

GEF-8 PROJECT IDENTIFICATION FORM (PIF)

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General Project Information

Project Title

Lake Ecosystem Restoration in Indonesia through Integrated Governance, Landscape, and Community-based Approaches.

Region	GEF Project ID
Indonesia	11422
Country(ies)	Type of Project
Indonesia	FSP
GEF Agency(ies):	GEF Agency ID
IFAD	2000004738
Executing Partner	Executing Partner Type
Ministry of Environment and Forestry	Government
GEF Focal Area (s)	Submission Date
Multi Focal Area	10/18/2023

Project Sector (CCM Only)

AFOLU

Taxonomy

Land Degradation, Focal Areas, Sustainable Land Management, Improved Soil and Water Management Techniques, Restoration and Rehabilitation of Degraded Lands, Climate Change, United Nations Framework Convention on Climate Change, Nationally Determined Contribution, Climate Change Mitigation, Agriculture, Forestry, and Other Land Use, Biodiversity, Biomes, Lakes, Protected Areas and Landscapes, Community Based Natural Resource Mngt, Mainstreaming, Tourism, Agriculture and agrobiodiversity, Infrastructure, Fisheries, Species, Threatened Species, Invasive Alien Species, Supplementary Protocol to the CBD, Financial and Accounting, Payment for Ecosystem Services, Forest, Forest and Landscape Restoration, Influencing models, Convene multi-stakeholder alliances, Transform policy and regulatory environments, Strengthen institutional capacity and decision-making, Stakeholders, Communications, Awareness Raising, Public Campaigns, Education, Type of Engagement, Participation, Consultation, Private Sector, SMEs, Civil Society, Non-Governmental Organization, Indigenous Peoples, Gender Equality, Gender Mainstreaming, Women groups, Sex-disaggregated indicators, Beneficiaries, Capacity, Knowledge and Research, Capacity Development, Targeted Research, Knowledge Generation, Knowledge Exchange, Learning

Type of Trust Fund	Project Duration (Months)
GET	60
GEF Project Grant: (a)	GEF Project Non-Grant: (b)
7,105,936.00	0.00
Agency Fee(s) Grant: (c)	Agency Fee(s) Non-Grant (d)
675,064.00	0.00
Total GEF Financing: (a+b+c+d)	Total Co-financing
7,781,000.00	35,000,000.00

PPG Amount: (e) 200,000.00	PPG Agency Fee(s): (f) 19,000.00
PPG total amount: (e+f) 219,000.00	Total GEF Resources: (a+b+c+d+e+f) 8,000,000.00
Project Tags CBIT: No NGI: No SGP: No Innovation: No	

Project Summary

Provide a brief summary description of the project, including: (i) what is the problem and issues to be addressed? (ii) what are the project objectives, and if the project is intended to be transformative, how will this be achieved? (iii), how will this be achieved (approach to deliver on objectives), and (iv) what are the GEBs and/or adaptation benefits, and other key expected results. The purpose of the summary is to provide a short, coherent summary for readers. The explanation and justification of the project should be in section B “project description”. (max. 250 words, approximately 1/2 page)

About 1% of the freshwater on the surface of our planet exists in liquid form, and more than 90% of it is in lakes and wetlands. Indonesia has more than 1500 lakes which accommodates 500 km³ (five hundred cubic kilometers) of water or 72% of the total Indonesian surface water. Like in many other countries, lakes in Indonesia have numerous purposes related to human life, such as drinking water, agriculture, fishery, industry, transportation and energy. Lakes also provide important ecosystem services, control of floods, droughts and climate change, and biodiversity habitats, as well as advantages for ecotourism, education and research.

Lake ecosystems in the Republic of Indonesia, one of the 17 megadiverse^[1] countries in the world and the fourth largest in terms of population, support globally significant biodiversity and provide important provisioning, regulating, and cultural services for local communities^[2]. Moreover, the terrestrial and aquatic ecosystems within the catchment areas help mitigate the effects of climate change through carbon sequestration and soil and water conservation. These unique lake ecosystems that have specific character, are under increasing threat from pollution, driven by unsustainable land use practices and resulting in eutrophic conditions, which impact aquatic biodiversity and microclimate. Hydraulic capacities are steadily reducing as siltation rates increase due to land clearing and other practices leaving soil in catchment areas vulnerable to erosion. Biodiversity loss is on the rise as a result of deterioration and fragmentation of habitats, as well as widespread occurrence of invasive alien plant and animal species. This context, the biodiversity resources that primarily need attention are those in the lakes themselves (i.e., freshwater aquatic species) and in surrounding areas, including migratory birds. Recognizing the urgent need for effective management of lake ecosystems and cross-sectoral and multiple stakeholder collaboration, the proposed project will mainstream integrated and community-based approaches to lake ecosystem management through strengthening regulatory and policy frameworks, incorporating key principles into spatial planning processes, developing database, and improving methodologies and systems for assessing and monitoring lakes. Integrated lake ecosystem management will be implemented in three priority target locations, including Lake Rawa Pening, situated within the critical Tuntang River watershed in Central Java Province; Lake Batur, in the Balingkang catchment in Bali Province; and Lake Limboto, in the critical Limboto catchment in Gorontalo Province. Working with rural, small-scale producers in the demonstration areas, the project will enhance livelihoods and improved food and nutrition security of local communities, e.g., through agroforestry systems that increase incomes and promote sustainable forest/land management; agroecological practices including sustainable and climate resilient soil

and water management; improved agricultural production, post-harvest, processing and marketing;; improved ecotourism experiences; and pilot initiatives on controlling invasive alien species. Focused interventions will advance gender equality and empowerment of women and girls, and facilitate increased youth participation, to be actively involved in integrated lake ecosystem management. The project will also facilitate and promote engagement of local communities, addressing and supporting reconciliation of stakeholder interests and concerns, including tenure and access and sustainable use of natural resources. The project aligns with the GEF-8 Biodiversity, and Climate Change Mitigation objectives, expecting to deliver more than 130,000 ha of landscapes under improved practices to benefit biodiversity, approximately 6,480 ha of land and ecosystems under restoration, roughly 1.2 million metric tons of carbon dioxide equivalent in greenhouse gas emissions mitigated, and at least 10,000 people (of whom 50% are women/girls) direct benefitting from the GEF-financed investment. The durability and upscaling of results achieved will be ensured through promoting knowledge sharing and learning.

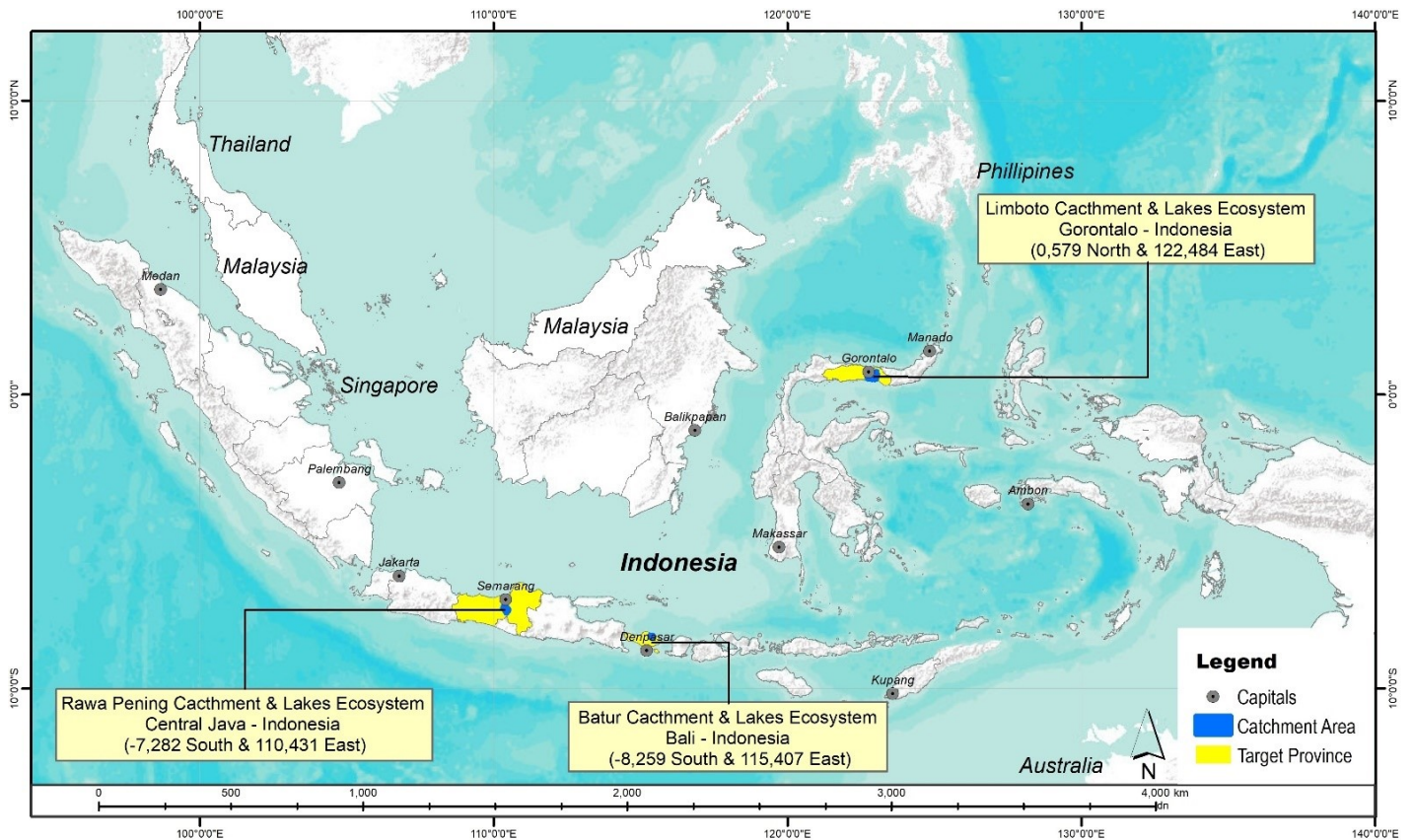


Figure 1: Country map showing proposed target lake ecosystems

[1] 17 countries which have been identified as the most biodiversity-rich countries of the world, with a particular focus on endemic biodiversity: United States of America, Mexico, Colombia, Ecuador, Peru, Venezuela, Brazil, Democratic Republic of Congo, South Africa, Madagascar, India, Malaysia, Indonesia, Philippines, Papua New Guinea, China, and Australia. <https://www.biodiversity-z.org/content/megadiverse-countries>

[2] Local communities are people who association with the lands and waters that they have traditionally live on or used that may include peoples of indigenous descent and culturally diverse (Convention on Biological Diversity, 2006)

Indicative Project Overview

Project Objective

To strengthen the enabling environment for sustainable lake ecosystem management in Indonesia, demonstration of integrated approaches in priority ecosystems, and upscaling facilitated through improved knowledge sharing and learning.

Project Components

Component 1: Strengthening the enabling environment for integrated lake ecosystem management and governance

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
1,687,600.00	8,312,500.00

Outcome:

Outcome 1: Enhanced capacity for lake ecosystem management and governance in Indonesia

Output:

Output 1.1: Policy frameworks and guidelines on integrated lake ecosystem management developed;

Output 1.2: Methodologies for lake ecosystem health assessment and monitoring developed;

Output 1.1.3: National database on lake ecosystem management developed and operationalized.

Component 2: demonstrating multiple environmental and social benefits through implementation of integrated lake ecosystem management

Component Type	Trust Fund
Investment	GET
GEF Project Financing (\$)	Co-financing (\$)
3,375,300.00	16,625,000.00

Outcome:

Outcome 2:

Integrated lake ecosystem management implemented in three demonstration areas.

Output:

Output 2.1: Participatory integrated lake ecosystem management plans developed and local governance mechanisms strengthened in three demonstration areas;

Output 2.2: Implementation of integrated lake ecosystem management interventions at the demonstration areas

Output 2.3: Livelihoods, income generating, and food and nutrition security of local communities enhanced through Nature-based solutions and ecosystem-based approaches;

Output 2.4: Enhancing awareness, involvement, and collaboration for sustainability of improved landscape and the economic benefit at the demonstration areas

Component 3: Knowledge management and learning

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
1,501,633.00	7,395,841.00

Outcome:

Outcome 3: Enhanced community awareness and knowledge, contribution and collaboration among stakeholders on lake ecosystem management and restoration

Output:

Output 3.1: Lake center of excellence and knowledge hub developed.

Output 3.2: Knowledge sharing, learning systems and collaboration network established.

M&E

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
203,025.00	999,994.00

Outcome:

Project implementation and results strengthened through participatory and gender sensitive monitoring and evaluation

Output:

Project monitoring, evaluation and reporting systems (including the Gender Action Plan) established and implemented

Component Balances

Project Components	GEF Project Financing (\$)	Co-financing (\$)
Component 1: Strengthening the enabling environment for integrated lake ecosystem management and governance	1,687,600.00	8,312,500.00
Component 2: demonstrating multiple environmental and social benefits through implementation of integrated lake ecosystem management	3,375,300.00	16,625,000.00
Component 3: Knowledge management and learning	1,501,633.00	7,395,841.00
M&E	203,025.00	999,994.00

Subtotal	6,767,558.00	33,333,335.00
Project Management Cost	338,378.00	1,666,665.00
Total Project Cost (\$)	7,105,936.00	35,000,000.00

Please provide justification

b

PROJECT OUTLINE

A. PROJECT RATIONALE

Briefly describe the current situation: the global environmental problems and/or climate vulnerabilities that the project will address, the key elements of the system, and underlying drivers of environmental change in the project context, such as population growth, economic development, climate change, sociocultural and political factors, including conflicts, or technological changes. Describe the objective of the project, and the justification for it. (Approximately 3-5 pages) see guidance here

Global environmental significance

Indonesia has some of the largest freshwater reserves in the world, with an exceptional number of multi-origin lakes, including tectonic, volcanic, crater, and caldera types primarily in highland areas, ephemeral floodplain types in lowlands, as well as numerous artificial lakes. The vast archipelagic country is one of the 17 megadiverse countries and has three of the world's 25 biodiversity hotspots, namely Sundaland, Wallacea and Sahul. Indonesian lake ecosystems provide terrestrial and aquatic habitats for thousands of species of flora and fauna, including fish, birds, mammals, amphibians, insects, as well as mollusks and other invertebrates. For example, among the 4,782 native fish species recorded in Indonesia, 1,248 are freshwater species.^{[1]³} Among the critically endangered freshwater fish species identified in the IUCN Species Survival Commission's Asian Species Action Partnership (ASAP), the highest number (48), more than half on the list, are located in Indonesia.^{[2]⁴} Indonesia has agreed to contribute on the Kunming-Montreal Biodiversity Target by 2050 through updating national biodiversity strategy and action plan.

Indonesia has more than 21 natural ecosystems (based on the IBSAP 2015), it was stated that limnic ecosystem consist of riparian and lake ecosystem are crucial ecosystem in Indonesia. More than 523,388 Ha has been identified as essential ecosystem, some of them are freshwater ecosystems including lakes. In this regard, restoring lake ecosystem will significantly contribute to conserve the biodiversity including the habitat and to mitigate climate change.

In parallel to improve the biodiversity habitat, this project will address climate change issues through: 1. Mitigation of deforestation; 2. Mitigation from the forest and land fire; 3. Hydrological management of the catchment area; and 4. Forest and Land Rehabilitation refer to national degraded land map year 2022. It will be linked into the National Determined Contribution (NDC) and Forest Revision Emission Level (FREL).

Socio-ecological benefits of lake ecosystems in Indonesia

Lake ecosystems in Indonesia support agricultural production, freshwater fisheries, hydropower electricity, tourism experiences, freshwater availability, including for drinking water, sanitation, cultural and religious

sites. These ecosystem services provide food, energy, and nutrition security, livelihoods and income for millions of people living within and accessing the catchments.

Indonesian lake ecosystems are under increasing threats, including from pollution and agricultural runoff, as a result of unsustainable land use practices and resulting in eutrophic conditions (primarily attributed to increased nutrient loading), which impact aquatic biodiversity. Non-point runoff from agricultural lands is the major source of nutrients in the ecosystems. For instance, fertilizer consumption in the country has increased from 12.6 kg/ha in 1971 to 248.2 kg/ha in 2020, as agricultural land area increased from 383,500 sq.km to 623,000 sq. km over that same timeframe, and forest area as a share of total land area has fallen from 53.9% in 2001 to 49.1% in 2020.[\[3\]⁵](#)

Production from inland capture fisheries has steadily grown in recent years, increasing from 455,270 metric tons (MT) in 2015 to 649,978 MT in 2019. The largest source of fishery production in the country is aquaculture (both freshwater and mariculture); in 2019, there were 15,548,167 MT produced through aquaculture, which is about 68% of the 22,614,595 MT produced that year.[\[4\]⁶](#)

The agricultural sector employs the largest number of people in Indonesia; in 2021 employment in agriculture was 29% of total employment.[\[5\]⁷](#) The fisheries sector of Indonesia also provides employment for many people in the country and makes important contributions to the national economy and food and nutrition security. The agricultural and fisheries sectors are primarily male dominated (there was 35.5% female participation in agriculture in 2022)[\[6\]⁸](#); however, the gender balance is tipped more towards women and girls in postharvest activities, including processing and trade.

The energy sector in the country also relies on inland lake systems. Hydropower is currently the largest source of clean energy in Indonesia, with 6.6 GW generated in 2021, representing 57% of the total electricity generated from renewable resources.[\[7\]⁹](#) The quantity of electricity generated by hydropower is expected to increase in the coming years, as the country works towards the goal of having at least 31% of the primary energy supply mix from new and renewable sources by 2050.[\[8\]¹⁰](#)

Key system drivers

Ecosystem health of some lakes in Indonesia are currently in deficiency condition. Based on the results of water quality and lake morphology monitoring in 2022, Lake Batur and Lake Limboto are in eutrophic-hypereutrophic condition, which disrupts aquatic life while high rate of silting occurs in Lake Rawapening and Lake Limboto. The main causes of these lake condition in the two indicators are land-use in the water catchment area, and use of the lake water body, which are not in environmentally friendly patterns. The silting of the lakes causes flooding in the rainy season and drought in the dry season, while the water pollution will impact the biodiversity.

To overcome this, several ministries have attempted programs reducing the impact. Among others, development of infrastructure including the dam at the bank of the lake and water outlet, and hydrological arrangement surrounding the lake. These efforts have not fully addressed the sources of these impacts and have not adopted integrated approaches to handling the situation. Moreover, forest and land rehabilitation has also been implemented in the catchment area by stakeholders, unfortunately due to the uncompetitive economic interest, social-economic condition as well as the gap of information and capacity belong to the community, the sustainability of the rehabilitation result is difficult to maintain.

The health of lake ecosystems is affected by a multitude of drivers that often interact in complex ways. Population growth and limited economic alternatives for local communities are leading to unsustainable land use, land cover changes and over-exploitation of natural resources, as demand for income and food (land-based and fisheries) increases. The population of Indonesia has increased from 90.1 million in 1960 to 275.77 million in 2022.^{[9]¹¹}

Needs improvement of integrated and synergistic effort among key sectors and weak oversight are also driving ecosystem change, including need improvement of regulation which manages the integrated systems based on the hydrology catchment and needs of proper lake rehabilitation, for instance sustainable provision of ecosystem services and protection of sensitive environmental areas are not effectively being considered in land use/spatial planning and local development, and some overlapping interests with limitation concern regarding sustainable development and environment aspects.

Climate change impacts, e.g., variability in magnitude, frequency and duration of floods and droughts, increased temperatures, alternations in flow regimes which change patterns of runoff, etc. are considered as also primary drivers of ecological structure and function of lake ecosystems and the food production systems within the broader lake catchments. The majority of farmers in Indonesia are smallholders with less than a hectare of land and a low capacity to adapt to climate change.^{[10]¹²} Climate change and climatic variability may also alter pathways by which invasive alien species (IAS) enter and thrive in lake ecosystems, e.g., enhancing their competitive advantage over native species or increasing the likelihood of spillover and pollution from aquaculture systems.

Baseline initiatives and projects

Proposed by the Government of Indonesia, the 5th session of the United Nations Environment Assembly (UNEA5.2), convened from 28 February to 02 March 2022, adopted the **Resolution on Sustainable Lake Management**. This resolution calls for member states and relevant international organizations to undertake international cooperation in relevant regulation, budget allocations, technology and data addressing entire lake basins; integration of lakes into national plans including climate adaptation, water resources management and conservation of biodiversity; involvement and capacity building for relevant stakeholders including local communities; and research and guidance, including an emphasis on science-policy linkages.

Sustainably managing lake ecosystems has been a priority for the Government of Indonesia, e.g., as announced in the first National Conference of Indonesia Lakes in Bali in August 2009, when nine key line ministries committed to collaborating on sustainable lake management through the then called Bali Agreement. This agreement consisted of seven programs for 15 priority lakes, selected on the basis of the degree of degradation (e.g., sedimentation, pollution, eutrophication, water quality deterioration); lake function (e.g., hydroelectric power generation, agriculture, fisheries, drinking water, social and religious importance, tourism); commitment between government and local communities; strategic function of the lakes; biodiversity; and level of disaster risk. The priority lakes are Toba in North Sumatra, Singkarak and Maninjau in West Sumatra, Kerinci in Jambi, Rawadanau in Banten, Rawa Pening in Central Java, Batur in Bali, Tondano in North Sulawesi, Cascade Mahakam (Semayang, Melintang, Jempang) in East Kalimantan, Sentarum in West Kalimantan, Limboto in Gorontalo, Tempe and Matano in South Sulawesi, Poso in Central Sulawesi, and Sentani in Papua.

In 2012, the Ministry of Environment (MoE) issued “The Grand Design of Indonesian Lake Conservation and Rehabilitation”, to provide guidance for governmental sectors, local communities and other stakeholders in creating healthier lake ecosystems. The National Medium-Term Development Plan for 2020-2024 (RPJMN 2020-2024) highlights the importance of maintenance, recovery and conservation for revitalization of the 15 national priority lakes. This strategic issue has been concerned and stipulated at the Technocratic Plan of The Strategic National Medium-Term Development Plan and prioritized for the upcoming period (RPJMN 2025-2029).

Presidential Decree No. 60/2021 regarding Restoration of National Priority Lakes was issued to reinforce the importance of rehabilitating and improving management of the 15 priority lakes. The government has identified the need to develop integrated solutions to manage lake ecosystems more effectively, taking into consideration economic, social, cultural, spatial and environmental aspects. In this Presidential Decree also consist the **national priority lakes management strategy** which stated the programs/activities in each of the priority 15 lakes.

Watershed management has garnered governmental attention since the 1980s, reflecting the recognition of the environmental and socioeconomic services provided by watersheds across the country. In the subsequent years various policies and government decrees have been adopted, as of 2009, there were 108 priority watersheds identified out of more than 17,000 nationwide. In a 2019 review^{[11]¹³} conducted by the Ministry of National Development Planning Agency (Bappenas), certain shortcomings were identified in the implementation of integrated watershed management planning. One of the issues is the fact that watersheds extend across jurisdictions, which is inconsistent with conventional spatial and development planning processes in the districts and provinces. Such lessons will need to be factored into the project strategy on promoting integrated lake ecosystem management.

Objective and barriers

The overall project objective is to strengthen the enabling environment for sustainable lake ecosystem management in Indonesia, demonstration of integrated approaches in priority ecosystems, and upscaling facilitated through improved knowledge sharing and learning.

The following barriers have been identified that are hindering mainstreaming of integrated lake ecosystem management approaches:

- **Barrier 1:** Lack of regulatory and programs framework that refer to the same and agreed vision among key stakeholders on lake ecosystem management, and no dedicated information system on lakes.
- **Barrier 2:** Limited examples of implementing integrated approaches for lake ecosystem management and restoration, and lack of incentives and opportunities for local communities to benefit from integrated lake ecosystem management.
- **Barrier 3:** Limited knowledge and availability of information and learning opportunities to promote adoption of integrated lake ecosystem management in a sustainable manner.

The project rationale is underpinned by the need to mainstream and provide scale-able demonstrations of integrated lake ecosystem management. Some of the main threats to these ecosystems are associated with the agricultural sector. For that reason, some of the proposed project involves management and restoration interventions as well as livelihood initiatives that are focused on improving agricultural practices, diversifying income streams, and increasing awareness. The project will require cross-sectoral collaboration, not only from

the agricultural sector, but also forest management, water resources management, tourism, energy, and development.

Key stakeholders consulted during the development of the PIF include the Ministry of Environment and Forestry (including the GEF OFP, the Directorate General of Watershed Management and Forest Rehabilitation, the Directorate of Inland Waters and Mangroves Rehabilitation), local governments where the three demonstration areas are located, civil society organizations, private sector companies, and IFAD country, regional and headquarter offices.

During the PIF phase MoEF have also initiated consultations with representative of the provincial and regency government in three provinces (Central Java, Bali and Gorontalo), three of the technical units under the MoEF who manage the three target locations under the catchment hydrology unit that cover Rawa Pening – Central Java, Batur – Bali and Limboto in Gorontalo. The MoEF team has been surveying the locations. In-depth consultations with local communities, civil society organizations, universities, and private sector partners are planned to be conducted during the project preparation phase.

[1] Haryani, G.S. 2021. Sustainable use and conservation of inland water ecosystems in Indonesia: Challenge for fisheries management in lake and river ecosystems. 2021 IOP Conf. Ser.: Earth Environ. Sci. 789 012023.

[2] Patricio H. et al. 2023. *A strategic framework to accelerate urgent conservation action for ASAP Freshwater Species in Southeast Asia*. IUCN SSC Asian Species Action Partnership. Singapore.

[3] World Data Atlas, Indonesia. Knoema, <https://knoema.com> (accessed on 02 July 2023)

[4] SEAFDEC. July 2023. *Fisheries Country Profile: Indonesia (2022)*. Southeast Asian Fisheries Development Center

[5] ILOSTAT, International Labour Organization, www.ilo.org/data (reported in the World Bank DataBank (<https://databank.worldbank.org>))

[6] Ibid.

[7] Indonesia-Investments. 10 May 2022. *Hydro power generation in Indonesia; challenges & opportunities of this renewable energy source*.

[8] Republic of Indonesia. 2022. *Enhanced Nationally Determined Contribution*.

[9] Source: <https://www.worlddata.info> (accessed on 15 Jul 2023)

[10] FAO. 2017. *Country fact sheet on food and agriculture policy trends: Indonesia*.

[11] Pambudi, A.S. 2019. *Watershed Management in Indonesia: A Regulation, Institution and Policy Review*. Ministry of National Development Planning / Bappenas, Republic of Indonesia.

B. PROJECT DESCRIPTION

Project description

This section asks for a theory of change as part of a joined-up description of the project as a whole. The project description is expected to cover the key elements of good project design in an integrated way. It is also expected to meet the GEF's policy requirements on gender, stakeholders, private sector, and knowledge management and learning (see section D). This section

should be a narrative that reads like a joined-up story and not independent elements that answer the guiding questions contained in the PIF guidance document. (Approximately 3-5 pages) see guidance here

Incremental/Additional Cost Reasoning

Under the future “business as usual” scenario without the GEF funding, lake ecosystems would continue to be managed in the absence of improved coordination among key sectors, leading to expansion of unsustainable land use practices, land cover changes and increase in the unregulated use of fertilizer and non-point runoff into natural water bodies. Erosion would continue to increase, resulting in further reduction of hydraulic capacities and deterioration of water quality, as well as result in deterioration and fragmentation of biodiversity habitats.

Climate change and climatic variability will most likely continue to affect aquatic ecosystems. Strengthening resilience, e.g., restoring degraded forest areas in upland reaches of the catchments, increasing awareness of local producers, and instating sustainable IAS prevention and control strategies will enhancing coping capacities. With increased erosion, lake systems will have a reduced capacity to buffer extreme rain events and changes in runoff patterns for more resilient ecosystems and livelihoods. Pollution and degraded lake health will also reduce mitigation potential through decreased nutrient cycling and hypoxia. The impacts of climate change will also have compounding effects on biodiversity, as habitats are transformed and ecosystem functions are strained.

The alternative scenario envisaged through the proposed GEF funding, recognizes that effective management of lake ecosystems requires cross-sectoral and multiple stakeholder collaboration. The proposed project will advance the implementation of sustainable lake management through mainstreaming and demonstrating integrated approaches that deliver multiple global environmental benefits and socioeconomic co-benefits. Protection of globally significant biodiversity will be strengthened through improved natural resource management practices, restoration of damaged and fragmented habitats, promotion and demonstration of effective management and control of invasive alien species, and increased awareness among national and local stakeholders and beneficiaries. Improved land use, including good agricultural practices, expanded adoption of agroforestry systems, strengthened ecotourism practices, and improved capacities of local producers will deliver livelihood benefits to local communities through diversified and sustainable income streams. The improved management practices and restoration interventions will also deliver climate change mitigation benefits, through avoided deforestation, increased water and soil conservation, and improved vegetation cover. Facilitating cross-sectoral collaborative action, including incorporating sustainable lake management priorities into spatial planning processes, and enhanced engagement of local communities in the management of lake ecosystems will provide climate change adaptation benefits through increased resilience across the broader catchments in the demonstration areas.

Theory of Change

The Theory of Change for the proposed project, illustrated in **Figure 2**, will be further elaborated during the project development phase, when more in-depth stakeholder consultations will be conducted. The three mutually supportive causal pathways address the barriers to achieving the project objective and outcomes.

The project strategy is predicated on community participation in the implementation of integrated lake ecosystem management, generating global environmental benefits and delivering livelihood and food and nutrition co-benefits for local communities, with a particular focus on women, youth and other vulnerable groups. The project will make contributions to the achievement of Sustainable Development Goal (SDG) targets, prioritized to SDG 6 (Clean Water and Sanitation, especially on the target 6.6 to protect and restore water related ecosystems, including mountains, forests, wetlands, rivers aquifers, and lakes) and SDG 15 (Life on Land), ensuring improved management, restoration and sustainable use of lake ecosystems, as well as other SDGs, including SDG 2 (Zero Hunger), SDG 5 (Gender Equality), SDG 7 (Affordable and Clean Energy), SDG 13 (Climate Action) and SDG 17 (Partnerships for the Goals). The project will also contribute towards achievement of a number of the Kunming-Montreal Global Biodiversity Framework (GBF) 2030 Action-oriented global targets, including targets 1, 2, 6, 7, 10, 11, 14, 20, 21, 22 and 23, and as a real implementation of the commitment to the International Decade for Action on Water for Sustainable Development 2018-2028, and UN Decade on Ecosystem Restoration 2021-2030.

Component 1 will address Barrier No. 1 by **strengthening the enabling environment for integrated lake ecosystem management and governance**. The expected outcome of this pathway is: **Outcome 1: Enhanced lake ecosystem management and governance in Indonesia**. Outputs and indicative activities to achieve this outcome include the following:

Output 1.1: Policy frameworks and guidelines on integrated lake ecosystem management. The project will support the MoEF in strengthening the regulatory and policy frameworks on lake ecosystem management through developing policy frameworks and regulatory instruments and facilitating advocacy among key ministries and institutions to mainstream the proposed policies and regulations, as well as enhancing cross-sectoral governance conditions. Local lake management mechanisms, e.g., task forces or teams which are already established in the province/district governments will also be strengthened by this approach. This approach will be safeguarded by ensuring the incorporation of environmental management principles, gender-responsive approach, youth and local community involvement and empowerment, and attention to the socio-culture aspects in the process and product of the policy. Technical guidelines will be prepared on integrated lake ecosystem management and restoration, drawing from best practices, with emphasizing the application of soil and water conservation – these guidelines will be utilized in the implementation of integrated approaches in the demonstration areas under Component 2. In collaboration with the FAO-GEF project (GEF ID 10705), the project will develop a complementary action plan on prevention, control and management of invasive alien species (IAS) in lake ecosystems, linked to the updated National Strategy and Action Plan for the Management of Invasive Alien Plant Species in Indonesia (NISSAP).

Output 1.2: Methodologies for lake ecosystem health assessment and monitoring developed. For assuring the enhancement or sustainability of the lake ecosystem needs methodology and standard of lake ecosystem health and monitoring. Consistent methodologies on assessing and monitoring ecosystem health are important management tools for national and subnational level stakeholders responsible for management of lakes. The data-information will consist of all key aspects and indicators of the lake ecosystem health, especially water quality, biodiversity, water trophic states, depth and wide of the lake, bathymetry, silting rate, hydrodynamics, biodiversity, and condition of the catchment area.

Output 1.3: National database on lake ecosystem management developed and operationalized. To improve and update database on lake ecosystem, the data can be obtained through direct monitoring, either automatic, online or manual, or through secondary information. Linking up with existing information systems, e.g., inventories for wetlands, mangroves, etc., the project will support development of a national database on lakes, with information on ecosystem, ecology and biodiversity characteristics.

To determine the conditions of the lake, and formulate appropriate policy recommendations or technical measures, analysis of the data and information is carried out, for example, to determine maximum pollution load, and appropriate land rehabilitation. The project will also work on developing innovative methodologies for estimating the carbon sequestration potential in tropical lake ecosystems. Capacity building will be delivered on best practices and emerging approaches for assessment and monitoring lake ecosystems, and on the use of the national database and associated information management systems. The project will also operationalize the strengthened national lake inventory through assessing lake ecosystems.

Component 2 will address Barrier No. 2 by **demonstrating multiple environmental and social benefits through implementation of integrated lake ecosystem management**. The expected outcome of this pathway is **Outcome 2: Implemented integrated lake ecosystem management in three demonstration areas**. Outputs and indicative activities to achieve Outcome 2 are presented below:

Output 2.1: Participatory integrated lake ecosystem management plans developed and local governance mechanisms strengthened the three demonstration areas. Participatory ecosystem assessments will be conducted of the three demonstration areas. The plan should be started by determining strategic issues, taking into account the gap between the lakes' current condition and the expected condition, and determining the vision that would like to achieve. Understanding among stakeholders and agreement to the vision, is an important part of the management planning, because the vision is a reference for formulating the mission. Participatory assessment is an important measure to define the key stakeholders who will be engaged in the multi-stakeholder collaborative management and governance of the lake ecosystem; and strategic communication is a key element of the process to ensure their commitment to the mission. The recommendations generated in these activities are references for elaborating the integrated lake ecosystem management plans into the formulation of proper programs and activities, that also means for controlling program and activities which are not in line with the mission. **Achieving effective lake ecosystem management will depend on cross-sectoral cooperation, ensuring sector plans and budgets incorporate priority actions of the management plans, including, for example, the prevention of the spread of IAS.**

Output 2.2: Implementation of integrated lake ecosystem management interventions at the demonstration areas. Under this output, implementation of the management plans developed under Output 2.1.1 will be initiated. One of the first step will be to strengthen partnerships with local government units, civil society organizations and private sector enterprises through engaging local communities in participatory conservation and restoration initiatives, e.g., protecting intact forest ecosystems. Partnerships will also be explored with protected areas located within the catchments, e.g., through supporting collaborative management arrangements with local communities. Addressing the issue of eutrophication in the lake ecosystems, the project will deliver capacity building on good agricultural practices, reducing chemical fertilizer usage, control erosion to reduce non-point runoff from agricultural lands and decrease sedimentation in the lakes. Another potential intervention would be piloting payment for ecosystem services

(PES) between local communities and governmental units and/or the private sector (e.g., community-managed erosion control initiative linked with hydroelectric power companies to reduce siltation, etc.). Reducing erosion in the catchment areas would also deliver important climate change adaptation benefits through strengthening the resilience of the ecosystems to climatic variability. The potential PES pilot will be explored during the project preparation phase, including a description of the potential mechanism and identification of buyers and sellers. The project will also support one or more pilot initiatives on prevention, control and management of IAS, e.g., reintroducing local and native species for revegetation and restoration and revitalizing economic value in the demonstration areas. Cross-learning exchanges will be arranged among the demonstration areas and other priority lake ecosystems, to help facilitate increased awareness, with the aim of preventing the spread of IAS.

Output 2.3: Livelihoods, income generating, and food and nutrition security of local communities enhanced through Nature-based solutions and ecosystem-based approaches. Engagement of local communities in the management of the lake ecosystems in the demonstration areas is an integral part of the project strategy, generating livelihood and supporting food security that will help enable the sustainability of the integrated approaches. The project will support village economic development in the demonstration areas through capacity building at the village level and facilitating linkages between local producers with government programs, as well as with civil society and private sector partners. Working with rural, small-scale producers, the project will deliver technical and investment assistance for sustainable and resilient livelihoods and improved food and nutrition security (e.g., agroforestry systems that increase incomes and promote sustainable forest management; agroecological practices including sustainable and climate resilient soil and water management; improved agricultural production, post-harvest, processing and trading; shifting aquaculture practices into practices of environmentally friendly livelihood; improved ecotourism experiences, etc.). Moreover, pilot initiatives on sustainable use of invasive alien plant species (e.g., organic fertilizer, animal feed, small-scale biomass energy, etc.) will be explored. Adoption of more sustainable agriculture and forest management practices will also provide climate change adaptation benefits, enhancing the coping capacities of local communities and strengthening the resilience across the lake ecosystems.

Engagement with private sector associations and enterprises will be an important part of the livelihood interventions, building enabling partnerships between small producers and other actors in green value chains, improving product quality and applying quality control, strengthening marketing, enhancing network with consumer institutions, financial management skills, and developing capacities on sustainable practices. This output will emphasize the local community involvement in the process through intensive dialogue and application of social safeguarding, e.g., through establishing or strengthening Grievance Redress Mechanisms (GRMs), to enhance their awareness, understanding and sense of belonging, for their convenience in contributing to the program. This output will also including focused interventions for advancing gender equality and empowerment of women and girls, and for facilitating youth participation in integrated lake ecosystem management.

Output 2.4: Enhancing awareness, involvement, and collaboration for sustainability of improved landscape and the economic benefit at the demonstration areas. Under this output, the project will facilitate understanding and cooperation among stakeholders for the development of the demonstration areas, access and sustainable use within the demonstration lake ecosystems. This project will also give the increasing of the community income and welfare. Securing free, prior and informed consent (FPIC) from local communities, the project will also incorporate traditional knowledge and practices into the implementation of the integrated lake ecosystem management plans in the demonstration areas.

Component 3 will address Barrier No. 3 by **facilitating adaptive management and upscaling through knowledge sharing and learning**. The expected outcome of this pathway is: Outcome 3.: *Enhanced community awareness knowledge, contribution, and collaboration on lake ecosystem management and restoration*. Outputs and indicative activities to achieve this outcome include the following:

Output 3.1: Lake center of excellence and knowledge hub developed. The lake's center of excellence will be developed to produce, to store, and to disseminate knowledge and best practices, develop and deliver communication materials and awareness campaigns of lake management. This lake center will increase children and youth awareness and knowledge about sustainable lake management. This center can be a major place for community to learn technical or policy aspect of lake management. **While MoEF will build the infrastructure for the Center of Excellence through its own funding, the GEF funding will be used to develop the information/data collection system, the knowledge products and the technical modules based on project lessons learnt and good practices.**

Output 3.2: Knowledge sharing, learning systems and collaboration network established. Learning is an important part of the project strategy, enabling timely adaptive management and enhancing the likelihood that the results will be sustained, as well as upscaled and replicated. The project will promote learning through education, outreach and development of an innovation platform (e.g., learning center, online platform). Learning exchanges will be arranged among the demonstration areas and other lake ecosystems in the country. A knowledge sharing platform will be established and/or linked with an existing system, to share lessons and progress among project stakeholders.

The three causal pathways and project outcomes are mutually supportive. For example, strengthening the enabling environment for integrated lake ecosystem management and governance under Component 1 will support the mainstreaming and implementation of integrated lake ecosystem management at the three demonstration areas in Component 2. Experience gained at the demonstration areas in implementing integrated lake ecosystem management will also support on the participatory planning, technical implementation, and developing network, and help facilitate adjustments accordingly. Knowledge sharing and learning promoted under Component 3 will support adaptive management and share-learning across the project components and other national lakes, providing information on emerging approaches, lessons from the field level implementation and advances in participatory management, restoration and governance of lake ecosystems.

There is a mosaic of land uses and water use within the lake ecosystems, including agriculture, fisheries, energy, conservation, tourism and cultural heritage. Successful implementation of the integrated approaches promoted through the project strategy is contingent upon effective collaboration among stakeholders, including cross-sectoral governmental entities, as well as non-governmental actors, such as civil society organizations, private sector associations and enterprises, academic and research institutions and, importantly, the local communities residing and accessing the catchments.

Assumptions and impact drivers

Achievement of the project outcomes is subject to the following assumptions and impact drivers:

- **Assumption:** Stakeholder commitment to integrated approaches.
- **Assumption:** Financing for sustaining information systems secured.
- **Impact driver:** Cross-sectoral and multi-stakeholder collaboration mechanisms are established.
- **Assumption:** Sustainable options are attractive to local producers.
- **Impact driver:** Environmentally and social friendly scheme established to ensure sustained community involvement
- **Assumption:** Equitable participation by women, local communities and other vulnerable groups.
- **Assumption:** Knowledge sharing and lessons learning process established.

The three project outcomes are expected to catalyze the achievement of several medium-term outcomes, as illustrated in the theory of change diagram. The strengthened enabling environment realized under Component 1 will lead to the medium-term outcome No. 1: *Lake ecosystem services and biodiversity safeguarded through successful mainstreaming of integrated management, restoration and governance approaches*. Implementation of integrated lake ecosystem management approaches initiated in the demonstration areas under Component 2 will help ensure that *integrated approaches contribute to achievement of sustainable management objectives and enhanced livelihoods and improved food and nutrition security of local communities*. The co-benefits generated for local communities and improved dialogue on tenure issues and other concerns will strengthen the spirit of effective multiple stakeholder collaboration. The adaptive management capacities built under Component 3 will facilitate the medium-term outcome of *Upscaling and replication in other lake ecosystems through effective knowledge sharing and learning*. Achievement of these medium-term outcomes, which are envisaged to be realized after GEF funding ceases, is dependent upon the following assumptions and impact drivers:

- **Impact driver:** Policy and regulatory frameworks adopted by relevant ministries and institutions.
- **Assumption:** Local stakeholders committed to ensure scaling up of project demonstrations.
- **Impact driver:** Best practices mainstreamed according to effective flow of knowledge.

Description of target locations:

Integrated lake ecosystem management will be implemented in three target locations: (1) Lake Rawa Pening (27,278-ha catchment), situated within the critical Tuntang River watershed in Central Java Province; (2) Lake Batur, in the 10,212-ha Balingkang catchment in Bali; (3) and Lake Limboto (89,389-ha catchment), in the critical Limboto River watershed in Gorontalo Province. Based on available 2020 census data, there are approximately 744,550 people residing in the 167 villages that are located within the catchments of the three demonstration areas.

Lake Rawa Pening is a semi-natural, multipurpose lake, formed in a natural depression of the surrounding volcanoes Merbabu, Telomoyo and Ungaran, in the province of Central Java, approximately 45 km south of Semarang City. The 27,278-ha catchment of Lake Rawa Pening is situated within the Tuntang River basin, one of the critical watersheds in the country. The upper reaches of the catchment overlap with the Merbabu National Park (WDPA ID 317251; 5,725 ha; type: terrestrial and inland waters protected area). Based on available MoEF data from 2020 on critical land, the catchment includes 3,990 ha of degraded land: protection forests (177 ha), production forests (16 ha) and other use areas (*AraeI penggunaan lain*: APL) (3,797 ha). Fauna species found in the ecosystem include Javan hawk-eagle (*Nisaetus bartelsi* – IUCN Red List endangered EN), black eagle (*Ictinaetus malayensis* – Red List least concern LC), Spotted Kestrel (*Falco moluccensis* - LC), and the Javan leopard (*Panthera pardus ssp. Melas* - EN). Among the freshwater fish species in the lake, at least three are endemic: Common Barb (*Barbodes binotatus*); Ikan Lumajang (*Cyclocheilichthys enoplos*); and the Hard-lipped Barb (*Osteochilus vittatus*). Flora species include puspa (*Schima wallichii ssp. Noronhae* - LC), sengon (*Albizia lophanta*), pasang (*Quercus* sp).

The water level of Lake Rawa Pening was raised by the construction of weirs in the first half of the 20th century, to secure water supply for the Jelok and Timo hydroelectric power plants. Lake water is also allocated for irrigation, including approximate 24,000 ha of rice fields. Lake Rawa Pening also is used for aquaculture, supports inland water fisheries, provides raw water reserves for public water utilities and is a tourist destination, including the Dukuh Temple on the lakeshore, estimated to have been built in the 9th century. The lake is facing multiple pressures associated with unsustainable land management, planning and development practices. Nearly 70% of the surface of the lake is covered by water hyacinth, the lake is eutrophic and depths have significantly decreased due to high rates of sedimentation.[\[1\]¹⁴](#)

Lake Batur is located within the UNESCO Batur Global Geopark in Kintamani Sub-district, Bangli District in the province of Bali. The 10,263-ha catchment of Lake Batur overlaps with the Gunung Batur Bukit Payang Nature Recreation Park (WPDA_ID: 555571228; 3,000 ha; type: terrestrial and inland waters protected area). Based on available MoEF data from 2020 on critical land, the catchment includes 1,655 ha of degraded land: protection forests (152 ha), production forests (113 ha) and other use areas APL (1,391 ha). Fauna species in the catchment include the Spotted Kestrel (*Falco moluccensis* - LC), Buffy Fish-owl (*Ketupa ketupu* - LC), White-bellied Munia (*Lonchura leucogastroides* - LC), Scaly-breasted Munia (*Lonchura punctulate* - LC), Common Iora (*Aegithina tiphia* - LC). And flora species include Ampupu (*Eucalyptus urophylla*), Cemara gunung (*Casuarina junghuhniana*), Sonokeling (*Dalbergia latifolia*), Ampupu (*Eucalyptus urophylla*), Seming (*Pometia* sp).

The volcanic crater lake has a maximum depth of roughly 70 m, and provides a wide range of ecosystem services, including domestic water supply, water transportation, irrigation, aquaculture (by floating net cage systems), agro-tourism and cultural tourism. The lake is fed exclusively by rainfall, and seepage from the lake feeds groundwater springs in nearby villages. Lake Batur is facing increased threats from pollution originating from agricultural runoff and aquaculture systems, as well as expanding numbers of tourists visiting Bali.

Lake Limboto, located in the province of Gorontalo, receives water from 23 rivers. The 93,366-ha catchment of the lake is situated within the Limboto-Bone-Bolango catchment, one of the critical watersheds in the country. Based on available MoEF data from 2020 on critical land, the catchment includes 36,461 ha of degraded land: protection forests (152 ha), production forests (113 ha) and other use areas APL (1,391 ha). Fauna species include the Shortfin Eel (*Anguilla bicolor* – Red List near threatened NT). The Lake Limboto catchment also provides habitat for at least 94 bird species, including migratory birds along the Australia-Asia flyway. 87 species of 94 species are least concern IUCN status and 7 species are near threatened IUCN red list species, e.g., *Numenius minutus*, *Charadrius veredus*, *Limnodromus semipalmatus*, and *Stiltia Isabella*.

Lake Limboto provides important ecological, hydrological and socioeconomic services to the communities within the catchment and to the province as a whole. The primary livelihoods in the area include lowland agriculture and freshwater fisheries. The lake has undergone severe shrinkage and deterioration due to sedimentation, high rates of agricultural runoff, and excessive growth of water hyacinth. The lake extent in 2019 was 64% of that in 1978, shrinking from 31.50 km² to 20.44 km², respectively.^{[2]¹⁵} The land use land cover changes in the upper catchment have led to the reduction of the lake's (fresh water) surface area, thus impacting the habitat of three endemic and vulnerable fish species, i.e., including *Channa striata*, *Glossogobius giuris*, *Puntius janaicus*.

The yellow bamboo (*Bambusa vulgaris var. striata*) is rarely found in the catchment area of Limboto. This bamboo is very important to the community for traditional ceremonies and to prepare traditional food. Bamboo has an important role in improving land degradation, especially to prevent soil erosion. Based on the research was conducted by National Research Institute (BRIN) with planting of bamboo can reduce the sedimentation significantly from 4,235 ton/km² to be 436 ton/km² after 5 years planting bamboo. There is also an endemic tree species called "malahengo" (*Eugenia sp*) acknowledged by local government to be reintroduced for rehabilitation/land rehabilitation. It is can potentially be combined with cashews (*Anacardium occidentale*) as multi propose tree species which suitable with the land/soil conditions and improve the micro-climate.

Limboto usually used as fly way from Asia to Australia between July-September. It is recorded by the bird watcher in Gorontalo province with some bird species using this lake: white headed stilt (*Himantopus leucocephalus*), wood sandpiper (*Tringa glareola*), pacific golden plover (*Pluvialis fulva*), *Todirhampus sanctus*. The researchers ha sbeen tabulating the data/information since the early 2000s.

Innovation and upscaling

Inland lakes are recognized as important carbon sinks, including sequestration of carbon through deposition of organic matter in bottom sediments. Carbon cycle dynamics, however, are complex, with fluxes influenced by a multitude of variables, including rainfall, dissolved oxygen, groundwater seepage, etc.

Carbon cycling in lake systems in temperate climates in northern hemisphere countries are more studied than those in tropical lake ecosystems. The project provides a unique opportunity to develop innovative methodologies for estimating the carbon sequestration potential for the three demonstration areas, as well as other ones in the country, where there is a wide variety of lake types.

Innovation will also be realized through demonstrating the role of local producers and communities in effectively managing lake ecosystems, coupling livelihood diversification opportunities and enhanced food and nutrition security with protection and restoration interventions. The demonstrations will ensure a community-driven approach which incorporates local knowledge into the practices implemented.

The three demonstration lake ecosystems are included among the 15 priority lakes in Indonesia. Strengthening the enabling environment for integrated lake ecosystem management under Component 1, demonstrating implementation of such integrated approaches in the demonstration areas in Component 2, and enhancing knowledge flow and facilitating learning, through education, outreach and an innovation platform (e.g., learning center, online platform) and cross-learning exchanges among the demonstration areas in Component 3 will enhance the durability of the project results and promote upscaling to other lake ecosystems in the country.

During the implementation of this project, a database and national inventory for the lakes in Indonesia will be developed, differentiating the lake systems into their typology and biodiversity, e.g., tectonic, volcanic, crater, and caldera, for better management and improvement of lake ecosystems. The systems will be developed by the MoEF and in collaboration with other relevant institutions, such as the national research and innovation agency (BRIN), relevant research centers, local universities, and technical experts, to support the monitoring of lakes in Indonesia, particularly to address the international pledge regarding the lake restoration and the Convention on Biological Diversity (CBD). The lessons learned from the three target locations are expected to be replicated in other lake ecosystems that have similar typologies.

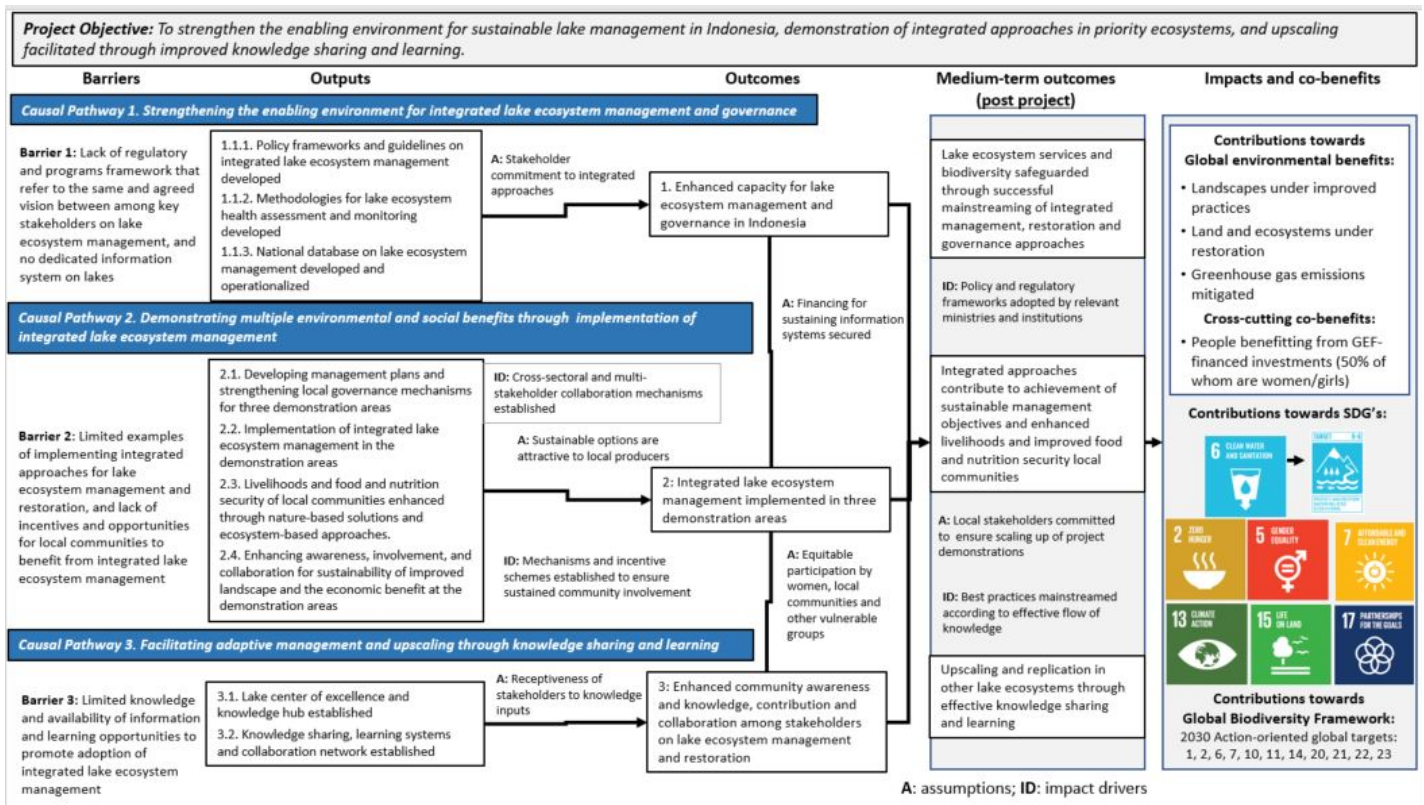


Figure 2: Preliminary Theory of Change for the proposed project

Gender Equality and Women's Empowerment

As outlined in the *IFAD Strategic Framework 2016-2025*, **gender equality** is one of the five principles of IFAD's engagement. The *IFAD Country Strategic Opportunities Programme 2023-2027* for the Republic of Indonesia further elaborates that IFAD projects in the country will primarily target smallholder households with sufficient land to develop farming activities as their main source of livelihood, land-poor households, landless rural people, and unemployed and underemployed women and youth, ensuring gender equality and women's economic empowerment, economic opportunities and participation in decision-making roles. These gender mainstreaming objectives have been incorporated into the project description.

Women in the agriculture and the rural sector in Indonesia are often marginalized, having limited access to financial resources, knowledge and technology to improve their livelihoods, as well as food and nutrition security for their households. [1] While women comprise 37% of the agricultural workforce, they earn an average of 44% less than their male counterparts, just 13% of agricultural landowners are female, and only 11% of smallholder farms are female headed [2][3]16. Women spend an average of 5.4 hours on agricultural production per day while also performing significant domestic labor around their time in the fields. Female-headed households are more vulnerable to poverty due to their lower incomes, and estimates suggest that 20% of rural households are headed by women. Due to gender inequalities and income distribution, access to credit, and control over land and natural resources, rural women are more vulnerable to poverty. Further,

previous studies have shown that women are vulnerable to gender-based violence during and after disasters^[4]¹⁷.

The National Medium-Term Development Plan for 2020-2024 (RPJMN 2020-2024) has specific metrics on improving the Maternal Mortality Ratio (183 per 100,000 live births); Gender Development Index (91.39), and Gender Empowerment Index (74.18), through strengthening gender-responsive planning and budgeting, increasing knowledge, strengthening the role and participation of women in development, and enhancing networking and coordination among stakeholders.

A project level gender analysis will be conducted during the project preparation phase, and the results of the analysis will inform the development of a gender action plan, with specific gender-responsive measures for achieving gender equality and women's empowerment objectives. Gender-sensitive indicators and sex-disaggregated targets will **also** be integrated into the project results framework. The gender action plan will identify measures to reduce negative impacts to women from the proposed project activities and promote measures for equitable benefit sharing, labor division, access to resources and technologies, capacity development, etc. **The costs for implementing and monitoring and evaluating the gender action plan will be incorporated into the project budget.**

The project will support women's economic and social empowerment by promoting their access to technical, financial and business services and technologies. Targeted interventions will help facilitate livelihood activities where women have a higher potential to play leading roles, such as post-harvest handling, processing and marketing horticultural and/or fisheries products, as well as ecotourism experiences and support services. It will also help them build equitable relationships in their households and family business.

[1] FAO. 2019. *Country Gender Assessment of Agriculture and the Rural Sector in Indonesia*. Jakarta

[2] World Bank (n.d.) 'Employment in agriculture, female (% of female employment) (modelled ILO estimate) - Indonesia | Data'

[3] World Bank. 2020. *Indonesia Country Gender Assessment : Investing in Opportunities for Women*. World Bank, Washington, DC. © World Bank

[4] FAO. 2019. *Country Gender Assessment of Agriculture and the Rural Sector in Indonesia*. Jakarta

[1] Irawan, E. and N. Haryanti. 2020. *The changes in property-rights regimes and lake degradation: an institutional analysis of Lake Rawapening*. IOP Conf. Ser.: Earth Environ. Sci. 535 012063.

[2] Kimijima, S. et al. 2020. *Mechanism of the rapid shrinkage of Limboto Lake in Gorontalo, Indonesia*. Sustainability 2020, 12, 9598; doi: 10.3390/su12229598.

Coordination and Cooperation with Ongoing Initiatives and Project.

Does the GEF Agency expect to play an execution role on this project?

No

If so, please describe that role here. Also, please add a short explanation to describe cooperation with ongoing initiatives and projects, including potential for co-location and/or sharing of expertise/staffing

There are several opportunities for coordination and cooperation with ongoing initiatives and projects, including the ones described below.

FAO-GEF project “Strengthening Capacities for Management of Invasive Alien Species (SMIAS) in Indonesia (GEF ID 10705). Under Component 1, the proposed project would develop a complementary action plan on prevention, control and management of invasive alien species (IAS) in lake ecosystems, linked to the updated National Strategy and Action Plan for the Management of Invasive Alien Plant Species in Indonesia (NISSAP) and contribute to the updating National Biodiversity Strategy and Action Plan which mandated to the Kunming-Montreal Global Biodiversity Framework.

USAID Ber-IKAN: Improve Sustainable, Resilient and Equitable Fisheries Management (In Gorontalo). The USAID Ber-IKAN project is providing technical and financial assistance on protection of marine biodiversity by supporting sustainable and equitable management for fisheries. In particular, the program helps improve adoption of and compliance with evidence-based fisheries policies for priority fisheries; strengthen small-scale fisheries (SSF) governance; increase government and market-based incentives for sustainable seafood products; and improve protection of endangered, threatened, and protected marine species affected by fishing practices. Potential opportunities for collaboration with the proposed project include capacity building on best practices for inland fisheries, cooperating on livelihood interventions with local fishing communities, especially those representing women, youth, and other vulnerable and/or minority groups.

GEF-7 ENTREV (<https://www.thegef.org/projects-operations/projects/10641>) and one of the project site in Bali. GEF7: Enhancing Readiness for the Transition to Electric vehicles in Indonesia (ENTREV) has objective to support the Government of Indonesia and key stakeholders in policy, institutional, environmental & technical readiness to transition towards electric mobility and to demonstrate innovative business models in the transport sector that will lead to GHGs emissions reduction. The project is managed by United Nations Development Programme (UNDP) Indonesia as medium sized project with budget US\$ 1,816,500 and has been implemented since 2022 for 36 months project implementation.

Community-Government Restoration, Recreation, and Livelihood in Batur UNESCO Global Geopark in Indonesia for Climate Resilience (2022 – 2024). This project is managed Center Information for Research (CIFOR) in collaboration with AFoCo together with the National Institute of Forest Science of the Republic of Korea (NIFoS) and the Center for Standardization of Disaster and Climate Change Instruments, Agency for Standardization of Environment and Forestry Instruments (under Indonesia’s Ministry of Environment and Forestry). It has been implementing from 2022 until 2024 with the objective to obtain the principles or guidelines of land-based and community-based economic revitalization to enhance

disaster and climate change resilience. The priority area is support on the research and development in climate change adaptation in Batur Geopark, Bali. Potential coordination and cooperation opportunities include linking up on livelihood interventions, e.g., with the community-based forest culture model promoted by the UNESCO project.

National Watershed Management Programme. Currently Indonesia has a watershed area of 189,278,753 ha which is divided into 17,076 watersheds, of which 106,884,471 ha or as many as 2,145 watershed are classified as damaged/need to be restored. Based on MoEF data, there are more than 14,006,450 ha of critical land in Indonesia, which is a major issue in watershed restoration. There are 14 focus scope areas to be intervened by MoEF and relevant ministries, including Forest Reclamation and Watershed Rehabilitation.

Indonesia Biodiversity Strategy and Action Plan (IBSAP), Kunming Montreal Biodiversity Target

Under the Sixth National report of Indonesia to the Convention on Biological Diversity (CBD), the Management and conservation of reservoirs, watersheds, lakes, and other water container buildings was included in the national target report and Aichi target achievement under the aichi target number-14. It was stated that the Management and conservation of reservoirs, retention basins, lakes, and other water storage buildings: Management and conservation of reservoirs/retention basins/ channel reservoirs/long storage aims to improve and maintain water availability at the farming business level in addition to irrigation water for food crop commodities and reduce the risk of crop failure occurs due to drought in farming land during the dry season. As of 2017, 2,673 water conservation building units have been developed in 22 provinces and 147 regencies, representing 63.7% of the targeted number for 2019 at 4,020 units.

Other invasive species is *Salvinia molesta* which is one of the 100 dangerous Invasive Alien Species in the world which are found in many freshwater bodies in Indonesia, especially in the **freshwater lakes**. The invasion of *Salvinia molesta* can change wetland ecosystems and cause loss of wetland habitat. *Salvinia molesta* prefers tropical, sub-tropical or warm temperate regions in the world and grows best in calm or slow-moving water bodies including slow gutters, ponds, lakes, rivers and canals. The invasion of *Salvinia* also poses a serious threat to socioeconomic activities that depend on open, flowing and/or high-quality water bodies, including hydroelectric power, fishermen transportation, and ships. IAS from the animal group that also disturbs the ecosystem is golden apple snails (*Pomacea canaliculata*) which become pests for rice farm which entered Indonesia around 1984 and spread widely in various types of water bodies such as swamps, lakes, rice fields, and ponds. The results of monitoring due to the spread of invasive snails *Pomacea canaliculata* in Rawapening conducted by Marwoto et al. (Person. Comm) showed that local snails *Pila ampullacea* and *Pila virescens*, or commonly called gondang or kool snails, that had been found in Rawapening were extinct and only one survivor species left, *Pila scutate*.

Institutional Arrangement

Under the Presidential Decree No. 60/2021 regarding Restoration of National Priority Lakes, **a** national and sub-national priority lake restoration team **has been established**. In the national level, the steering committee lead by Coordinating Minister for Maritime and Investment Affairs, and the technical committee which is called “Tim Penyelamatan Danau Prioritas Nasional Tingkat Pusat” lead by the Minister of Public Works and Minister of Environment and Forestry. While in sub-national level, which is called “Tim Penyelamatan

Danau Prioritas Nasional Tingkat Daerah”, led by Head of Province/District. All the 15 (fifteen) institutional priority lakes have been established, especially for the three lakes proposed by this project namely:

- a. Rawapening Lake: Central Java Governor's Decree No. 610/44 of 2018 on the Establishment of Rawapening Lake Management Team.
- b. Limboto Lake: Gorontalo Governor's Decree No. 313/28/X/2022 on the Establishment of the National Priority Lake Rescue Team at the Provincial Level in Gorontalo.
- c. Batur Lake: Bangli Regent's Decree No. 660.05/328/2018 on the Batur Lake Management Working Group in 2018.

This project **proposes** to use local management units (Balai Pengelolaan Daerah Aliran Sungai/BPDAS) under MoEF in Central Java, Bali, and Gorontalo Province **as local project implementation units**.

Core Indicators

Indicator 3 Area of land and ecosystems under restoration

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
6480	0	0	0

Indicator 3.1 Area of degraded agricultural lands under restoration

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
Cropland	120.00			

Indicator 3.2 Area of forest and forest land under restoration

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
506.00			

Indicator 3.3 Area of natural grass and woodland under restoration

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 3.4 Area of wetlands (including estuaries, mangroves) under restoration

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
5,854.00			

Indicator 4 Area of landscapes under improved practices (hectares; excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
130907	0	0	0

Indicator 4.1 Area of landscapes under improved management to benefit biodiversity (hectares, qualitative assessment, non-certified)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
130,245.00			

Indicator 4.2 Area of landscapes under third-party certification incorporating biodiversity considerations

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Type/Name of Third Party Certification

Indicator 4.3 Area of landscapes under sustainable land management in production systems

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
662.00			

Indicator 4.4 Area of High Conservation Value or other forest loss avoided

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4.5 Terrestrial OECMs supported

Name of the OECMs	WDPA-ID	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)

Documents (Document(s) that justifies the HCVF)

Title

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO₂e (direct)	1236765	0	0	0
Expected metric tons of CO₂e (indirect)	0	0	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO₂e (direct)	1,236,765			
Expected metric tons of CO₂e (indirect)				
Anticipated start year of accounting	2025			
Duration of accounting	20			

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO₂e (direct)				
Expected metric tons of CO₂e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)

Indicator 11 People benefiting from GEF-financed investments

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	5,000			
Male	5,000			
Total	10,000	0	0	0

Explain the methodological approach and underlying logic to justify target levels for Core and Sub-Indicators (max. 250 words, approximately 1/2 page)

The CI 3 target is based on the restoration of degraded inland wetlands, agricultural land, and forest areas in the three demonstration areas. Preliminary estimates include restoring more than 600 ha of degraded land through introduction of agroforestry systems, with the aim of reducing erosion and providing livelihood co-benefits for local communities. The end target also includes restoration of degraded agricultural lands, through improved practices to enhance soil and water conservation, provide erosion control and reduce non-point agricultural runoff, and improve vegetative cover. The rehabilitation will re-introduce the fast-growing tree and local/endemic tree species that can improve the land conditions and reduce the erosion and sedimentation to the lake.

The CI 4 target represents the cumulative area (130,907 ha) of the catchments in the three demonstration areas, where improved landscape practices will be achieved through implementation of integrated lake ecosystem management plans. Preliminary estimations of specific interventions planned for improved landscape management to benefit biodiversity include broader adoption of good agricultural practices with the expected result of avoided forest conversion of 53 ha of primary forest and 1,600 ha of secondary forest; strengthened fire management through improved management practices within plantation areas, resulting in an estimated 500 ha reduction in fire incidence; improved agricultural practices across more than 662 ha, e.g., reduced chemical use and reduced tillage, resulting in strengthened soil and water conservation and restoration of soil biodiversity; introduction of agroforestry systems across approx. 626 ha on degraded land, restoring and reducing further habitat fragmentation; control of invasive alien species across approx. 700 ha of inland wetlands within the lake catchments, restoring terrestrial and aquatic ecosystems.

Proposed Site Locations (Landscape) - Description & remarks - (the table with maps is in the PIF as here there is no way to upload it)

1. Rawa Pening Catchment (Central Java)

The total catchment area is 27,278 ha. In 2000s there is 37 ha area covered with secondary forest and 13,071 ha with plantation/monoculture forest and others aren't forest. In 2020, secondary forest increases 514 Ha, however the plantation forest decreases to be 778 ha. The deforestation was significantly happened with more than 600 ha/year and contribute for the erosion and sedimentation about 350,000 ton/year in Rawa Pening lake (Ariyani, 2018).

2. Batur Catchment (Bali Province)

The total catchment area is 10,263 ha. In 2000s there is 90 ha area covered with secondary forest and 70 ha with plantation forest and others aren't forest. Referring to the land cover data in 2020, the secondary forest increases to be 1,035 ha and the plantation forest also increases to be 245 ha. Batur catchment has 1,4 ha/year for deforestation.

3. Limboto Catchment (Gorontalo Province)

The total catchment area is 93,366 ha. In 2000s there is 3,270 ha with primary forest and 7,484 ha covered with secondary forest and others aren't forest. The land use land cover (LULC) was changed with additional for the secondary forest to be 9,090 ha and plantation forest is 1,356 ha. Limboto catchment has 137 ha/year for the degradation forest and 142 ha/year for deforestation. These contribute significantly to the critical land in the catchment area and lake conditions to prevent the erosion & sedimentation with estimate calculation 1,500 ton/year.

Greenhouse gas mitigation benefits (CI 6) were estimated using the FAO EX-Ante Carbon-balance Tool (EX-ACT), V9.4.51. Mitigation benefits are to be generated through the planned restoration interventions, as well as improved practices across 130,907 ha of landscapes in the three demonstration areas. The preliminary EX-ACT calculations are provided as a separate annexed Excel file. The estimated reduction of GHG emissions are based on preliminary estimates of avoided deforestation (1,653 ha) as a result of improved management practices in the lake catchments, e.g., broader adoption of good agricultural practices is expected to result in less pressure to encroach into forest areas; reduced forest fires (approx. 500 ha) as a result of improved management of plantation areas; improved agricultural practices, e.g., reduced tillage management, reduced use of chemical fertilizers (approx. 1,330 ha); introduction of agroforestry systems (approx. 626 ha) on degraded land as part of the restoration efforts.

The estimated number of people benefiting from the GEF-financed investment (CI 11) includes people receiving targeted and high intensity support from the proposed project, e.g., people working in the entities managing the lake ecosystems in the three demonstration areas; people working with rural, small-scale producers who receive technical and investment assistance for sustainable and resilient livelihoods and improved food and nutrition security. It is proposed that 50% of target beneficiaries will be women/girls. This indicator/gender target will be monitored regularly through a gender sensitive monitoring-evaluation systems (GESI: gender equality and social inclusion).

Risks to Project Preparation and Implementation

Summarize risks that might affect the project preparation and implementation phases and what are the mitigation strategies the project preparation process will undertake to address these (e.g. what alternatives may be considered during project preparation- such as in terms of consultations, role and choice of counterparts, delivery mechanisms, locations in country, flexible design elements, etc.). Identify any of the risks listed below that would call in question the viability of the project during its implementation. Please describe any possible mitigation measures needed. (The risks associated with project design and Theory of Change should be described in the "Project description" section above). The risk rating should reflect the overall risk to project outcomes considering the country setting and ambition of the project. The rating scale is: High, Substantial, Moderate, Low.

Risk Categories	Rating	Comments
Climate	Moderate	<p>Risks: Climate change was identified as a key driver in the project description, e.g., increased climate variability and compounding impacts of changing climate are threatening biodiversity habitats and ecosystem functions. Climate and disaster hazards also pose risks during project implementation. For example, the execution of certain project activities may be delayed or undermined as result of extreme weather events. Government priorities and resources may also be redirected in the event of a significant climate or disaster event, possibly diminishing the impacts and sustainability of the project. A climate risk screening was conducted at the PIF stage.</p> <p>Mitigation measures: The project will draw upon lessons and experiences from other projects in the country and region. Building upon the preliminary climate risk screening made at the PIF stage, an assessment of climate and disaster risks will be conducted during the PPG phase and mitigation measures will be incorporated into the project design accordingly. For instance, the integrated lake ecosystem management plans for the demonstration areas will address climate and disaster risks.</p>
Environment and Social	High	<p>Risks: A preliminary environmental and social safeguards screening was conducted during the PIF stage. There are inherent environmental and social risks associated with working with natural resource management, e.g., within or adjacent to sensitive ecosystems, and involving multiple stakeholders, including women, local communities and other vulnerable</p>

		<p>groups. Risks that were identified in the preliminary screening include the project possibly directly or indirectly affecting local communities' rights, lands, natural resources, territories, livelihoods, knowledge, social fabric, traditions, governance systems, and culture or heritage (tangible or intangible); and the execution of certain activities may not fulfill national or international labor and working conditions. Mitigation measures: A social, environmental and climate assessment procedure (SECAP) will be conducted during the project preparation phase following IFAD procedures. Appropriate safeguard management plans and/or frameworks will be developed based on the results of the SECAP.</p>
Political and Governance	Moderate	<p>Risks: The project strategy on integrated lake ecosystem management requires national and subnational governmental commitment and collaborative governance involving multiple sectors and stakeholders. There is a risk that buy-in may not be maintained throughout the project, e.g., as a result of staff turnover, reluctance to change compartmentalized approaches, etc. Mitigation measures: The project will build upon existing governmental programs and governance mechanisms. Buy-in will be facilitated through targeted advocacy and awareness-raising activities, focused on key decision-makers at the national and subnational levels.</p>
Macro-economic	Moderate	<p>Risks: Global and/or national macro-economic trends or events may impact the effectiveness and</p>

		<p>stakeholder participation of the integrated approaches promoted in the project strategy. For example, external demand for certain agricultural crops or commodities may lead to increased pressure on lake ecosystem resources and local producers may be reluctant to adopt sustainable management practices. Mitigation measures: The project will promote livelihood diversification for local producers, leading to food and nutrition security co-benefits, as well as increased resilience to macro-economic disruptions and the impacts of climate change. Engagement with private sector partners, e.g., inserting local producers into green value chains will also help mitigate risks associated with macro-economic externalities.</p>
Strategies and Policies	Moderate	<p>Risks: The proposed advances to policy and regulatory frameworks on integrated lake ecosystem management may not be realized due to shifts in government priorities, turnover of key decision-makers, or prolonged bureaucratic timeframes. Mitigation measures: The project strategy was formulated in direct response to commitment of the Ministry of Environment and Forestry (MoEF) to accelerate their efforts on mainstreaming integrated lake ecosystem management.</p>
Technical design of project or program	Low	<p>Risks: Obtaining the requisite technical expertise for design of the full-sized project may be delayed. Mitigation measures: Substantive progress has been made at the PIF stage in developing the preliminary theory of change, working closely with MoEF officials and other stakeholders in preparing the</p>

		<p>conceptual design of the project, and formulating the indicative project activities and interventions.</p> <p>Moreover, IFAD will leverage off the technical expertise and lessons on other projects in Indonesia, as well as regionally and globally.</p>
<p>Institutional capacity for implementation and sustainability</p>	<p>Moderate</p>	<p>Risks: Capacities of national and subnational institutional partners may be insufficient to implement the project and to ensure durable impacts after GEF funding ceases. Mitigation measures: The project management will be established in the MoEF Directorate of Rehabilitation of Inland Waters and Mangroves. This is a dedicated directorate whose mandate is directly aligned with the project strategy of mainstreaming integrated lake ecosystem management. Capacity building is an important part of the project description, strengthening institutional and individual capacities for ensuring sufficient sustainability structures are incorporated in the project design.</p>
<p>Fiduciary: Financial Management and Procurement</p>	<p>Low</p>	<p>Risks: The Executing Agency (MoEF) may not have the capacity or systems to efficiently manage the GEF funds. Also, committed co-financing may be delayed or not realized due to unforeseen circumstances. Mitigation measures: The MoEF has executed GEF-financed projects in the past. A fiduciary assessment will be conducted during the project preparation phase and mitigation measures implemented for any shortcomings identified. Moreover, through their quality assurance role, IFAD will help ensure cost efficiency and effectiveness.</p>

Stakeholder Engagement	Moderate	<p>Risks: Certain stakeholder groups (e.g., private sector, civil society, local communities) may not be meaningfully engaged in the project, due to reluctance to adopt sustainable management practices or because of ineffective communication.</p> <p>Mitigation measures: Stakeholder consultations initiated during the PIF stage will be expanded during the project preparation phase. Based on feedback from stakeholders, a stakeholder engagement plan, with specific strategies for inclusive involvement of key stakeholder groups. Moreover, a knowledge management and communications plan will be developed and implemented, to ensure regular and targeted awareness-raising and communications during project implementation.</p>
Other		
Financial Risks for NGI projects		
Overall Risk Rating	High	<p>The overall risk rating for this project is high. Management plans and frameworks will be developed to ensure risks are mitigated and managed proactively. As part of the project monitoring & evaluation, identified risks and mitigation measures implemented will be closely monitored and evaluated, providing timely feedback to the project team to enable relevant adaptive management.</p>

C. ALIGNMENT WITH GEF-8 PROGRAMMING STRATEGIES AND COUNTRY/REGIONAL PRIORITIES

Describe how the proposed interventions are aligned with GEF- 8 programming strategies and country and regional priorities, including how these country strategies and plans relate to the multilateral environmental agreements.

Confirm if any country policies that might contradict with intended outcomes of the project have been identified, and how the project will address this.

For projects aiming to generate biodiversity benefits (regardless of what the source of the resources is - i.e., BD, CC or LD), please identify which of the 23 targets of the Kunming-Montreal Global Biodiversity Framework the project contributes to and explain how. (max. 500 words, approximately 1 page)

BD-1-2: Sustainable use of biodiversity. As part of the integrated lake ecosystem management plans, the project will enhance livelihoods and food and nutrition security of local communities through Nature-based solutions and ecosystem-based approaches.

BD-1-3 Ecosystem restoration. Implementation of the integrated lake ecosystem management plans in the three demonstration areas under Component 2 will include community-based approaches on restoration of agro-ecosystem services, avoidance of forest loss, erosion control and other interventions that focus on creating co-benefits and enhance livelihoods and food and nutrition security for local communities.

BD-1-4: Biodiversity mainstreaming in priority sectors. Under Component 1, the policy and regulatory frameworks will be strengthened, to facilitate mainstreaming of integrated lake ecosystem management and incentivize biodiversity-positive natural resource use. Moreover, an instrument will be developed that will help enable incorporation of integrated lake ecosystem management principles into spatial and land use planning processes, rationalizing production without degrading ecosystem services and biodiversity. Implementation of improved practices will be conducted under Component 2 in the demonstration areas, including in the agricultural, forestry, tourism, and freshwater fisheries sectors.

BD-1-5: Prevention, control, and management of Invasive Alien Species (IAS). In collaboration with the FAO-GEF project (GIF ID 10705), the project will develop a complementary action plan to the National Strategy and Action Plan for the Management of Invasive Alien Plant Species in Indonesia (NISSAP), focusing on lake ecosystems. Pilot initiatives on prevention, control and management of IAS will be implemented in the demonstration areas, as part of the integrated lake ecosystem management plans. And sustainable use of IAS will be piloted as part of the Nature-based solutions and ecosystem-based approaches under Output 2.2.1.

CCM-1.4: Promote Nature-based Solutions with high mitigation potential. GHG mitigation benefits will be generated through improved landscape practices and restoration with the high carbon lake ecosystems in the three demonstration areas. Consistent with the Koronivia Joint Work on Agriculture, the interventions focused on enhancing livelihoods and food and nutrition security of local communities will include improved agroecological practices including sustainable and climate resilient soil and water management.

The proposed project will contribute to several of the Global Biodiversity Framework 2030 action-oriented global targets 1, 2, 6, 7, 10, 11, 14, 20, 21, 22, and 23, as described below.

Target 1: Under component 2, participatory integrated lake ecosystem management plans for the three demonstration areas will be developed and implemented, contributing to reduction in the loss of areas of high ecological integrity.

Target 2: The project proposes restoration of degraded areas within the catchments in the demonstration lake ecosystems, to benefit biodiversity and ecosystem integrity.

Target 6: Under Component 1, the project proposes to collaborate with the FAO-GEF project (GEF ID 10705) by developing a complementary action plan on prevention, control and management of invasive alien species (IAS) in lake ecosystems, linked to the updated National Strategy and Action Plan for the Management of Invasive Alien Plant Species in Indonesia (NISSAP). Pilot interventions on prevention, control and management of IAS in the demonstration areas will be conducted under Component 2.

Target 7: Promotion of good agricultural practices as part of implementing the integrated lake ecosystem management plans under Component 2 will include promotion of reducing use of agrochemicals, contributing to the target of reducing pollution risks and negative impacts of pollution from all sources.

Target 10: The implementation of the integrated lake ecosystem management plans will help ensure areas under agriculture and forestry are managed sustainably, including through the application of biodiversity friendly practices.

Target 11: The ecosystem functions and services of the three demonstration areas will be restored, maintained and enhanced through implementation of nature-based solutions and ecosystem-based approaches.

Target 14: Under Component 1, project will support the MoEF on strengthening regulatory and policy frameworks on lake ecosystem management through developing policy frameworks and regulatory instruments and facilitating advocacy among key ministries and institutions to mainstream the proposed policies and regulations, as well as enhancing cross-sectoral governance condition. These regulatory and policy frameworks and the integrated lake ecosystem management plans for the demonstration areas will contribute to the target aimed at ensuring integration of biodiversity and its multiple values across all levels of government and sectors.

Target 20: The project strategy has a strong emphasis on capacity building and increasing access to innovation and knowledge, helping to facilitate application of science-based management of lake ecosystems.

Target 21: The national database on lakes proposed under Component 1 will help ensure the best available data, information and knowledge are accessible to decision-makers, practitioners and the public.

Target 22: Ensuring full, equitable, inclusive, effective, and gender-responsive representation and participation in decision-making across all levels of the project. A gender analysis will be conducted during the project preparation phase, informing the development of a gender action plan that will guide the project implementation in achieving gender equality and women's empowerment objectives.

Target 23: Gender equality will be ensured through a gender-responsive approach, facilitating equal opportunity for women to participate in and benefit from the project, including the recognition of their equal rights and access to natural resources.

The expected project results will contribute to the Republic of Indonesia's Medium-Term Development Plan (RJPMN) for 2020-2024. The project is also directly aligned with each of the three strategic objectives outlined in the IFAD 2016-2025 Strategic Framework (*Enabling inclusive and sustainable rural transformation*), and with the IFAD 2023-2027 Country Strategic Opportunities Programme for the Republic of Indonesia.

The project is also aligned with the Government of Indonesia's national strategies and action plans in response to obligations under the multilateral environmental agreements, including the National Biodiversity Strategy and Action Plan (NBSAP), the Land Degradation Neutrality National Target Setting Programme (LDN TSP), and the Enhanced Nationally Determined Contribution (NDC).

D. POLICY REQUIREMENTS

Gender Equality and Women's Empowerment:

We confirm that gender dimensions relevant to the project have been addressed as per GEF Policy and are clearly articulated in the Project Description (Section B).

Yes

Stakeholder Engagement

We confirm that key stakeholders were consulted during PIF development as required per GEF policy, their relevant roles to project outcomes and plan to develop a Stakeholder Engagement Plan before CEO endorsement has been clearly articulated in the Project Description (Section B).

Yes

Were the following stakeholders consulted during project identification phase:

Indigenous Peoples and Local Communities: Yes

Civil Society Organizations: Yes

Private Sector: Yes

Provide a brief summary and list of names and dates of consultations

Consultations with local communities, local lake management institutional and experts from local universities were initiated during the PIF stage, including consultations with local lake management task forces at the subnational level to seek their inputs and suggestions, and with local experts from universities who have been engaged as MoEF's partners in the implementation of the national lakes strategy.

The MoEF team working on the PIF has conducted several consultation meetings and workshop between May and August 2023 in the three proposed target areas (Central Java, Bali and Gorontalo). The meetings included public consultations at provincial level led by MoEF in collaboration with representatives from MoEFF's BPDAS (Watershed Agency). Meetings/workshops were attended by representative of key stakeholders from province agencies or forums i.e watershed Forum, local government (environment agency, planning & spatial agency, forestry agency) and representatives from line ministries (public work, marine & fishery, home affairs). In total the MoEF has conducted 6 workshops at province level and conducted field visits to the tree lakes (Rawa Pening, Batur & Limboto). There was one national consultation workshop held on September 5th 2023 where key partners from the National Research Institution (BRIN), representative from university, representative from NGO and the focal point from MoEF participated.

Robust stakeholder consultations will be conducted during the project preparation phase, informing key stakeholders of the proposed project strategy, enabling stakeholders opportunities to provide inputs and feedback, and identifying and strengthening partnerships. The information and feedback gathered from the stakeholder consultations will inform the development of the project stakeholder engagement plan.

(Please upload to the portal documents tab any stakeholder engagement plan or assessments that have been done during the PIF development phase.)

Private Sector

Will there be private sector engagement in the project?

Yes

And if so, has its role been described and justified in the section B project description?

Yes

Environmental and Social Safeguard (ESS) Risks

We confirm that we have provided indicative information regarding Environmental and Social risks associated with the proposed project or program and any measures to address such risks and impacts (this information should be presented in Annex D).

Yes

Overall Project/Program Risk Classification

PIF	CEO Endorsement/Approval	MTR	TE
High or Substantial			

E. OTHER REQUIREMENTS

Knowledge management

We confirm that an approach to Knowledge Management and Learning has been clearly described in the Project Description (Section B)

Yes

ANNEX A: FINANCING TABLES

GEF Financing Table

Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non-Grant	GEF Project Grant(\$)	Agency Fee(\$)	Total GEF Financing (\$)
IFAD	GET	Indonesia	Biodiversity	BD STAR Allocation: BD-1	Grant	5,684,749.00	540,051.00	6,224,800.00
IFAD	GET	Indonesia	Climate Change	CC STAR Allocation: CCM-1- 4	Grant	1,421,187.00	135,013.00	1,556,200.00
Total GEF Resources (\$)						7,105,936.00	675,064.00	7,781,000.00

Project Preparation Grant (PPG)

Is Project Preparation Grant requested?

true

PPG Amount (\$)

200000

PPG Agency Fee (\$)

19000

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non- Grant	PPG(\$)	Agency Fee(\$)	Total PPG Funding(\$)
IFAD	GET	Indonesia	Biodiversity	BD STAR Allocation: BD-1	Grant	160,000.00	15,200.00	175,200.00
IFAD	GET	Indonesia	Climate Change	CC STAR Allocation: CCM-1-4	Grant	40,000.00	3,800.00	43,800.00
Total PPG Amount (\$)						200,000.00	19,000.00	219,000.00

Please provide justification

Sources of Funds for Country Star Allocation

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Sources of Funds	Total(\$)
IFAD	GET	Indonesia	Biodiversity	BD STAR Allocation	6,400,000.00
IFAD	GET	Indonesia	Climate Change	CC STAR Allocation	1,600,000.00
Total GEF Resources					8,000,000.00

Indicative Focal Area Elements

Programming Directions	Trust Fund	GEF Project Financing(\$)	Co-financing(\$)
BD-1-2	GET	1,376,775.00	6125000
BD-1-3	GET	1,021,479.00	4000000
BD-1-4	GET	1,083,655.00	7350000
BD-1-5	GET	2,202,840.00	9025000
CCM-1-4	GET	1,421,187.00	8500000
Total Project Cost		7,105,936.00	35,000,000.00

Indicative Co-financing

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Recipient Country Government	Ministry of Environment and Forestry (MoEF)	In-kind	Recurrent expenditures	30000000
GEF Agency	IFAD	Grant	Recurrent expenditures	5000000
Total Co-financing				35,000,000.00

Describe how any "Investment Mobilized" was identified

The IFAD cofinancing line corresponds to IFAD's funded Horticulture Development in Dryland Areas Sector Project (HDDAP, 2023-2030, \$5M)

ANNEX B: ENDORSEMENTS

GEF Agency(ies) Certification

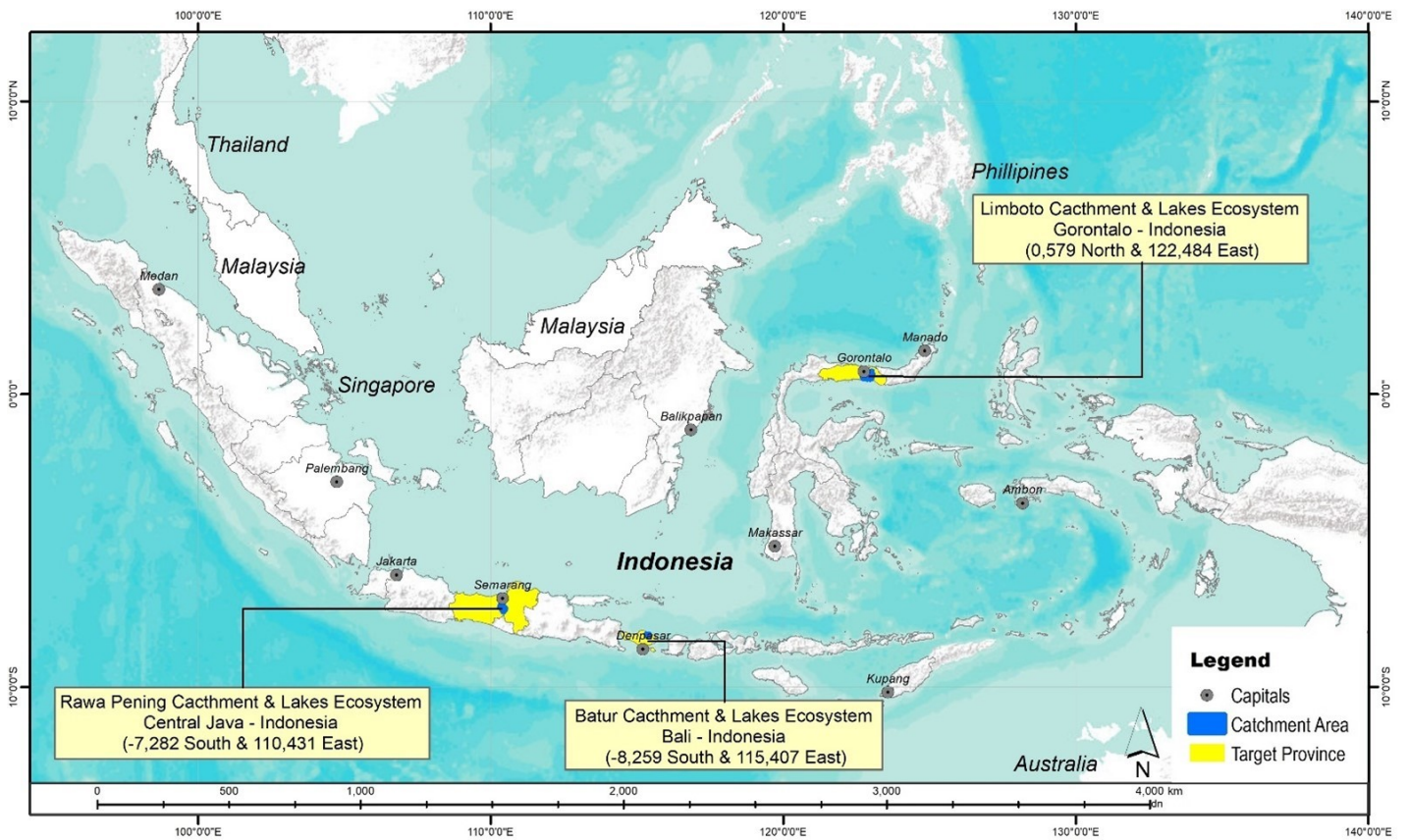
GEF Agency Type	Name	Date	Project Contact Person	Phone	Email
GEF Agency Coordinator	Juan Carlos Mendoza Casadiegos				juancarlos.mendoza@ifad.org
GEF Agency Coordinator	Janie Rioux				j.rioux@ifad.org
Project Coordinator	Anupa Rimal Lamichhane				a.rimallamichhane@ifad.org
Project Coordinator	Hani Abdelkader Elsadani Salem				h.elsadani@ifad.org

Record of Endorsement of GEF Operational Focal Point (s) on Behalf of the Government(s):

Name	Position	Ministry	Date (MM/DD/YYYY)
Mrs. Laksmi Dhewanti	Director General of Climate Change Control	Ministry of Environment & Forestry	10/18/2023

ANNEX C: PROJECT LOCATION

Please provide geo-referenced information and map where the project interventions will take place



ANNEX D: ENVIRONMENTAL AND SOCIAL SAFEGUARDS SCREEN AND RATING

(PIF level) Attach agency safeguard screen form including rating of risk types and overall risk rating.

Title

Indonesia Healthy Lakes SECAP screening

ANNEX E: RIO MARKERS

Climate Change Mitigation	Climate Change Adaptation	Biodiversity	Land Degradation
Principal Objective 2	Significant Objective 1	Principal Objective 2	Significant Objective 1

ANNEX F: TAXONOMY WORKSHEET

Level 1	Level 2	Level 3	Level 4
Influencing models			
	Transform policy and regulatory environments	The national strategy planning will be ended in 2024, the ministry of environment & forestry wants continuing it for the national concern link to the Food, energy & water as well as biodiversity ratification.	
	Strengthen institutional capacity and decision-making	Empowering the existing lakes forum in national & subnational level	
	Convene multi-stakeholder alliances		
Stakeholders			
	Indigenous Peoples		

	Private Sector		
		SMEs	
	Civil Society		
		Non-Governmental Organization	
	Type of Engagement		
		Consultation	
		Participation	
	Communications		
		Awareness Raising	
		Education	
		Public Campaigns	
Capacity, Knowledge and Research			
	Capacity Development		
	Knowledge Generation and Exchange		
	Targeted Research		
	Knowledge and Learning		
		Knowledge Management	
		Capacity Development	
	Stakeholder Engagement Plan		
Gender Equality			
	Gender Mainstreaming		
		Beneficiaries	
		Women groups	
		Sex-disaggregated indicators	
Focal Areas/Theme			
	Biodiversity		
		Protected Areas and Landscapes	
			Community Based Natural Resource Management
		Mainstreaming	
			Tourism
			Agriculture & agrobiodiversity
			Fisheries
			Infrastructure
		Species	
			Threatened Species
			Invasive Alien Species (IAS)
		Biomes	
			Lakes
		Financial and Accounting	
			Payment for Ecosystem Services
		Supplementary Protocol to the CBD	
	Forests		
		Forest and Landscape Restoration	
	Land Degradation		
		Sustainable Land Management	
			Restoration and Rehabilitation of Degraded Lands
			Improved Soil and Water Management Techniques
	Climate Change		
		Climate Change Mitigation	
			Agriculture, Forestry, and other Land Use
		United Nations Framework on Climate Change	

			Nationally Determined Contribution
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