INTERNATIONAL TROPICAL TIMBER ORGANIZATION

ITTO

PROJECT DOCUMENT

TITLE	CLIMATE RISK AND VULNERABILITY ASSESSMENT OF POTENTIAL INVESTMENT AREAS (PIAs) WITHIN FOREST LAND IN THE PHILIPPINES
SERIAL NUMBER	PD 944/25 (F)
COMMITTEE	REFORESTATION AND FOREST MANAGEMENT
SUBMITTED BY	GOVERNMENT OF THE PHILIPPINES
ORIGINAL LANGUAGE	ENGLISH

SUMMARY

The Philippine Forests are increasingly vulnerable to natural disasters and climate-related hazards, such as pests, diseases, soil degradation, typhoons, and droughts. These risks pose significant threats to forest ecosystems and the investments tied to them. This project aims to assess these vulnerabilities and provide actionable insights for private investors, enabling them to optimize their investments in climate-resilient forestry and reduce financial risks. By implementing the recommended strategies, investors can expect improved asset protection, reduced revenue loss, and a contribution to national climate adaptation goals.

EXECUTING AGENCY	:	PHILIPPINES FOREST MANAGEMENT BUREAU (FMB)	
DURATION	:	12 MONTHS	
APPROX.STARTING DATE	:	TO BE DETERMINED	
BUDGET AND PROPOSED SOURCES OF FINANCE		**Source**	**Contribution (in US$)**
		ITTO	**160,000**
		TOTAL	**160,000**

Table of Contents		
Part	**Heading**	**Page**
	Project Brief	3
	List of Abbreviations and Acronyms	5
Part 1	**Project Context**	6
1.1	- Origin	6
1.2	- Relevance	6
1.2.1	- Conformity with ITTO's objectives and priorities	6
1.2.2	- Relevance to the submitting country's policies	8
1.3	- Target Area	9
1.3.1	- Geographic location	10
1.4	- Expected outcomes at project completion	11
Part 2	**Project Rationale and Objectives**	12
2.1	- Rationale	12
2.1.1	- Organizational issues	12
2.1.2	- Stakeholder analysis	14
2.1.3	- Problem analysis	16
2.1.4	- Logical framework matrix	20
2.2	- Objectives	21
2.2.1	- Specific objective and outcome indicators	21
Part 3	**Description of Project Interventions**	25
3.1	- Outputs and activities	25
3.1.1	- Outputs	25
3.1.2	- Activities	25
3.2	- Implementation approaches and methods	27
3.3	- Work plan	28
3.4	- Proposed Budget	30

Project Brief

This project aims to conduct a comprehensive Climate Risk and Vulnerability Assessment (CRVA) for selected forestlands identified as potential investment areas in the Philippines to be included in the Forest Investment Portfolio Package which will be offered to investors. The assessment will evaluate the potential impacts of climate change on forestry investments, focusing on risks associated with extreme weather events, shifting climate patterns, biodiversity loss, and overall forest health. The results will inform the development of climate-resilient investment strategies for forestry projects, particularly in areas that hold significant economic, environmental, and social value.

The main objectives of this project include:

1. Conducting a thorough analysis of climate hazards, incorporating both present and future climate change scenarios.
2. Assessing the vulnerability of forest ecosystems to various natural and climate hazards, soil degradation, and extreme weather events.
3. Synthesizing the findings into comprehensive reports that detail the current and future climate risks to selected potential investment areas, with a focus on providing actionable recommendations for private investors.

The project will provide key insights into climate-related risks for forestry investments in the Philippines, enabling stakeholders to make informed decisions that protect forest ecosystems, reduce climate vulnerabilities, and promote sustainable investments. The findings will contribute to building long-term climate resilience, improving forest management practices, and encouraging climate-smart investments in the forestry sector.

The Climate Risk and Vulnerability Assessment for forestland investments in the Philippines will establish a valuable foundation for sustainable, climate-resilient forestry practices. By identifying and addressing climate risks, the project aims to ensure that forest investments contribute positively to both economic development and environmental sustainability, even amid growing climate challenges.

Beneficiaries

The primary beneficiaries of the project will be the Philippine government, especially the Department of Environment and Natural Resources (DENR), which is responsible for monitoring and law enforcement, and the Forest Management Bureau (FMB), which oversees forest policy and programs. Additionally, the initiative will enhance the competitiveness of the forestry industry, benefiting all economic actors involved in the production and processing of timber. Increased access to reliable information will also assist other stakeholders, including local communities, non-governmental organizations, and civil society as a whole.

Methodology

As the executing agency of the DENR, the FMB will collaborate with other bureaus within the DENR to gather the necessary data for this project. From a technical standpoint, the FMB will engage a single sub-contractor for the project's implementation, thereby simplifying overall project management and coordination. The selection process for the sub-contractor will adhere to ITTO guidelines.

Budget

The total budget for the project is $132,858, which will be requested from ITTO.

List of Abbreviation and Acronyms

CENRO	Community Environment Natural Resources Office
CRVA	Climate Risk and Vulnerability Assessment
DAO	Department Administrative Order
DENR	Department of Environment and Natural Resources
DOST	Department of Science and Technology
ERDB	Ecosystems Research and Development Bureau
FMB	Forest Management Bureau
FIDD	Forest Investment Development Division
GIS	Geographic Information System
ITTA	International Tropical Timber Agency
ITTO	International Tropical Timber Organization
LGU	Local Government Units
PAGASA	Philippine Atmospheric, Geophysical, and Astronomical Services Administration
PENRO	Provincial Environment and Natural Resources Office
PDP	Philippine Development Plan
PIA	Potential Investment Areas
PPP	Public-Private Partnerships
MGB	Mines and Geosciences Bureau
NCCAP	National Climate Change Action Plan
NGO	Non-governmental Organization
RCP	Representative Concentration Pathway

PART 1: PROJECT CONTEXT

The Project

Forests in the Philippines are facing significant risks due to natural disasters and climate-related hazards such as diseases, pests, soil degradation, typhoons, flooding, landslides, and droughts. These risks are expected to intensify in the future due to the impact of climate change. Sustainable forest management is crucial, and private investors need to be advised on climate-resilient forestry investments in the Philippines.

To address this need, the Forest Management Bureau (FMB) is proposing a project that will conduct a comprehensive climate hazard and risk vulnerability assessment of potential investment areas (PIAs) within classified Forest Lands in the Philippines. The project aims to provide private investors with insights into the current and future climate risks associated with forestry investments. This will enable informed decision-making and the implementation of climate-resilient strategies.

1.1 Origin

In 2014, the Forest Management Bureau issued Technical Bulletin No. 5 to guide the DENR Field Offices in the criteria and methodology for the delineation and mapping of production and protection forests. Production forests are lands of the public domain that can be made available for but not limited to timber and agroforestry production, range lands for grazing, and other forest lands for special uses.

The guidelines on the ground delineation of production forests for investments (FMB Technical Bulletin No. 5-A) was issued in 2018 to provide procedural guidance in the delineation of potential investment areas (PIA). In the same year, the FMB initiated the operationalization of the delineation of PIA as a vital component of our commitment outlined in the Philippine Development Plan 2017-2022.

Since then, the DENR field offices have successfully generated maps for PIA suitable for various production purposes such as agroforestry, grazing, and other special uses. These PIA will be actively promoted and marketed to non-governmental organizations, civil society organizations, and private companies for the sustainable management of these areas.

1.2. Relevance

1.2.1 Conformity with ITTO's Objectives and Priorities

The present project proposal is compliant with the objective of the International Tropical Timber Agency (ITTA) of 2006, to contribute to the process of sustainable development.

- *To promote and support research and development with a view to improving forest management and efficiency of wood utilization as well as increasing the capacity to conserve and enhance other forest values in timber producing tropical forests;*

- *To develop and contribute towards mechanisms for the provision of new and additional financial resources and expertise needed to enhance the capacity of producing members to attain the objectives of this Agreement;*
- *To encourage members to support and develop industrial tropical timber reforestation and forest management activities as well as rehabilitation of degraded forest land, with due regard for the interests of local communities dependent on forest resources;*

The present project supports the strategic priority of the ITTO Strategic Action Plan 2022-2026, under Resilience, restoration and conservation, to Analyze and promote approaches to managing forest landscapes in an integrated manner in the context of a changing climate.

Similarly, the project will support the Philippines in meeting the following national objectives:

a. Achieving sustainable development and inclusive growth while enhancing resilience to climate risks of the Philippine Development Plan (PDP). The CRVA will serve as a guide/input in climate-resilient infrastructure development and sustainable land use planning.
b. Strengthening the country's climate adaptation and mitigation efforts through Ecosystem and environmental stability and Climate-smart industries and services under the National Climate Change Action Plan (NCCAP). The CRVA will provide localized data to prioritize actions, enabling targeted climate-resilient strategies, and decision-making for climate adaptation and mitigation programs.
c. Strengthening disaster preparedness and risk reduction through climate-responsive policies under the Philippine Disaster Risk Reduction and Management Act of 2010 (Republic Act 10121). The CRVA will identify areas with high exposure and vulnerability to climate-induced disasters (e.g., typhoons, floods, droughts), and will support disaster risk reduction planning by providing vulnerability maps and projections.

Natural disasters, such as the destruction of thousands of hectares of forest due to Super Typhoon Rai and the recent Super Typhoon Gaemi just last July 2024, highlight the urgent need for this assessment. The degradation of forests not only threatens biodiversity but also endangers livelihoods, particularly in rural areas, and undermines the Philippines' commitment to international climate agreements. Immediate action is essential to protect these ecosystems, and the economic investments tied to them.

This project is critical for private investors, as it will provide them with a clear understanding of the risks and opportunities associated with climate-resilient forestry. Successful investments in similar initiatives in neighboring countries have

demonstrated significant returns and enhanced ecosystem resilience, making this a promising opportunity for both financial and environmental impact.

1.2.2. Relevance to submitting country's policies

The project aligns closely with national policies by directly supporting the Philippines' overarching goals of climate resilience, sustainable development, and disaster risk reduction. Here's how it integrates with key national frameworks:

- Philippine Development Plan (PDP): The current Philippine Development Plan emphasizes inclusive growth and sustainable development, which includes ensuring climate resilience. By assessing the climate risks and vulnerabilities of potential investment areas, the project aligns with the plan's objectives of promoting investments that are sustainable and climate-resilient;

- National Climate Change Action Plan (NCCAP): The Philippines has a National Climate Change Action Plan that outlines strategies for mitigating and adapting to climate change. A climate risk and vulnerability assessment directly supports this plan by identifying areas most at risk from climate impacts, helping prioritize areas for adaptation;

- Local Government Code and Disaster Risk Management Plans: This policy encourages local governments to plan for climate-related risks and incorporate resilience into local development. The climate risk assessment can provide local governments with data to strengthen their disaster risk management plans and enhance local adaptation efforts;

- Disaster Risk Reduction and Management Act (RA 10121): This law emphasizes the importance of disaster risk reduction and management. Climate vulnerability assessments will inform investment decisions and risk management strategies in areas prone to disasters like floods, typhoons, and droughts, ensuring that the country's investments are resilient to such risks.

- Green Economy Framework: The Philippines has shown increasing interest in green investments and a transition to a green economy. Climate risk assessments help ensure that investment projects are designed with environmental sustainability in mind, identifying both physical and transition risks related to climate change

By aligning with these policies, the project provides critical data for making informed decisions on investments, ensuring that they are not only financially sound but also resilient to climate impacts, which supports the Philippines' long-term sustainability goals.

1.3. Project Area

The Forest Management Bureau issued Technical Bulletin No. 5 to guide the DENR Field Offices in the criteria and methodology for the delineation and mapping of production and protection forests. Production forests are lands of the public domain that can be made available for but not limited to timber and agroforestry production, range lands for grazing, and other forest lands for special uses. The Technical Bulletin No. 5 was the prerequisite in developing guidelines on the ground delineation of Production Forests for Investment or the Potential Investment Areas (Technical Bulletin No. 5-A).

Since then, the DENR field offices have successfully generated maps for PIA suitable for various production purposes such as agroforestry, grazing, and other specialized uses. These PIA will be actively promoted and marketed to non-governmental organizations, civil society organizations, and private companies for the sustainable management of these areas.

The Philippines has a vast area of Potential Investment Areas (PIA), which is approximately 1.18 million hectares and is spread throughout the country as seen in Figure 1. To focus on data collection, analysis, and reporting on the specific risks of individual sites. This project will cover the following region groups: (1) Region I, II, III, and CAR; (2) Region IV-A, IV-B, and V; (3) Region VI, VII, VIII, and IX; and (4) Region X, XI, XII, and XIII.

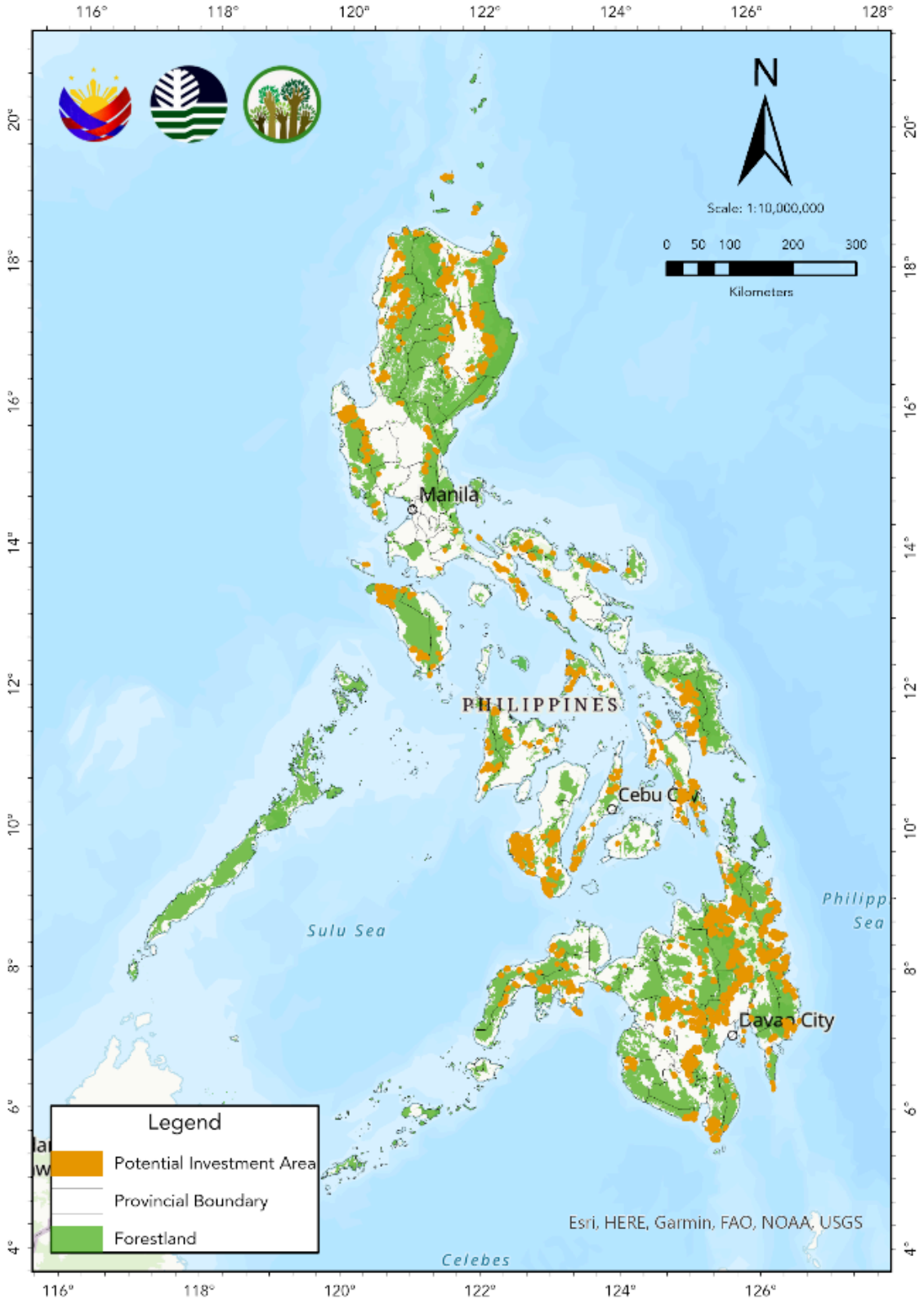

Figure 1. Potential Investment Areas within the Forest Land in the Philippines

1.4. Expected outcomes at project completion.

It is expected that at the end of the project, “Climate Risk Vulnerability Assessment of Potential Investment Areas” the outcomes are as follows:

Specific Outcomes:

a. Maps
   - Climate Risk Maps per Municipality/ Province/ Region: Detailed maps identifying areas vulnerable to climate-related hazards (e.g. flooding, droughts, heatwaves, etc.
b. Tabulated Data in .csv format
   - Climate Data Analysis per Municipality/ Province/ Region
   - Vulnerability Index Municipality/ Province/ Region: Quantitative index ranking communities/ regions by climate vulnerability.
c. Shapefile, kml/kmz
   - Datasets for mapping the risks analysis
d. Technical Reports
   - Risk Assessment Report: Comprehensive documentation of climate-related risks, impacts, and vulnerabilities
   - Climate resilient Infrastructure Plans/ Investment Options: Recommendations for the investors of climate-resilient investment options to their prospect area
   - Stakeholder Engagement Plan: strategies for involving stakeholders in climate resilient efforts

PART 2: PROJECT RATIONALE AND OBJECTIVES

2.1. Rationale

Forests in the Philippines are increasingly vulnerable to natural disasters and climate-related risks, such as pests, diseases, soil erosion, typhoons, and droughts. These challenges pose significant threats to both forest ecosystems and the investments linked to them. This project aims to assess these vulnerabilities and provide actionable recommendations for private investors, enabling them to strengthen their investments in climate-resilient forestry while mitigating financial risks. By implementing the proposed strategies, investors can anticipate enhanced asset protection, reduced revenue losses, and a meaningful contribution to the country's climate adaptation objectives.

2.1.1. Organizational issues

The Forest Management Bureau (FMB) of the Department of Environment and Natural Resources of the Philippines plays a key role in forest governance and management, and addressing climate risk and vulnerability assessment involves various organizational aspects. These can range from internal capacity and resource allocation to coordination with other agencies and stakeholders. Below is the potential organizational issues that the Forest Management Bureau (FMB) may face in the context of the Climate Risk and Vulnerability Assessment project:

- Institutional Capacity and Expertise - Technical Knowledge Gaps: The FMB may need to enhance its internal technical capacity, particularly in climate change modeling, vulnerability assessments, and integrating climate change into forest management practices.

  Solution: FMB can engage in training programs, partnerships with academic institutions, or hiring additional experts in climate science and forest ecosystems.

- Lack of Specialized Staff: There might be a shortage of specialized staff in climate risk assessment, GIS mapping, or other technical fields needed for a comprehensive vulnerability assessment.

  Solution: Recruiting or collaborating with experts from external institutions like universities, research organizations, or international partners.

- Data Availability and Quality - Insufficient Baseline Data: Inadequate baseline data on forest health, biodiversity, community vulnerability, and climate trends can pose challenges in accurately assessing climate risks.

  Solution: *Strengthening monitoring systems, utilizing remote sensing, and collaborating with research bodies or universities to gather high-quality data.*

- Data Gaps and Integration: Data from various sources (e.g., weather data, ecosystem health, socio-economic information) may not be integrated or standardized, making it difficult to conduct a comprehensive risk and vulnerability assessment.

  Solution: *Establishing standardized data collection protocols, integrating datasets from multiple agencies, and ensuring data sharing between relevant bodies.*

- Uncertainty in Climate Projections: When predicting future changes in local conditions, climate models frequently contain uncertainties. The Philippines is especially susceptible to typhoons, floods, and droughts; although these risks are well-documented, it is still difficult to predict with any degree of accuracy how frequently and how intensely these events will occur, which complicates risk assessments for investors. This uncertainty makes it difficult to evaluate long-term climate risks for forestry investments with a high degree of confidence.

  Solution: The agency can invest more in climate risk modelling that accounts for both immediate and long-term climate impacts, including extreme weather events, and can improve the accuracy of risk assessments.

- Private Sector and Market Readiness: If climate risks are not adequately recognized or taken into consideration, there may be little incentives for private sector investments in climate-resilient forestry initiatives. Investors can be hesitant to put long-term sustainability ahead of immediate profits if they are unclear about the financial ramifications of climate threats.

  Solution: Government policies and regulations that promote and reward climate-resilient forestry investments can help drive greater private sector participation.

2.1.2. Stakeholder analysis

Climate Risk and Vulnerability Assessment in the Philippines highlights a diverse array of actors, each with unique interests and levels of influence. Successful engagement with these stakeholders will require clear communication, shared objectives, and collaborative decision-making. Ensuring that all stakeholders are adequately involved will help create a more inclusive, comprehensive, and sustainable climate resilience strategy for forests and forest-dependent communities.

Stakeholder Analysis				
Stakeholder	**Characteristics**	**Problems, needs, interests**	**Potentials**	**Involvement in the project**
Primary Stakeholders				
Forest Management Bureau (FMB)	Project lead and implementing agency.	The FMB is responsible for improving forest management practices, conserving forest ecosystems, and integrating climate change considerations into forest governance.	FMB holds significant authority over forest management policies and implementation in the Philippines.	Lead project planning, coordination, and execution.
Department of Environment and Natural Resources (DENR)	FMB's parent agency and key partner in environmental management.	The DENR is responsible for national environmental protection and regulation, including forest conservation and biodiversity.	The DENR oversees national forest policies, laws, and regulations, and has jurisdiction over environmental governance.	Collaborate on aligning the climate vulnerability assessment with national environmental goals.
Secondary Stakeholders				
Local Government Units (LGUs)	Key partners in the implementation of forest management activities at the local level.	LGUs are involved in local land-use planning, forest governance, disaster risk management, and community welfare.	LGUs play a critical role in the on-the-ground implementation of policies and the mobilization of community resources.	Involve LGUs in the climate risk assessment process, ensuring that local-level risks and vulnerabilities are captured.
Non-Governmental Organizations (NGOs) and Civil Society Organizations (CSOs)	Advocates for environmental sustainability, community rights, and climate action.	Climate adaptation, forest conservation, biodiversity protection, and community empowerment.	NGOs and CSOs can provide technical expertise, raise awareness, and influence policy decisions. They also play a critical role in community outreach.	Collaborate on data collection, community engagement, and dissemination of findings.
National Disaster Risk Reduction and Management Council (NDRRMC)	Government body tasked with disaster preparedness, response, and risk reduction.	Integration of climate risks into disaster risk reduction and resilience building.	NDRRMC has strong influence in shaping national disaster policies and coordinating response efforts, particularly in the context of climate-induced	Collaborate on integrating forest vulnerability findings into broader disaster risk reduction plans.

Stakeholder Analysis				
Stakeholder	**Characteristics**	**Problems, needs, interests**	**Potentials**	**Involvement in the project**
			disasters like floods and droughts.	
Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)	National agency responsible for weather forecasting, climate analysis, and climate data.	Improved understanding of climate change impacts, particularly in the context of extreme weather events like typhoons and droughts.	PAGASA provides the necessary climate data and weather forecasting, which is critical for climate vulnerability assessments.	Work with PAGASA to gather and integrate climate data into the vulnerability assessment.
Department of Agriculture (DA)	Government agency responsible for agriculture, which can be significantly impacted by climate change, especially in forest-adjacent farming communities.	Protecting agricultural productivity, food security, and climate adaptation for farming communities.	The DA's involvement is critical to ensuring that climate vulnerability assessments include agriculture's role in forest-dependent livelihoods.	Integrate climate change impacts on agriculture and forest ecosystems into the vulnerability assessments.
Research Institutions and Universities	Provide scientific research, data collection, and technical support for climate vulnerability assessments.	Advancing knowledge on forest ecosystems, climate change impacts, and adaptation strategies.	Research institutions have technical expertise and can assist in producing high-quality data and analysis for the assessment.	Collaborate on research methodologies and data collection
Private Sector	Industries that may be impacted by climate change and forest management policies, including logging, agriculture, and ecotourism.	Economic stability, sustainable business practices, and minimizing the impact of climate-related disruptions on operations.	Private sector interests often have a significant influence on policy, especially in industries like logging, agriculture, and tourism.	Encourage private sector participation in sustainable forest management and climate adaptation strategies.
International Donors and Funding Agencies	Provide financial and technical support for climate change adaptation and forest management projects.	Promoting climate resilience and sustainable development in forest ecosystems, while meeting international climate goals	Donors often influence the scope, scale, and funding mechanisms for climate-related projects. Engagement Strategy:	Seek funding and technical assistance for data collection, research, and community-based adaptation.

2.1.3. Problem analysis

Conducting a Climate Risk and Vulnerability Assessment of Potential Areas in the Philippines involves addressing various challenges, given the country's geographic, socio-economic, and environmental conditions. Below is a problem analysis that outlines key issues that may arise during the project and the potential solutions to these problems.

- Lack of Planning - a critical issue that can hinder the successful execution of the Climate Risk and Vulnerability Assessment (CRVA) project in the Philippines. A well-structured and comprehensive planning process is essential to ensure the project's objectives are met efficiently, effectively, and on time. Below is an analysis of the key challenges arising from inadequate planning, as well as potential solutions for addressing them.

  Key issues related:
  - Data gaps and Inconsistent Data quality; and uncertainty in Climate Projections - Uncertainty around future climate projections (e.g., varying scenarios for temperature rise, rainfall changes, frequency of extreme weather events) can make it challenging to develop reliable long-term plans for climate adaptation. Limited understanding of local-scale climate impacts, such as microclimates or specific forest ecosystem responses to climate change, could affect the accuracy of the vulnerability assessments.

  Potential Solutions:
  - ➔ Collaborate with universities and international climate institutions to refine local climate models and projections based on the latest scientific research;
  - ➔ Use scenario-based approaches to explore different possible futures and assess the implications for vulnerability, allowing flexibility in the adaptation strategies;
  - ➔ Incorporate local knowledge and expert judgment alongside scientific projections to better account for uncertainties in future climate trends.

  - Lack of Technical Knowledge on Climate Models and Risk Assessment Tools - Insufficient knowledge about how to analyze and interpret climate data and how to apply these models at a local level can result in flawed risk assessments or missed vulnerabilities. Limited expertise in climate science, modeling, and the use of Geographic Information Systems (GIS) can impede the accuracy and reliability of these tools.

  Potential Solutions:
  - ➔ Provide training and capacity building in climate modeling, GIS, and risk assessment tools for relevant staff, local governments, and stakeholders involved in the project;

➔ Collaborate with technical experts and institutions (e.g., universities, climate research centers, and international organizations) to ensure the project team has access to advanced knowledge and tools for accurate climate projections and vulnerability assessments;
➔ Hire or consult with climate specialists who have expertise in climate modeling, risk assessment, and vulnerability mapping to guide the project.

- Financial Constraints and Resource Limitations - Competition for limited climate funding among various sectors and projects could delay or hinder the allocation of necessary resources for the vulnerability assessment. Budget constraints may limit the scope of the project, particularly for remote and underfunded regions. The project may struggle to secure sufficient funding for comprehensive data collection, field assessments, and community consultations.

  Key issues related:
  - Limited government budget allocation - can significantly constrain the successful implementation of the Climate Risk and Vulnerability Assessment (CRVA) project in the Philippines. Adequate financial resources are crucial for carrying out detailed assessments, engaging stakeholders, and developing and implementing climate adaptation strategies. Without sufficient funding, the project may face delays, reduced scope, or compromised quality, ultimately undermining its potential impact.

  Potential Solution:
  ➔ Seek funding from a range of sources, including government agencies, international donors (e.g., UNDP, World Bank), climate adaptation funds, and private sector partnerships.
  ➔ Prioritize high-risk areas and sectors in the initial phase of the assessment, focusing on the most vulnerable communities and ecosystems. This phased approach allows for targeted actions in the areas with the greatest need.

- Forest degradation and deforestation - is a key challenge for the Climate Risk and Vulnerability Assessment (CRVA) project in the Philippines. Forest ecosystems in the country are essential for maintaining biodiversity, regulating water cycles, storing carbon, and providing livelihoods to local communities. However, deforestation, logging, land conversion for agriculture, and unsustainable practices contribute to significant forest degradation, which exacerbates vulnerability to climate change. Understanding the link between forest degradation and climate risk is critical for the success of the CRVA project, as it can help identify priority areas for conservation and restoration and inform adaptation strategies.

Key issues related:

- Loss of Ecosystem Services - Degradation of forest ecosystems, through deforestation or poor land management, diminishes these services, making areas more vulnerable to climate risks such as floods, droughts, and landslides. It leads to increased vulnerability to natural disasters, particularly in areas prone to flooding, erosion, and landslides. It also results in a loss of carbon storage capacity, contributing to global warming and further intensifying local climate risks.

- Lack of maintenance and protection - is a critical concern for the success of the Climate Risk and Vulnerability Assessment (CRVA) project in the Philippines. Without proper maintenance and protection of natural resources, especially forests, watersheds, and biodiversity, the effectiveness of climate adaptation measures will be severely limited. Inadequate protection can lead to the degradation of ecosystems, loss of valuable services, and increased vulnerability to climate risks, which undermines the long-term sustainability of the project's goals.

Potential Solutions:

- ➔ Prioritize forest restoration and conservation in areas identified as highly vulnerable to climate risks, particularly in watersheds and forested regions prone to erosion, flooding, or drought.
- ➔ Promote sustainable forest management practices and enforce regulations to combat illegal logging, slash-and-burn agriculture, and other activities that contribute to deforestation.
- ➔ Establish monitoring and evaluation systems that track the health of ecosystems, particularly those identified as critical for climate resilience, such as forests, wetlands, and coastal areas.

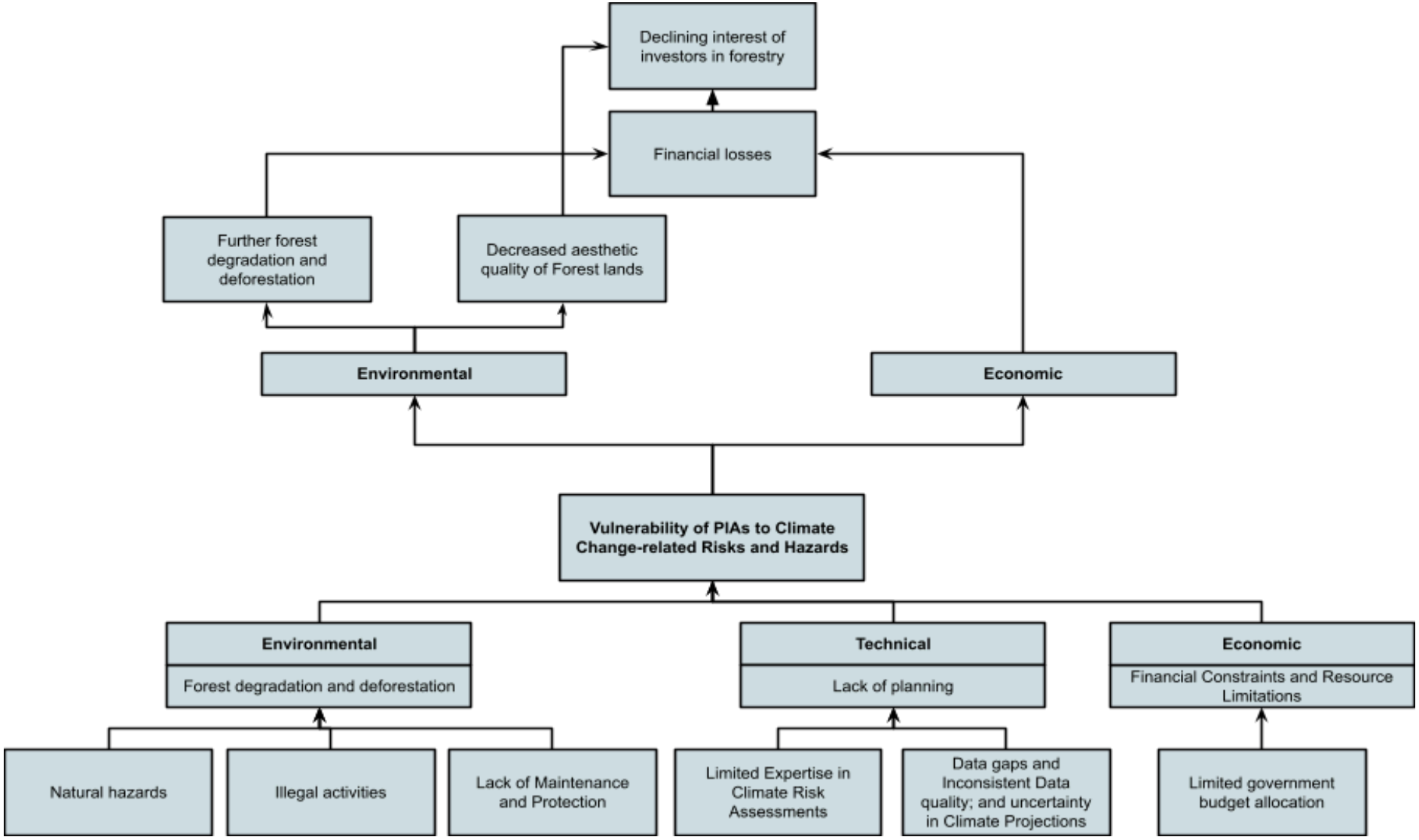

Figure 2. Problem Tree Analysis

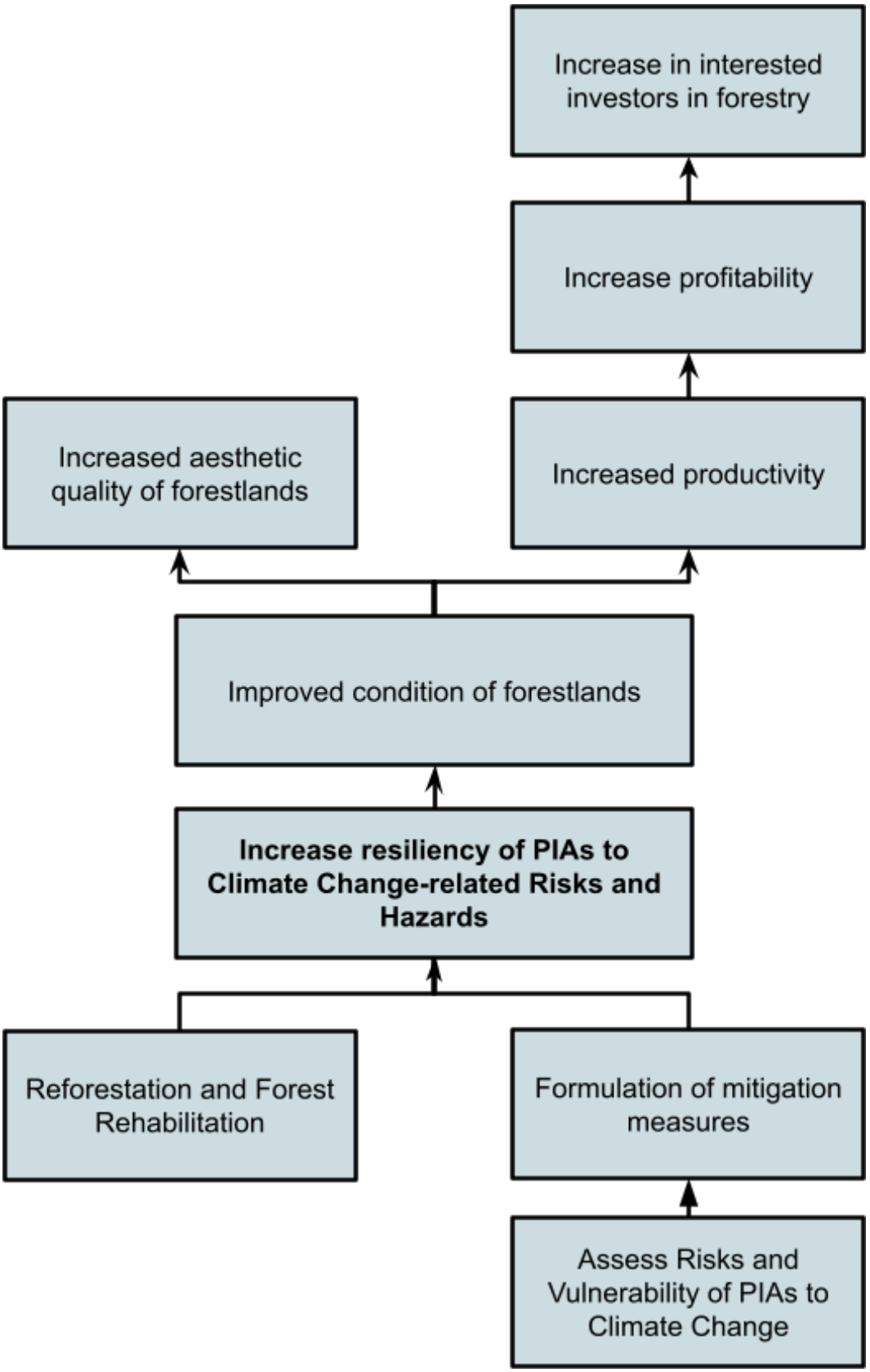

Figure 3. Solution Tree Analysis

2.1.4. Logical framework matrix

Narrative Description	Indicators	Means of Verification	Assumptions
Goal: Climate Resilient Potential Investment Areas that are economically attractive to investors	Increase in number of interested investors in forestry	● Emails/letters signifying interest to invest in forestry or inquiring on forest investment opportunities ● Submitted applications for tenurial instruments	Uninterested investors Forestlands remain unprofitable
Outcome 1 **1.** Improved disaster preparedness for PIAs	Increase of Community awareness and response time	Risk Assessment Reports	lack of awareness when it comes to disaster preparedness
Output **1.1** Formulate mitigating measures	No. of hectares of PIAs with formulated mitigation plans	Formulated mitigation plans for PIAs Reports submitted	Inadequate funding and lack of resources; slow policy formulation
Activities **1.1.1** Conduct CRVA	No. of hectares of PIAs subject to CRVA	Formulated CRVAs Reports submitted	lack of funding
Inputs **1.1.1.1** Primary and secondary data, GIS analysis, additional manpower, funding, materials/equipment			
Outcome 2 Properly maintained and protected forestlands	Increase in forest cover	● Forest Cover Monitoring and Satellite Imagery ● Monitoring of illegal activities	Local Communities Are Engaged and Support Forest Protection; Forestland Management Institutions Have the Necessary Capacity
Output **2.1** Rehabilitated and reforested forestlands	Increase of tree survival rate; forest canopy cover; forest density; and Species composition	● Comparison of before and after imagery ● Change detection ● Regular monitoring	Forest Ecosystems Are Resilient to Climate Change; Illegal Activities, such as Logging and Poaching, Will Be Effectively Controlled
Activities **2.1.1** Conduct tree planting activities	No. of hectares and seedlings planted	● Project Documentation and Records ● Site Visits and Ground-Truthing ● Tree Inventory and	Sufficient Funding and Resources Will Be Available; Capacity of Local

Narrative Description	Indicators	Means of Verification	Assumptions
2.1.2 Conduct regular maintenance and protection		Documentation	Institutions and Stakeholders Will Be Sufficient

2.2 Objectives

The main objectives of this project include:

1. Conducting a thorough climate hazard analysis, incorporating present and future climate change scenarios.
2. Assessing the vulnerability of forest ecosystems to various nature and climate hazards, soil degradation, and extreme weather events.
3. Synthesizing the findings into comprehensive reports detailing the current and future climate risks to selected potential investment areas, with a focus on providing actionable recommendations for private investors.

2.2.1. Specific objectives and outcomes

Specific Objectives

Objective 1: Conduct a comprehensive climate risk and vulnerability analysis of potential investment areas incorporating present and future climate change scenarios.

- Outcome: A clear understanding of climate hazards (e.g., floods, typhoons, sea-level rise) and their potential impact on identified investment areas.
- Indicators for Verification:
    - Identification of key climate risks (e.g., frequency and severity of typhoons, flood risk, droughts) in the assessment report.
    - Climate data analysis reports detailing historical and future climate projections for the target areas.
    - Availability of a climate hazard map showing areas at risk of specific climate-related events.
    - Vulnerability index or rating for each sector and community, illustrating the degree of vulnerability across different regions.
    - A vulnerability assessment report that includes a detailed sectoral analysis (e.g., agriculture, tourism, infrastructure) of vulnerability to climate risks.

Objective 2: **Integrate climate risk and vulnerability assessments into the planning and decision-making processes for investments in the target areas.**

- Outcome: Investment decisions in the selected areas are informed by climate risk assessments and adaptation strategies to ensure long-term sustainability.

- Indicators for Verification:
    - Analyze the possible financial effects of climate threats on various industries (e.g., crop losses, infrastructure damage, or business operations interruptions).
    - Create and model various risk scenarios according to the importance of climate impacts (e.g., worst-case versus best-case scenarios) and how they affect investment regions.
    - Investment guidelines or recommendations that reflect climate resilience criteria, including risk management protocols for potential investments.

Objective 3: **Develop and propose adaptation strategies to reduce climate risks and enhance resilience in the identified investment areas.**

- Outcome: Concrete recommendations for climate adaptation measures and strategies to improve resilience in targeted sectors.
- Indicators for Verification:
    - A list of proposed adaptation measures, including infrastructure upgrades, early warning systems, and climate-smart agricultural practices.
    - Feasibility studies or cost-benefit analyses of proposed adaptation strategies, assessing their viability and potential impact.
    - Inclusion of resilience indicators such as risk reduction percentages or cost-effectiveness in proposed strategies.
    - Policy integration: Evidence of climate risk factors being incorporated into regional or national development plans and investment strategies (e.g., in the Philippine Development Plan (PDP) or local climate adaptation plans).

Expected Outcomes:

1. Improved Understanding of Climate Risks: Decision-makers, investors, and local stakeholders will have access to detailed, accurate data on climate risks and vulnerabilities in targeted areas, which will help to mitigate potential negative impacts.
    - Indicator: Published assessment report and risk maps available to local governments, investors, and key stakeholders.
2. Resilient Investment Planning: Potential investments will be more climate-resilient by incorporating adaptation strategies based on the vulnerability and risk assessments.
    - Indicator: A climate-resilient investment framework developed and applied to at least one pilot investment project, with documented guidelines for future investments.
3. Effective Policy Integration: Climate risk assessment findings will be integrated into national and local development policies, guiding future investment planning in the context of climate change.

    - Indicator: Official policy documents or development plans (e.g., local government development plans, national climate action plans) that include climate risk assessment data and adaptation recommendations.
4. Strengthened Local Capacity for Climate Adaptation: Local communities and governments will be better equipped to assess and respond to climate risks, fostering sustainable development and investment.
    - Indicator: Increased local engagement in climate risk assessments and adaptation projects (e.g., number of local governments adopting climate-adaptive policies).

Problem to be addressed

Conducting a Climate Risk and Vulnerability Assessment (CRVA) for Potential Investment Areas (PIAs) is essential for understanding and managing the impacts of climate change on these vital ecosystems and formulating mitigating measures in response to these. Forests are highly sensitive to shifts in climate, such as changes in temperature, precipitation patterns, and the frequency of extreme weather events. By assessing these risks, investors gain insight into how climate change could affect forest health, growth rates, and overall productivity, thereby protecting their investments from potential adverse effects.

A CRVA is irreplaceable for managing the complexities of climate risks in Potential Investment Areas (PIAs). It enables investors to anticipate and mitigate potential challenges, ensures compliance with regulations, supports biodiversity conservation, and ultimately enhances the long-term success and resilience of forest investments.

The devastation of thousands of hectares of forest by Super Typhoon Gaemi and Rai and other recent natural disasters emphasize how urgently this assessment is needed. Along with posing a threat to biodiversity, forest degradation additionally compromises livelihoods, especially in rural regions, and calls into question the Philippines' commitment to international climate agreements. Protecting these ecosystems and the financial interests associated with them requires swift action.

PART 3: DESCRIPTION OF PROJECT INTERVENTIONS

3.1. Outputs and activities

The output of this Climate Risk and Vulnerability Assessment of Potential Investment Areas in the Forest Land in the Philippines would be included as a portion in the Forest Investment Portfolio Package to aid and let investors know the possible risks that projects within the area would entail and how to mitigate the said risks.

Output formats:

a. Hazard and Vulnerability analyses in raster format;
b. Data in comma delimited (.csv) format; and
c. Documentation and Final Report of the project

3.1.1. Outputs

Output 1: Detailed maps identifying areas vulnerable to climate-related hazards (e.g. flooding, droughts, heatwaves, etc.

Output 2: Tabulated Data in .csv format Climate Data Analysis per Municipality/ Province/ Region and Vulnerability Index Municipality/ Province/ Region: Quantitative index ranking communities/ regions by climate vulnerability.

Output 3: Datasets for mapping the risks analysis in shapefile format

Output 4: Technical Reports - Risk Assessment Reports

3.1.2. Activities

These activities will help provide comprehensive insights into the potential risks associated with climate change in investment areas and guide the development of informed, resilient investment strategies that contribute to the long-term sustainability of the Philippines.

Activity 1: Identification of Climate Risks and Vulnerabilities

- Climate Hazard Mapping: Identify specific climate hazards (e.g., flooding, droughts, typhoons, sea-level rise, etc.) relevant to the selected areas.
- Vulnerability Assessment: Evaluate the vulnerability of the identified areas by considering factors like local infrastructure, population density, land use, and existing capacity to cope with climate impacts.
- Sectoral Risk Analysis: Assess how climate risks impact key sectors in potential investment areas (e.g., agriculture, infrastructure, tourism, health, water resources, etc.).

Activity 2: Data Collection and Analysis

- Geospatial Data Gathering: Use GIS (Geographic Information Systems) to collect geospatial data related to the geographic characteristics of potential investment areas (e.g., elevation, proximity to water bodies, land use).

- Climate Data Review: Collect historical climate data (e.g., temperature, rainfall, extreme weather events, etc.) and future climate projections for different timeframes (e.g., short-term, medium-term, and long-term).
- Socioeconomic Data Collection: Gather data on population, infrastructure, livelihoods, and economic activities within the investment areas to understand the human and economic context.

Activity 3: Risk Scenarios and Modeling

- Climate Impact Modeling: Use climate models to simulate various climate change scenarios and how they could impact the identified investment areas in terms of extreme weather events, temperature changes, or sea-level rise.
- Economic Impact Analysis: Assess the potential economic impact of climate risks on different sectors (e.g., crop losses, infrastructure damage, or disruptions to business operations).
- Risk Scenarios: Develop and model different risk scenarios based on the severity of climate impacts (e.g., worst-case vs. best-case scenarios) and their implications for investment areas.

Activity 4: Report Writing and Documentation

- Preparation of Assessment Report: Document the findings of the climate risk and vulnerability assessment, including the methods used, key results, and recommendations for adaptation and investment strategies.
- Risk and Vulnerability Maps: Provide detailed maps of the identified climate risks and vulnerabilities in the target areas, showing areas most at risk from climate hazards.
- Executive Summary: Produce a concise summary for decision-makers that highlights key risks and recommended actions.
- Development of Adaptation Strategies
    - Vulnerability Reduction Plans: Based on the identified risks and vulnerabilities, propose adaptation strategies for reducing exposure to climate hazards (e.g., improved infrastructure design, early warning systems, flood control measures).
    - Integration into Investment Plans: Recommend how climate risk considerations can be integrated into investment planning processes to ensure that future investments are climate-resilient.
    - Policy Recommendations: Provide policy recommendations to support the integration of climate risk and vulnerability assessments into local development plans and national policies.

Activity 5: Monitoring and Evaluation Framework

- Climate Monitoring Systems: Propose monitoring and evaluation systems to track the effectiveness of climate adaptation measures and investments over time.

- Continuous Risk Assessment: Set up a system for periodic reassessment of climate risks, especially as new climate data and investment opportunities emerge.

3.2. Implementation approaches and methods

The project will be divided into four sub-phases:

1. **Hazard Analysis.** The first phase of the project involves the collection and organization of climate hazard data for both current and future climate change scenarios. This data will be merged with exposure data provided by the FMB, which may include land cover or land use data that identifies the potential investment areas and focus areas for the climate hazard analysis. The outcome of the initial phase will be a diagnostic map of hazards created with the appropriate resolution.

    a. Hazards (Geohazard and Climate hazards)
    b. Representative Concentration Pathway (RCP)/ Shared Socioeconomic Pathway (SSP) scenarios:
        i. RCP2.6/SSP1 (Sustainability)
        ii. RCP4.5/SSP2 (Middle of the road)
        iii. RCP 7.0/SSP3 (Regional rivalry)
        iv. RCP8.5/SSP5 (Fossil-fueled development)
    c. Time horizons
        i. Baseline (current)
        ii. 2030 (near-term)
        iii. 2040 (mid-term)
        iv. 2050 (mid-long term)
        v. 2100 (long-term)

2. **Climate Risk and Vulnerability Assessment.** In the second sub-phase of the project, the focus will be on gathering and organizing scientific research and other datasets. The objective of this phase is to evaluate the vulnerability of various forest regions to specific nature and climate hazards. The collected data will then be combined with the hazard data gathered in the previous phase. This will enable the creation of a comprehensive climate risk assessment, which will be rated on a single scoring system.

3. **Loss Projection.** Estimating the possible monetary losses that investments in the PIAs might incur due to the hazard exposure and ecological sensitivity found in the earlier phases of this scope would be the third phase of the project.

4. **Risk Mitigation Options.** Given the output of the previous phases, identifying the possible mitigation options for the investment to aid in mitigating losses due to climate-induced hazards.

3.3. Work Plan

OUTPUTS/ ACTIVITIES	RESPONSIBLE PARTY	QUARTER			
Output 1: Hazard and Vulnerability Analyses					
Activity 1.1: Identification of Climate Risks and Vulnerabilities	Consultant				
Activity 1.1.1: Climate Hazard Mapping: Identify specific climate hazards (e.g., flooding, droughts, typhoons, sea-level rise, etc.) relevant to the selected areas	Consultant				
Activity 1.1.2: Vulnerability Assessment: Evaluate the vulnerability of the identified areas by considering factors like local infrastructure, population density, land use, and existing capacity to cope with climate impacts	Consultant				
Activity 1.1.3: Sectoral Risk Analysis: Assess how climate risks impact key sectors in potential investment areas (e.g., agriculture, infrastructure, tourism, health, water resources, etc.).	Consultant				
Activity 1.2: Data Collection and Analysis	Consultant				
Activity 1.2.1: Geospatial Data Gathering: Use GIS to collect geospatial data related to the geographic characteristics of potential investment areas (e.g., elevation, proximity to water bodies, land use).	Consultant				
Activity 1.2.2: Climate Data Review: Collect historical climate data (e.g., temperature, rainfall, extreme weather events, etc.) and future climate projections for different timeframes (e.g., short-term, medium-term, and long-term)	Consultant				
Activity 1.2.2: Socioeconomic Data Collection: Gather data on population, infrastructure, livelihoods, and economic activities within the investment areas to understand the human and economic context.	Consultant				
Output 2: Risk Scenarios and Modeling					

Activity 2.1. Climate Risk and Vulnerability Assessment and Modeling	Consultant				
Activity 2.1.1: Climate Impact Modeling: Use climate models to simulate various climate change scenarios and how they could impact the identified investment areas in terms of extreme weather events, temperature changes, or sea-level rise.	Consultant				
Activity 2.1.2: Economic Impact Analysis: Assess the potential economic impact of climate risks on different sectors (e.g., crop losses, infrastructure damage, or disruptions to business operations).	Consultant				
Activity 2.1.3: Risk Scenarios: Develop and model different risk scenarios based on the severity of climate impacts (e.g., worst-case vs. best-case scenarios) and their implications for investment areas.	Consultant				
Output 3: Documentation of potential criteria on possible risk mitigation strategies and loss projection to be included in the packaging of PIAs offered to potential investors.					
Activity 3.1. Loss Projection and Identification of Risk Mitigation Strategies	Consultant				
Activity 3.1.1: Preparation of Assessment Report: Document the findings of the climate risk and vulnerability assessment, including the methods used, key results, and recommendations for adaptation and investment strategies.	Consultant				
Activity 3.1.2: Risk and Vulnerability Maps: Provide detailed maps of the identified climate risks and vulnerabilities in the target areas, showing areas most at risk from climate hazards.	Consultant				
Activity 3.1.3: Executive Summary: Produce a concise summary for decision-makers that highlights key risks and recommended actions.	Consultant				
Activity 3.1.4: Development of Adaptation Strategies	Consultant				
Activity 3.2: Monitoring and Evaluation Framework	Project Proponent				

3.4. Proposed Budget

3.4.1 Master Budget Table

The calculated cost for the Assessment of Potential Investment Areas to Natural Disasters and Climate-Related Hazards is at US$ 132,858.

Outputs/ Activities	Description	Budget Category	Quantity	Unit	Unit Cost	Total	ITTO	Exec. Agency
		Code	*1 Year*		*US$ (1,000)*			
Output 1: Hazard and Vulnerability Analyses								
Activity 1.1: Identification of Climate Risks and Vulnerabilities								
	Consultant/ Subcontract							
	Consultant - Project management	1301	1	Person months	1	11.07	11.07	0
	Consultant - Communication	1302	1	Person months	1	11.07	11.07	0
	Consultant - Forest Monitoring	1303	1	Person months	1	11.07	11.07	0
	Travel	30	0	-	0	0	0	0
	Consumable items	50	0	-	0	0	0	0
	Miscellaneous	60	0	-	0	0	0	0
Activity 1.2: Data Collection and Analysis								
	Consultant/ Subcontract							
	Consultant - Project management	1301	1	Person months	1	11.07	11.07	0
	Consultant - Communication	1302	1	Person months	1	11.07	11.07	0
	Consultant - Forest Monitoring	1303	1	Person months	1	11.07	11.07	0
	Travel	30	0	-	0	0	0	0
	Consumable items	50	0	-	0	0	0	0

Outputs/ Activities	Description	Budget Category	Quantity	Unit	Unit Cost	Total	ITTO	Exec. Agency
		Code	*1 Year*		*US$ (1,000)*			
	Miscellaneous	60	0	-	0	0	0	0
Output 2: Risk Scenarios and Modeling								
Activity 2.1. Climate Risk and Vulnerability Assessment and Modeling								
	Consultant/ Subcontract							
	Consultant - Project management	1301	1	Person months	1	11.07	11.07	0
	Consultant - Communication	1302	1	Person months	1	11.07	11.07	0
	Consultant - Forest Monitoring	1303	1	Person months	1	11.07	11.07	0
	Travel	30	0	-	0	0	0	0
	Consumable items	50	0	-	0	0	0	0
	Miscellaneous	60	0	-	0	0	0	0
Output 3: Documentation of potential criteria on possible risk mitigation strategies and loss projection to be included in the packaging of PIAs offered to potential investors.								
Activity 3.1. Loss Projection and Identification of Risk Mitigation Strategies								
	Consultant/ Subcontract							
	Consultant - Project management	1301	1	Person months	1	11.07	11.07	0
	Consultant - Communication	1302	1	Person months	1	11.07	11.07	0
	Consultant - Forest Monitoring	1303	1	Person months	1	11.07	11.07	0
	Travel	30	0	-	0	0	0	0
	Consumable items	50	0	-	0	0	0	0
	Miscellaneous	60	0	-	0	0	0	0

Outputs/ Activities	Description	Budget Category	Quantity	Unit	Unit Cost	Total	ITTO	Exec. Agency
		Code	*1 Year*		*US$ (1,000)*			
	Project monitoring and administration	80						
	Project monitoring and review	8001	1	-	1	5	5	0
	National audit costs	8002	1	-	1	5	5	0
	ITTO Programme support	8005	1	-	1	17.14	17.14	0
	Grand Total	**1000**			1	160	160	0

The master budget allocates a total of $160,000, which is entirely funded by ITTO. The primary expense category is sub-contracts, totaling $132,858. This amount includes costs for meetings ($12,728), quality assurance reviews ($16,972), and the presentation of results ($8,486).

The budget is organized around three main outputs: Hazard and Vulnerability Analyses, Risk Scenarios and Modeling, and Documentation of Risk Mitigation Strategies. Activities associated with these outputs include data collection and analysis ($22,541), additional research ($18,033), and report writing ($31,557). The funds for personnel, travel, consumable items, and miscellaneous expenses fall within the sub-contract budgetary requirements

Additional budget allocations to the ITTO Secretariat cover audit costs ($5,000), program support ($17,142), and project monitoring and administration ($5,000).

3.4.2 Yearly Consolidated Budget

Category	Description	Total (1 year) in US$1000
10	**Consultant/ Subcontract**	
1301	Consultant - Project management	53.14
1304	Consultant - Communication	39.86
1306	Consultant - Forest Monitoring	39.86
	Subcontract total	**132.86**
30	**Travel**	0
50	**Consumable items**	0
60	**Miscellaneous**	0
80	**Project monitoring and administration**	27.14
8001	Project monitoring and review	5.00
8002	National audit costs	5.00
8005	Programme support	17.14
1000	**Grand Total**	**160.00**

The Yearly Consolidated Budget amounts to $160,000, with the majority, $132,860, designated for consultant and subcontractor services. This allocation encompasses project management ($53,140), communication efforts ($39,860), and forest monitoring ($39,860). Additional budget allocations cover audit costs ($5,000), program support ($17,142), and project monitoring and administration ($5,000). The funds for personnel, travel, consumable items, and miscellaneous expenses fall within the sub-contract budgetary requirements.

3.4.3 ITTO Yearly Budget

The ITTO yearly budget will remain consistent with the amount specified in the consolidated annual budget, as the project has a one-year duration and an allocated budget of $160,000.

Category	Description	Total (1 year) in US$1000
10	**Consultant/ Subcontract**	
1301	Consultant - Project management	53.14
1304	Consultant - Communication	39.86
1306	Consultant - Forest Monitoring	39.86
	Subcontract Total	**132.86**
30	**Travel**	0
50	**Consumable items**	0
60	**Miscellaneous**	0
80	**Project monitoring and administration**	27.14
8001	Project monitoring and review	5.00
8002	National audit costs	5.00
8005	Programme support	17.14
1000	**Grand Total**	**160.00**

3.5. Assumptions, risks, and sustainability

Climate Risk and Vulnerability Assessment (CRVA) is crucial for Potential Investment Areas (PIAs) due to the unpredictable nature of climate change in a certain area of the country. This project will be included in the Forest Investment Portfolio Package that will be offered to the potential investors. This will aid in evaluating potential risks and vulnerabilities in forest environment aspects like soil quality, water availability, and pest and disease dynamics. CRVA helps investors anticipate outcomes, develop mitigation strategies, and identify adaptive management practices. It provides a framework for informed decisions, allowing investors to build resilience, safeguard investments, and contribute to sustainable land stewardship.

Assumptions

- **Climate Change Projections**: The project assumes the accuracy of climate models and predictions, such as temperature changes, rainfall

patterns, and extreme weather events. These projections help to determine which areas are more vulnerable and what impacts could arise.

- **Local Stakeholder Cooperation**: The assumption that local communities, government bodies, and businesses will be cooperative and aligned with the assessment process and the proposed investments. This includes willingness to share data, implement recommendations, and engage in sustainable practices.
- **Data Availability**: Assumes access to sufficient and accurate data on forest health, biodiversity, land use, and socio-economic conditions within the PIAs, as well as historical climate data to assess vulnerabilities effectively.
- **Technology Availability and Reliability**: The assumption that the technologies used to assess climate risks (e.g., GIS, remote sensing tools) are reliable, up-to-date, and able to provide accurate data in real-time.

Risks

- **Data Gaps and Inaccuracies**: Incomplete or inaccurate data could lead to incorrect assessments of vulnerability. There could be challenges with getting reliable environmental or socio-economic data from remote areas, especially if some forest regions are underreported or not monitored effectively.

- **Changing Political or Regulatory Landscape**: Sudden changes in government policies, land-use regulations, or forest protection laws could impact the project's objectives, especially if new policies limit investment opportunities or favor different forms of land use.
- **Extreme Weather Events**: The Philippines is highly vulnerable to natural disasters like typhoons, floods, and droughts. These risks could hinder the ability to complete assessments on the ground, delay progress, or even destroy infrastructure or resources essential for the project.
- **Resistance from Local Communities**: There could be local opposition to the project, particularly if it involves changes in land-use practices or if communities feel the assessments don't reflect their actual needs or if they fear negative consequences like displacement or loss of livelihood.
- **Funding and Resource Limitations**: Lack of sufficient funding or resources could delay or limit the scope of the climate risk and vulnerability assessments, which could compromise the quality of the assessment or lead to incomplete solutions.

Sustainability

- **Environmental Sustainability**: By assessing climate risks in forest areas, the project directly contributes to preserving ecosystems, maintaining biodiversity, and preventing deforestation. This can promote long-term ecological stability in the face of climate change.

Incorporating adaptive measures to help forests cope with these changes is key.

- **Social Sustainability**: The project could have positive social impacts if it leads to improved forest management, more resilient communities, and enhanced livelihoods. However, for this to be sustainable, the engagement with local communities must be thorough and sensitive to their needs and concerns. Fostering partnerships for education and capacity-building is essential.
- **Economic Sustainability**: Identifying the most climate-resilient investment areas can lead to better management of resources, more profitable land uses, and the creation of sustainable livelihoods in the long run. Ensuring that any investments in forest areas contribute to local economies without compromising ecological health will be key for the project's economic sustainability.
- **Long-Term Monitoring and Adaptation**: Sustainability can be enhanced by setting up mechanisms for continuous monitoring and adaptation of forest management strategies. This includes integrating adaptive management frameworks that allow future investments and policies to respond to ongoing climate impacts.

PART 4: IMPLEMENTATION ARRANGEMENTS

4.1. Organization structure and stakeholders involvement mechanisms

4.1.1 Executing Agency and Partners

The proposed executing agency for the project is the Philippines' Forest Management Bureau (FMB), one of the "Staff Bureau" of the Department of Environment and Natural Resources (DENR), the FMB is mainly responsible for recommending and implementing policies and programs to improve forest management. The Department of Environment and Natural Resources (DENR) Regional Offices will play a key role in providing institutional support and ensuring effective project implementation within their respective Provincial Environment and Natural Resources Offices (PENROs) and Community Environment and Natural Resources Offices (CENROs) at the local level. These offices will be responsible for coordinating, monitoring, and facilitating the execution of the project's activities in alignment with regional environmental priorities.

The Executing Agency, the Forest Management Bureau (FMB), will aid in coordinating with other offices of the DENR (*e.g*. MGB, ERDB) and other agencies such as DOST-PAGASA, etc. The same will work in close collaboration with interested potential investors, ensuring that any investment aligns with the project's objectives. This partnership will foster sustainable forest management practices and encourage investments that are not only environmentally sound but also contribute to the long-term resilience and economic sustainability of forest ecosystems. By leveraging the expertise and authority of DENR at both the regional and local levels, the project aims to create a cohesive and impactful approach to addressing climate risks and vulnerabilities in forested areas.

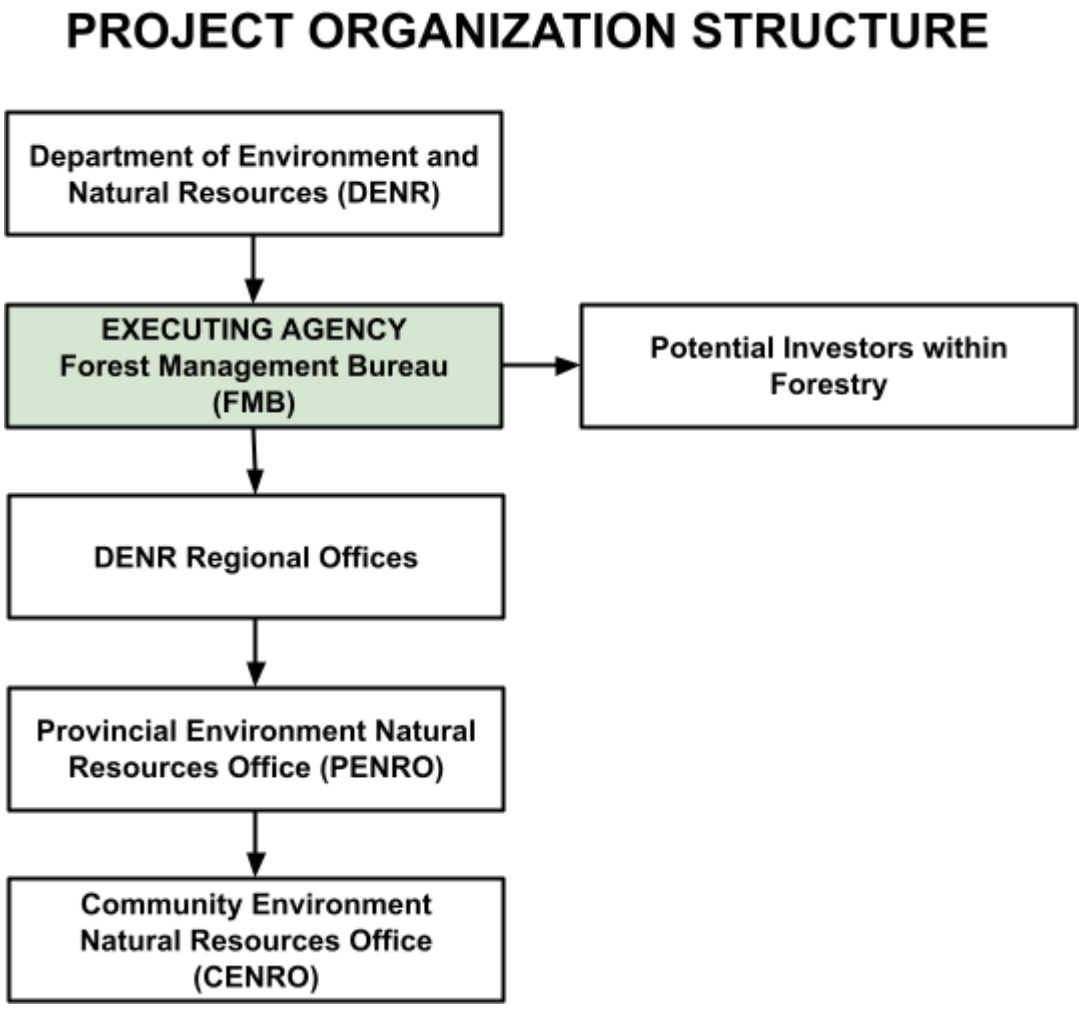

Figure 4. Project Organization of the Climate Risk and Vulnerability Assessment of Potential Investment Areas

4.1.2. Project Management Team

The project management team will be comprised of;

(a) an overall project coordination (FMB);
(b) a project manager of the technical sub-contractor

4.1.3. Project Steering Committee

The steering committee, responsible for the high level project guidelines and contractual arrangements will include;

(a) an appointed representative by the Secretary of DENR
(b) the overall project coordinator (FMB);
(c) the project manager of the technical subcontractor;
(d) a representative of the ITTO.

4.2. Reporting, review, monitoring and evaluation

a. Reporting Framework. To ensure effective reporting, the following framework will be utilized:

- Data Collection and Analysis: Collection of baseline climate data, historical climate patterns, projections, and socio-economic data.
- Vulnerability and Risk Assessment: Identification of key vulnerabilities in infrastructure, agriculture, health, and ecosystems.
- Risk Scenarios: Development of various climate risk scenarios based on different climate change projections.
- Adaptation Strategies: Formulation of practical recommendations to reduce vulnerability and enhance resilience to identified climate risks.
- Each stage of the project will be reported in periodic intervals, with progress updates, findings, challenges, and any changes in the scope of the work.

b. Review Process

The review process will ensure that the project remains on track and meets its intended goals. The review process will include:

- Internal Review: Regular reviews by the project team to assess progress, adjust strategies, and address challenges.
- Stakeholder Engagement: Involving key stakeholders (government agencies, local communities, businesses, NGOs) in discussions to provide feedback on findings and recommendations.
- Peer Review: Engagement with external experts to evaluate the methodology, accuracy of the assessments, and the robustness of the climate risk models.
- Key milestones in the review process include:
- Completion of initial data collection and analysis.
- Mid-term review to evaluate the progress of the vulnerability and risk assessment.
- Review of final recommendations and adaptation strategies.

c. Monitoring Plan

Monitoring the progress of the project ensures that it stays within scope, budget, and timeline. The monitoring plan will cover:

- Progress Indicators: These may include completion of data collection, completion of vulnerability assessments, stakeholder engagement activities, and completion of adaptation strategies.
- Timelines and Milestones: The project will be divided into phases (e.g., baseline data collection, vulnerability assessment, scenario modeling, adaptation recommendations), and each phase will have clear timelines.
- Risk Management: Identifying potential risks (e.g., delays in data collection, challenges in stakeholder engagement) and implementing mitigation strategies.
- Data Validation: Ensuring data accuracy by cross-referencing with reliable sources and applying validation methods.
- Regular meetings will be held to monitor progress, identify bottlenecks, and update stakeholders.

d. Evaluation Plan

Evaluation is the final step to assess the impact and effectiveness of the project. The evaluation will focus on:

- Relevance: To what extent does the project address the needs of the investment areas and stakeholders in terms of climate risk and vulnerability assessment?
- Effectiveness: How well did the project achieve its intended objectives, including the development of actionable adaptation strategies?
- Efficiency: Was the project executed on time and within budget? Were resources used effectively?
- Sustainability: Will the outcomes of the project continue to benefit the investment areas and stakeholders in the long term? Are the recommendations adaptable to future climate scenarios?
- Impact: How has the assessment improved climate resilience in the target areas? Has it informed policy, investment decisions, and local adaptation strategies?
- The evaluation will include both quantitative (e.g., cost-effectiveness analysis) and qualitative methods (e.g., stakeholder interviews, surveys).

4.3. Dissemination and mainstreaming of project learning

The dissemination of this would focus on sharing the results of the project through diverse channels (publications, workshops, digital platforms) with both local and national stakeholders, ensuring the findings reach those who can apply them. In ensuring the findings reach relevant stakeholders and that the lessons are incorporated into long-term forest management strategies, investment policies, and climate adaptation frameworks in the region. The FMB will actively promote presentations of the results of the project (clearly presented that the project as an

ITTO funding) at various national and international events potentially including, but not limited to the following:

- Technical Reports**:** Produce comprehensive technical reports detailing the climate risks, vulnerabilities, and opportunities identified for different PIAs. Also, produce policy briefs tailored to policymakers outlining the implications for forest governance and investment planning;
- Social Media: Promotion of the project through the use of social media platforms (e.g. LinkedIn) to share bite-sized insights, infographics, or key findings. These platforms are useful for engaging with a wider audience, including youth and other less traditional stakeholders;
- Roundtable Discussions with Government and Private Sector: Hold focused policy dialogues where findings can be shared with government agencies, private investors, and NGOs who are key decision-makers in land use and forest management. This will also open up conversations about integrating climate risk into investment decisions.
- Capacity Building and Training: Train Local Stakeholders: Provide training workshops for local government units (LGUs), forest managers, and NGOs on climate risk assessment tools, and the importance of climate vulnerability data in forest management decisions.
    - Establish Training Programs for the Private Sector: Work with forestry and investment companies to build capacity around considering climate risk in investment strategies, particularly in forest-based projects.
- Incorporating into Investment and Business Practices: Sustainable Investment Frameworks - Mainstream climate risks into frameworks for forest investment. This can include providing private investors with tools to assess climate vulnerabilities of investment areas (PIAs), promoting "climate-smart" investments in forestry that account for long-term sustainability and risk.
    - Public-Private Partnerships (PPPs): Develop partnerships with the private sector to promote responsible forest investment that considers climate risks, biodiversity conservation, and social impacts. Such partnerships can help mobilize funding for projects that integrate climate resilience into forest management.

Conclusion

The assessment will result in a comprehensive report detailing the vulnerabilities of forests to natural disasters and climate-related hazards. Key outcomes will include:

1. **Identification of High-Risk Areas.** Pinpointing forests most vulnerable to climate-related threats.
2. **Investment Strategies.** Recommending strategies for private investors to mitigate risks and capitalize on opportunities.
3. **Economic Impact Analysis.** Estimating the potential financial returns from investing in climate-resilient forestry.
4. **Policy Recommendations.** Offering suggestions to policymakers on how to support private investments in forest resilience.

To mitigate the risks associated with natural disasters and climate change, it is important to strengthen climate-resilient forest investments in the Philippines. The Forest Investment Development Division of the Forest Management Bureau aims to provide investors with the necessary information and understanding to make informed decisions and implement sustainable forestry practices by conducting comprehensive evaluations of hazards and vulnerabilities. Through collaborative efforts, we can protect forest ecosystems and ensure that investments made in the Philippines are sustainable in the long run.

ANNEX 1. PROFILES OF THE EXECUTING AGENCY

The central executing agency of the project is the Philippines Forest Management Bureau (FMB). As briefly discussed in Section 4.1.1 - Institutional set-up and organizational issues, the FMB is a “staff bureau” of the Department of Environment and Natural Resources (DENR) created in 1987 and providing support for the effective protection, development, management and conservation of forest lands in the Philippines.

The Forest Management Bureau of the Department of Environment and Natural Resources provides technical guidance to the central and field offices for the effective protection, development, and conservation of forests lands and watersheds. It shall recommend policies and programs towards the achievement of sustainable forest management, based on science and principles of good forest governance.

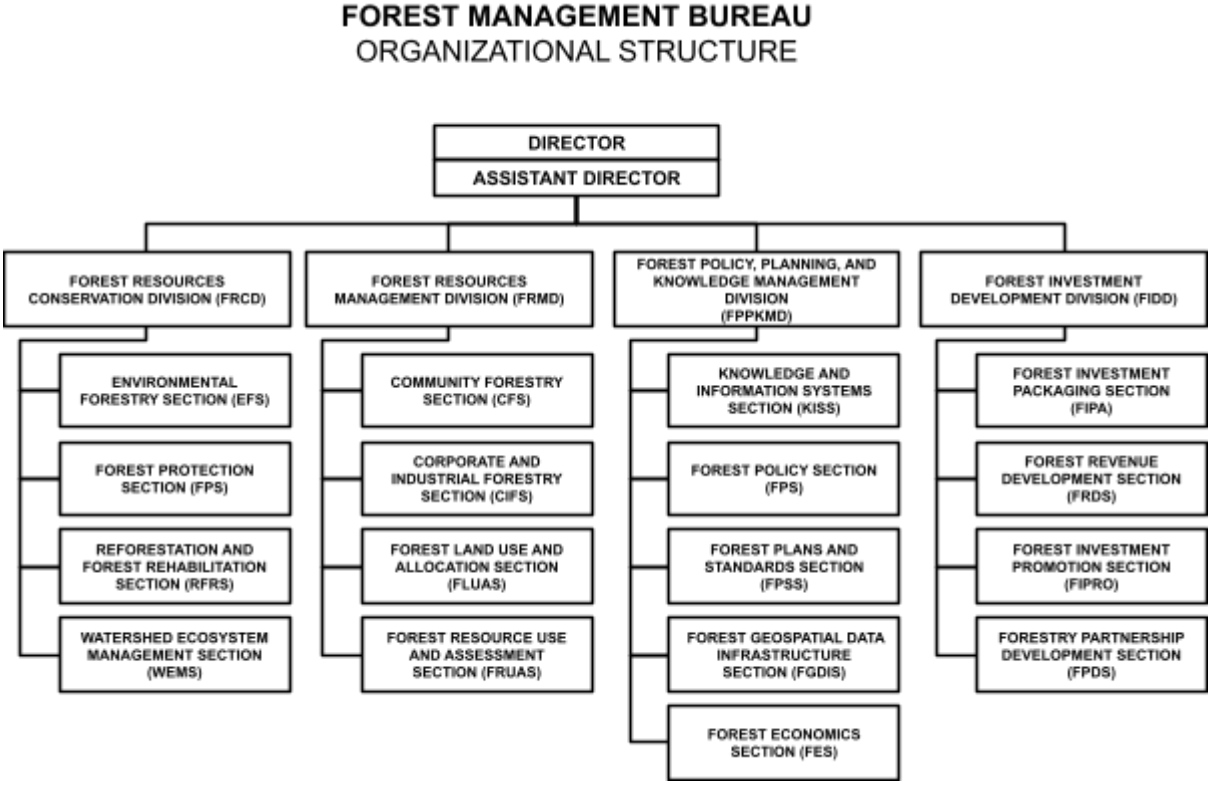

Figure 5. Forest Management Bureau Organization Structure

ANNEX 2. TASKS AND RESPONSIBILITIES OF KEY EXPERTS PROVIDED BY THE EXECUTING AGENCY

FMB Project Coordinator

The FMB project coordinator will be the overall overseer of the project, coordinating all aspects with other government agencies as well as with the sub-contractor. Responsibilities will involve:

- Reporting;
- Contract management;
- Training coordination;
- Workshop logistical coordination with stakeholders;
- Budget allocation and disbursement;
- Work plan and travel coordination; etc

ANNEX 3. TERMS OF REFERENCE OF PERSONNEL AND CONSULTANTS AND SUBCONTRACTS FUNDED BY ITTO

I. Background

Forests in the Philippines face growing risks from climate-related threats, including typhoons, droughts, pests, and soil degradation, which are expected to worsen due to climate change. Sustainable forest management is crucial, and private investors need guidance on climate-resilient forestry investments.

Recent events, like the destruction caused by Super Typhoons Rai and Gaemi, underscore the urgent need for action. Forest degradation threatens biodiversity, livelihoods, and the Philippines' climate commitments.

The Forest Management Bureau (FMB) proposes a project to assess climate risks in potential investment areas (PIAs), providing private investors with insights to make informed, climate-resilient investment decisions. This initiative offers both financial returns and environmental benefits, as demonstrated in neighboring countries.

II. Objectives in Engaging Service

1. To conduct a comprehensive Climate Risk and Vulnerability Assessment for Potential Investment Areas;
2. To conduct actuarial and projected analysis on the losses brought by hazards and risks related to climate change;
3. To develop mitigation strategies in addressing the potential risks identified in the areas; and
4. To create a manual on loss and mitigation strategies of the PIAs.

III. Scope of Work

This engagement shall cover the activities listed below; however, specifications shall be provided after the parties have made an agreement regarding FMB’s needs and requirements.

a. Climate Risk and Vulnerability Assessment
    - ➢ Evaluate the vulnerability of potential investment areas to specific nature and climate hazards
    - ➢ Generate vulnerability maps to visualize high-risk areas and identify critical assets at risk on forestry investments
    - ➢ Distinguish Exposures, Sensitivity, and Adaptive Capacity factors in identifying the right adaptation measures and interventions.

b. Loss Projection under Various Climate Scenarios
    - ➢ Conduct risk modeling techniques to project potential economic, environmental, and social losses from identified climate hazards
    - ➢ Evaluate the potential financial impact on investments, including direct losses (e.g., property damage) and indirect losses (e.g., business interruption).
c. Developing Climate Risk Mitigation Measures
    - ➢ Create a Risk Matrix to be included in the investment portfolio with specific options for different investment types (Agroforestry, Grazing, Tree Plantation, Renewable Energy, and Carbon related projects)
    - ➢ Propose nature-based solutions like restoration, reforestation, afforestation, and green infrastructure to mitigate climate risks identified
    - ➢ Recommend sustainable land-use and resource management practices to reduce vulnerability and enhance adaptability of forestry investments
d. Insurance Strategy Development
    - ➢ Develop a comprehensive insurance strategy that balances cost and coverage, tailored to the specific risks and needs of the forestry investment areas.
e. Module Development
    - ➢ Outline and write the corresponding documentation of the methodologies used to conduct:
        - ■ Climate Risk and Vulnerability Assessment Loss Projection under Various Climate Scenarios
        - ■ Developing Climate Risk Mitigation Measures
        - ■ Insurance Strategy Development
f. Conduct of Knowledge Transfer Activities
    - ➢ Provide comprehensive training sessions with selected FMB/DENR personnel on the aforementioned methodologies employed.

IV. Duration of Assignment and Duty Station

The Consultancy firm for the Conduct of Loss Projection and Climate Risk Mitigation Options of Potential Investment Areas will be hired for a period of **six (6) man-months**. He/She will coordinate with the **Forest Management Bureau - Forest Investment Development Division** for technical guidance in the performance of his / her tasks and shall report to the FMB **at least once a month** to provide updates on his/ her accomplishments relative to the TOR.

V. Deliverables

1. **Inception Report** - A summary matrix shall be prepared during the first week of the engagement including work schedule, outline of work plan and methodology to complete the tasks;

2. **Progress Report**: **A monthly progress** report relative to the specific tasks shall be submitted to the FMB-FIDD

3. **Final Report,** that includes:

    a. Climate Risk and Vulnerability Assessment of Potential Investment Areas Methodology;

    b. Overall data statistics on loss projection analysis on the Potential Investment Areas (PIAs) brought by Climate Change;

    c. Training modules for identification of risk mitigating strategies and loss projections;

    d. Documentation report on conducted trainings relative to the topic; and

    e. Documentation of potential criteria on possible risk mitigation strategies and loss projection to be included in the packaging of PIAs offered to potential investors.

The said reports should be submitted and presented to the FMB-FIDD within the prescribed period and quality thereof should be acceptable to the FMB-FIDD.

VI. Proposed Budget and Timeline

The total proposed budget for this project is **US$160,000** and is expected to be completed in twelve (12) months upon issuance of Notice to Proceed. The list of general activities, deliverables, and timelines is outlined in Table 1. Table 2, on the other hand, indicates the proposed budget allocation.

The table below provides indicative timelines for the proposed project by week, subject to the timely provision of the required data as outlined above.

Month	***2025***					
	March	***April***	***May***	***June***	***July***	***August***
Sub-phase		*Hazard Analysis*	*Climate Risk and Vulnerability Assessment.*			
Preparatory Meeting						
Data Collection						
Analysis						
Quality Assurance						
Additional Meeting						
Research						
Report writing						

Month	2025				2026	
	September	*October*	*November*	*December*	*January*	*February*
Sub-phase	*Loss Projection*		*Risk Mitigation Options*			
Data Collection						
Analysis						
Quality Assurance						
Additional Meeting						
Research						
Report writing						
Presentation of results						

The calculated cost for the Assessment of Potential Investment Forest Areas to Natural Disasters and Climate-Related Hazards is at US$ 160,000.

Table 1. Revised budget table

DESCRIPTION		DENR-FMB	TOTAL
Personnel	–	–	–
Sub-contracts	**132,858**	**–**	**132,858**
2.1. Meetings (Preparatory and Intermediate Meetings)	*12,728*		*12,728*
2.2. Quality assurance review	*16,972*		*16,972*
2.3. Presentation of results	*8,486*		*8,486*
2.4. Data collection and review	*22,541*		*22,541*
2.5. Analysis	*22,541*		*22,541*
2.6. Additional research	*18,033*		*18,033*
2.7. Report Writing	*31,557*		*31,557*
Travel	–	–	–
Consumable items	–	–	–
Miscellaneous	–	–	–
Audit cost	**5,000**	–	**5,000**
Programme support	**17,142**	**–**	**17,142**
Project monitoring and administration	**5,000**	**–**	**5,000**
TOTAL	**160,000**	–	**160,000**

VII. Qualifications of Consultants

The consultancy firm shall be legally registered and has demonstrated the capacity to conduct similar engagements and/or projects of identical magnitude. The identified experts within the firm should have prior involvement in generating, processing, visualizing, and assessing spatial data, as these are critical components in the decision-making process of the DENR in various capacities.

Relevant experiences and/or proven capacities are compulsory for the following positions being proposed:

a. Project Leader
    - Holder of at least master's degree in Forestry, Environmental Science, Environmental Management, Natural Resources Planning or other relevant discipline;
    - Proven and extensive involvement and/or engagements in natural resource planning using spatial technologies such as Geographic Information System (GIS), remote sensing, environmental modeling, among others;
    - Good understanding of multi-stakeholder project implementation and forest management;
    - Experience in working with various stakeholders;
    - With Good communication skills
    - Excellent time management skills with an ability to deliver high-quality outputs.

b. Geospatial Analyst
    - Bachelor's or master's degree in Geography, Geospatial Science, Surveying, Engineering, or a related field.
    - Minimum of 5 years experience in geospatial analysis and modeling
    - Experience in forest monitoring and management projects
    - Proficiency in Geographic Information Systems (GIS) software (ArcGIS, QGIS) and remote sensing tools (ERDAS, GEE, eCognition, ENVI).
    - Strong analytical and problem-solving skills.
    - Excellent written and verbal communication skills for documentation and training.
c. Actuarial Scientist
    - Bachelor's or master's degree in mathematics, Actuarial science, Statistics, or a related analytical field;
    - Minimum of 5 years experience on Actuarial science;
    - Excellent written and verbal communication skills; and
    - Ability to analyze data and draw meaningful conclusions.

d. Resource Economist
    - Bachelor's or master's degree in economics, or a related economic field
    - Minimum of 5 years experience in natural resource management, loss projection.
    - Excellent written and verbal communication skills.
    - Ability to analyze data and draw meaningful conclusions.

e. Environmental/Climate Scientist
    - Bachelor's or master's degree in a scientific field, climate science, climatology, meteorology, or another related field

- Knowledge in problem solving and analysis skills;
- Able to develop and analyze the results of models.

f. Project Development Officers
   - Bachelor's degree in Forestry, Environmental Science, Natural Resource Management, Computer Science, Information Technology, Software Engineer or a related field.
   - Preferably with experience in risk assessment related projects;
   - Ability to work effectively both independently and collaboratively within a team;
   - Excellent communication skills, both written and verbal;
   - Willing to engage in continuous learning and professional development

g. Other relevant professional/s deemed necessary by the consultancy team as essential to undertake this work

VIII. Payment Schedule

The funds will be distributed across the project duration in five (5) tranche payments upon submission of necessary outputs and reports, as detailed in the table below.

	Payment Modality	Percentage (%)	Amount (US$)
1	Upon submission of Inception Report	20	32,000.00
2	Upon submission of Reports on	50	80,000.00
3	Upon Submission of Modules	10	16,000.00
4	Upon Conduct of Trainings with documentations	10	16,000.00
5	Upon presentation and submission of the Final Report	10	16,000.00
	Total Proposed Budget	**100**	**160,000.00**

The allocated fund is Inclusive of all out-of-pocket expenses subject to mandatory withholding tax and existing accounting and auditing rules and regulations.