations, and agri-business companies involved in poultry or livestock raising. These companies have high power and influence considering their resources and interests, as their business also depends on the land, water, and other natural resources provided by Manupali. With this, their operations also affect the farmers' small-scale cultivations.

Apart from women farmers, other marginalized and disadvantaged groups are in the Manupali watershed. This includes the smallholder farmers, the elderly or the senior citizens, and the youths. Their limited livelihood assets and locations in remote and critical (landslide and flood-prone) areas in the landscape make them vulnerable to the negative effects of climate change. This points to the necessity of gender-based project interventions and those catering to other vulnerable groups. Hence,

it is important to deepen understanding of their conditions and capacities for targeted interventions. As they are less capable, they must be given more attention, especially in adapting to the impacts of climate change through FLR. Meanwhile, there was a consensus on smallholder farmers as the most vulnerable group in Manupali between women and men farmers and upstream and downstream villages. Still, there were already differences between the succeeding groups.

Climate change adaptation and mitigation interventions are crucial as these groups are exposed to different climate hazards. El Nino is adversely affecting smallholders' vegetable gardens and other crops in upstream villages, while floods with mud from pineapple plantations in adjacent villages are damaging rice fields in downstream villages during monsoons and typhoons. Tornadoes also occur sometimes along with typhoons. These hazards intensify the damage not just on farms but also on properties (houses), infrastructures (roads), and worse, casualties (deaths). While these hazards are natural and cannot be controlled, interventions can be designed and implemented to minimize their negative effects on vulnerable groups and their farming livelihood.

These vulnerable groups face several barriers that limit them from fully participating in development projects like FLR, which will consequently assist them in coping and adapting to climate change's effects. It is important to note that these barriers vary from one vulnerable group to another as they are in different parts of the landscape and have different contexts. Smallholder farmers are often located in remote areas, which limits their access to critical information, participation in programs and projects, and benefit from extension delivery. Their location, among other factors, also limits them from completing education, affecting their confidence and options for more diverse livelihoods. Meanwhile, rice farm laborers are excluded from joining organizations because they do not own land. Meanwhile, senior citizens are limited by their health due to old age whereas rural youths have low interest in farming livelihood. They are also not organized to support farming livelihoods.

Albeit limited, it is argued that these groups have different capacities to participate in FLR and enable them to adapt to climate change. The following are recommended:

- Designing and implementing targeted interventions considering the locations, the different contexts of the vulnerable groups, the varied livelihood assets and capacities of women and men farmers that affect how they can participate in projects and adapt to climate-based hazards. Such will enable these different groups to access project opportunities and benefits equally. It is important to note that planning for targeted interventions requires deeper understanding of each group.
- Harnessing gender and group differentials to address their strategic needs. For example, utilize women's ability on documentation for participatory monitoring and evaluation of community-based projects. For the rural youth, engage them in farming livelihood, particularly in digital marketing of farm products, considering their interest in gadgets or in social enterprise to encourage their creativity in processing and marketing. These require skills development, and this is imperative to make farming enticing to the youth. Building alliances and networking can also help capacitate these vulnerable groups.
- Localizing or contextualizing national GESI-related policies and institutions. As local institutions are already in place, they can still be improved in terms of being functional and effectively connecting to the groups by reaching out to them and understanding their situations – towards a more effective extension work delivery. Although the budget is limited, such can help maximize this meager resource by designing and implementing more responsive programs and projects where these groups can meaningfully participate as partners and ensure long-term impacts. There are also other stakeholders in the watershed whose agenda includes GESI that can help them enforce these national policies locally. For FLR, developing an engagement plan with these vulnerable groups and the stakeholders will promote equal opportunities for them to participate in project activities.

- I recommend a more comprehensive and holistic GESI study in the Manupali watershed. These vulnerable groups are affected by factors other than environment and climate change. Hence, there is a need to deepen current understanding and assess their situation holistically by using integrative approaches and expanding the scope of respondents and participants in the study. Understanding gender differences and recognizing the other groups' capacities are crucial to FLR in strengthening their potential and adapting to the changing climate. Such understanding will ensure that well-meaning initiatives will not lead to (adverse) unintended consequences for smallholder farmers and other vulnerable groups in Manupali.

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Seedling planting. Community member planting seedlings in degraded land in the Sangker River Basin, Cambodia (photo by Project Team)

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