



**GREEN
CLIMATE
FUND**

Meeting of the Board
17 – 20 October 2018
Manama, Bahrain
Provisional agenda item 17

GCF/B.21/10/Add.06

26 September 2018

Consideration of funding proposals - Addendum VI

Funding proposal package for FP087

Summary

This addendum contains the following three parts:

- a) A funding proposal summary titled “Building livelihood resilience to climate change in the upper basins of Guatemala’s highlands”;
- b) No-objection letter issued by the national designated authority(ies) or focal point(s); and
- c) Environmental and social report(s) disclosure;

The funding proposal package for FP087 was formerly submitted for the Board's consideration at its twentieth meeting and it remains unchanged.



GREEN
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Funding Proposal

Version 1.1

The Green Climate Fund (GCF) is seeking high-quality funding proposals.

Accredited entities are expected to develop their funding proposals, in close consultation with the relevant national designated authority, with due consideration of the GCF's Investment Framework and Results Management Framework. The funding proposals should demonstrate how the proposed projects or programmes will perform against the investment criteria and achieve part or all of the strategic impact results.

Project/Programme Title: **Building livelihood resilience to climate change in the upper basins of Guatemala's highlands**

Country/Region: Guatemala

Accredited Entity: International Union for Conservation of Nature IUCN

Date of Submission: July 31st, 2017

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Section B	FINANCING / COST INFORMATION
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Section F	APPRAISAL SUMMARY
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Section I	ANNEXES

Note to accredited entities on the use of the funding proposal template

- Sections **A, B, D, E** and **H** of the funding proposal require detailed inputs from the accredited entity. For all other sections, including the Appraisal Summary in section F, accredited entities have discretion in how they wish to present the information. Accredited entities can either directly incorporate information into this proposal, or provide summary information in the proposal with cross-reference to other project documents such as project appraisal document.
- The total number of pages for the funding proposal (excluding annexes) is expected not to exceed 50.

Please submit the completed form to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:

"[FP]-[Agency Short Name]-[Date]-[Serial Number]"

A.1. Brief Project / Programme Information		
A.1.1. Project / programme title	Building livelihood resilience to climate change in the upper basins of Guatemala's highlands	
A.1.2. Project or programme	Project	
A.1.3. Country (ies) / region	Guatemala	
A.1.4. National designated authority (ies)	Ministry of Environment and Natural Resources of Guatemala MARN	
A.1.5. Accredited entity	International Union for Conservation of Nature	
A.1.5.a. Access modality	<input type="checkbox"/> Direct <input checked="" type="checkbox"/> International	
A.1.6. Executing entity / beneficiary	<p>Executing Entities:</p> <ul style="list-style-type: none"> - Ministry of Environment and Natural Resources, Guatemala <p>Implementing Entities:</p> <ul style="list-style-type: none"> - Fundación para la Conservación de los Recursos Naturales y Ambiente en Guatemala FCG - Instituto de Agricultura, Recursos Naturales y Ambiente IARNA - IUCN Guatemala <p>Beneficiaries:</p> <ul style="list-style-type: none"> - National Forest Institute INAB - National Meteorological Authority INSIVUMEH - Ministry of Agriculture and Livestock MAGA - Local Municipalities - Community based organizations and cooperatives - National Protected Areas Council CONAP 	
A.1.7. Project size category (Total investment, million US\$)	<input type="checkbox"/> Micro (≤ 10) <input checked="" type="checkbox"/> Small ($10 < x \leq 50$) <input type="checkbox"/> Medium ($50 < x \leq 250$) <input type="checkbox"/> Large (> 250)	
A.1.8. Mitigation / adaptation focus	<input type="checkbox"/> Mitigation <input checked="" type="checkbox"/> Adaptation <input type="checkbox"/> Cross-cutting	
A.1.9. Date of submission		
A.1.10. Project contact details	Contact person, position	Grethel Aguilar, Regional Director for Mexico, Central America and the Caribbean
	Organization	IUCN
	Email address	Grethel.AGUILAR@iucn.org
	Telephone number	(+506) 2283 8449 - ext 246
	Mailing address	PO.Box 607 2050, San Pedro, Costa Rica

A.1.11. Results areas <i>(mark all that apply)</i>	
<u>Reduced emissions from:</u>	
<input type="checkbox"/>	Energy access and power generation (E.g. on-grid, micro-grid or off-grid solar, wind, geothermal, etc.)
<input type="checkbox"/>	Low emission transport (E.g. high-speed rail, rapid bus system, etc.)

- Buildings, cities and industries and appliances
(E.g. new and retrofitted energy-efficient buildings, energy-efficient equipment for companies and supply chain management, etc.)
- Forestry and land use
(E.g. forest conservation and management, agroforestry, agricultural irrigation, water treatment and management, etc.)

Increased resilience of:

- Most vulnerable people and communities
(E.g. mitigation of operational risk associated with climate change – diversification of supply sources and supply chain management, relocation of manufacturing facilities and warehouses, etc.)
- Health and well-being, and food and water security
(E.g. climate-resilient crops, efficient irrigation systems, etc.)
- Infrastructure and built environment
(E.g. sea walls, resilient road networks, etc.)
- Ecosystem and ecosystem services
(E.g. ecosystem conservation and management, ecotourism, etc.)

A.2. Project / Programme Executive Summary (max 300 words)

The project's overarching objective is to reduce the impacts of climate change on the hydrological cycle in target watersheds through improved land use practices. This will lead to improved water recharge and productivity and contribute to the population's and ecosystem's increased resilience to climate change. Period implementation of the project is seven years, including an exit strategy planned for years 6 and 7.

Total project area is 146,500ha of which 22,500 will be directly restored. This area includes agroforestry with annual crops, silvopastoral systems, and agroforestry with permanent crops or forest plantations and protection areas. The selected areas are considered as water recharge areas. The number of direct beneficiaries is 132,000 people.

GCF financial support (US\$22M) is requested with additional funding from the Korean Cooperation Agency for Development (KOICA) (US\$4.5M). Cash co-financing from the Government of Guatemala (GoG) (US\$5M) has been committed through its Forest Incentives Program PROBOSQUE, with an additional *in kind* co-financing of US\$6M.

Project will achieve its objective addressing three result areas:

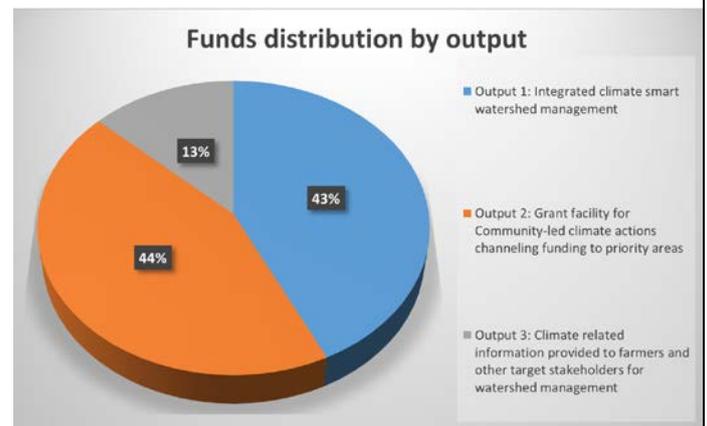
- 1) Integrated climate-smart watershed management adapted to the local context of the Highlands. The main activities in this component are: i) Improved local capacities for climate action and watershed management and ii) Government forestry and agroforestry incentives supporting water recharge and productivity;
- 2) Community – led watershed management systems promoted through grant facilities. This result is oriented toward community-led implementation of climate actions in priority areas through funding from the grant; and has two main activities; i) Awarding and implementation of medium grants for second level CBOs and ii) Awarding and implementation of small grants for grassroots organizations;
- 3) Climate related information provided to farmers and target stakeholders. This result will improve multi-level and multi-stakeholder access to climate information that enhances agricultural and water management practices and programs. Main activities are i) Strengthened meteorological and hydrological information systems through investment in equipment for data collection, modeling, forecasting, and archiving, and ii) Design and implement a participatory early warning system for agricultural practices and water management.

A.3. Project/Programme Milestone	
Expected approval from accredited entity's Board (if applicable)	Already approved in July 26 th 2017 , see Annex 17
Expected financial close (if applicable)	dd/mm/yyyy
Estimated implementation start and end date	Start: <u>01/01/2019</u> End: <u>01/01/2026</u>
Project/programme lifespan	_7_ years _____ months

B.1. Description of Financial Elements of the Project / Programme

The project will allow the leveraging of public investments (the national incentive program PROBOSQUE) and, at the same time improve decision making of local and national stakeholders for the promotion of climate-smart practices and technical services that the country needs. Guatemala has shown positive results in advancing the implementation of its National Adaptation Plan and in developing structural inter-sectorial partnerships for the restoration of degraded areas. However, more articulated efforts are needed between the public sector, communities, municipal organizations and the academic sector to develop and institutionalize criteria, practices and information to address current climatic effects and to prevent increased impacts on water security in the medium term. Based on the political decision and willingness of the GoG to invest in climate change adaptation, the project is an opportunity to implement, jointly with partners, Ecosystem-based Adaptation (EbA) strategies, measures and in-the-field practices, funding modalities (grants), information generation and dissemination so as to showcase and scale-up experiences to other vulnerable areas (Dry Corridor).

The breakdown of project costs from the GCF (see figure above) shows that funding is planned mainly toward direct investment on the ground and management practices for water security and livelihoods.



Activities described in C3 are the means to achieve the project overarching objective of improved watershed services in response to climate change in Guatemalan Highlands. To this end, three investment packages have been structured under each result area to tackle the most demanding adaptation needs regarding: i) integrated watershed management; ii) community-led climate action through direct investment; and iii) climate related information and technologies for adaption needs.

Component	Sub-component (if applicable)	Amount (for entire project)*	Currency	Amount (for entire project)	Local currency	KOICA funding amount	GoG funding amount	*GoG in kind Amount	GCF funding amount	Currency of disbursement to recipient
Component: Improved water recharge and productivity in response to climate change in Guatemalan Highlands	Subcomponent 1: Integrated climate smart watershed management.	15.18	million USD (\$)	107.8	million (GTQ)		5.0million	2.65 million	7.53 million	USD (\$)
	Subcomponent 2: Community-led watershed management systems promoted through grant facilities	15.18	million USD (\$)	107.8	million (GTQ)	4.12 Million		2.22 million	8.84 million	USD (\$)
	Subcomponent 3: Climate related information provided to farmers and target stakeholders.	5.02	million USD (\$)	35.66	million (GTQ)			0.46 million	4.56 million	USD (\$)
PMU		2.26		16.09	million (GTQ)	0.46 million		0.7 million	1.1 million	USD (\$)
Total project financing**		37.6	million USD (\$)	267.3	Million (GTQ)	4.5** million	5.0** million	6.0 million	22.0** million	USD (\$)
*: GCF, Koica and Gog funding **not included Administration fees										

B.2. Project Financing Information

	Financial Instrument	Amount	Currency	Tenor	Pricing
(a) Total project financing	(a) = (b) + (c)	37.6.....	million USD (\$)		
(b) GCF financing to recipient	(i) Senior Loans	.....	Options	() years	() %
	(ii) Subordinated Loans	.....	Options	() years	() %
	(iii) Equity	.....	Options		() % IRR
	(iv) Guarantees	.....	Options		
	(v) Reimbursable grants *	.....	Options		
	(vi) Grants *	...22	million USD (\$)		

<p>* Please provide economic and financial justification in section F.1 for the concessionality that GCF is expected to provide, particularly in the case of grants. Please specify difference in tenor and price between GCF financing and that of accredited entities. Please note that the level of concessionality should correspond to the level of the project/programme's expected performance against the investment criteria indicated in section E.</p>																
Total requested (i+ii+iii+iv+v+vi)		...22...	million USD (\$)													
(c) Co-financing to recipient	Financial Instrument	Amount	Currency	Name of Institution	Tenor	Pricing	Seniority									
	Grant	...4.5.....	million USD (\$)	KOICA		() %	<u>Options</u>									
	Grant	...5.....		GoG	() years	() %	<u>Options</u>									
	Grant6.....	million USD (\$)	GoG in kind*.....	() years	() % IRR	<u>Options</u>									
	<u>Options</u>	...	<u>Options</u>			<u>Options</u>									
	<u>Options</u>													
(d) Financial terms between GCF and AE (if applicable)	<p>In cases where the accredited entity (AE) deploys the GCF financing directly to the recipient, (i.e. the GCF financing passes directly from the GCF to the recipient through the AE) or if the AE is the recipient itself, in the proposed financial instrument and terms as described in part (b), this subsection can be skipped.</p>															
	<p>If there is a financial arrangement between the GCF and the AE, which entails a financial instrument and/or financial terms separate from the ones described in part (b), please fill out the table below to specify the proposed instrument and terms between the GCF and the AE.</p>															
	<table border="1"> <thead> <tr> <th>Financial instrument</th> <th>Amount</th> <th>Currency</th> <th>Tenor</th> <th>Pricing</th> </tr> </thead> <tbody> <tr> <td>---</td> <td>.....</td> <td><u>Options</u></td> <td>() years</td> <td>() %</td> </tr> </tbody> </table>							Financial instrument	Amount	Currency	Tenor	Pricing	---	<u>Options</u>	() years
Financial instrument	Amount	Currency	Tenor	Pricing												
---	<u>Options</u>	() years	() %												
<p>Please provide a justification for the difference in the financial instrument and/or terms between what is provided by the AE to the recipient and what is requested from the GCF to the AE.</p>																
B.3. Financial Markets Overview (if applicable)																
N/A																

Please fill out applicable sub-sections and provide additional information if necessary, as these requirements may vary depending on the nature of the project / programme.

C.1. Strategic Context

1. The impacts of climate change in Guatemala are twofold: in the short term, an increase in extreme events (e.g. hurricanes, droughts, frosts or floods) can be expected; in the long term, changes in annual average temperature and precipitation are estimated for the region. While extreme events have negative impacts on population and infrastructure, changes in average annual temperature and humidity can also modify the characteristics of flora and fauna and impact ecosystems. Both types of impacts are detrimental to agricultural productivity.
2. Regarding short-term events, several studies argue that global warming will increase the incidence of natural hydro-meteorological events in Central American (Giorgi 2006; Aguilar et al., 2005). This implies that a greater incidence of hurricanes, droughts or floods can be expected in the region (Lavell 2013). There is scientific evidence showing that the frequency of the ENSO has increased from two events in the period 1950-1970 to seven in the period 1990-2010 (URL-IARNA 2011). In terms of vulnerability to climate phenomena, Guatemala occupies ninth place among countries at the greatest risk of suffering from hydro-meteorological phenomena (Kreft et al., 2014).
3. Climate events are already affecting population in Guatemala. During the period 1990-2016, more severe extreme events took place, particularly in 2009 (drought, affecting 2.5 million people); 2011 (floods, 1.6 million people injured) and 2014 (drought, 1.4 million people injured). These events are followed by 2015 floods and landslides (each event with 400,000 people injured) (EM-DAT 2017). It is estimated that drought in 2009 caused a reduction of more than 60% in maize and bean production and the loss of almost 5,000 hectares of forest plantations throughout the country. Total economic losses in agriculture were estimated over 180 million Quetzals in 2009 (US\$24 million) (MARN 2012). The dry season of 2014 caused agricultural losses ranging from 54% to 75% of maize and bean crops, affecting more than 1.5 million people's food security (OCHA 2014).
4. Higher temperatures along with periods of increasing humidity (variables affected by climate change) create conditions for outbreaks of diseases and pests. For example, during July 2013 Central American health authorities were on alert for a dengue epidemic in the region - disease transmitted by the *Aedes aegypti* mosquito that spreads during the rainy season. The recent outbreak of coffee rust (*Hemileia vastatrix*) was due to optimal humidity and temperature conditions for fungus propagation, even affecting areas that were considered of no risk of infestation a few years ago.
5. Regarding monetary losses due to extreme events during the period 1990–2016, three years have had the highest monetary losses from natural events: 2010, 2005 and 1998. Due to Tropical Storm Agatha, along with the eruption of the Pacaya volcano, 2010 became the year with the greatest economic losses due to natural events. Hurricane Stan in 2005 is in second place, while Hurricane Mitch in 1998 ranks third in terms of material damages (EM-DAT 2017). It is estimated that in the last decade the losses suffered by droughts and floods surpass US\$1,300 million (Beteta 2014).
6. During the period 2010-2012, the Government of Guatemala (GoG) allocated a total of Q6,294 million (approximately US\$800 million at current prices) for reconstruction activities, which represented up to 5% of the annual government budget. If actual vulnerability conditions remain and the incidence of natural hazards continues to rise, the cost of damages and the budget required for reconstruction can be expected to increase for the next few years. ECLAC estimates that climate change will have severe impacts on the economy, and the cumulative cost for 2100 is expected to be equivalent to 38-64% of the GDP (Beteta 2014).
7. Adaptation to climate change requires the adequate provision of ecosystem services, which in Guatemala are strongly linked to forest ecosystems. However, Guatemala's forest cover continues to decline at a rate of 1.16% per year (UVG et al., 2011). In gross terms, the country lost 101,852 hectares per year during the period 2001-2006 (UVG et al., 2011).
8. Guatemala's national development policy document that brings together policies, plans, programs, projects and investments with a long-term vision is termed the National Development Plan: K'atun, Our Guatemala 2032. This

policy instrument synthesizes the country's development agenda, and recognizes that addressing climate change challenges is crucial for reaching sustainable economic and social development goals, reason for which adaptation and mitigation are included in its priorities. It proposes to reduce vulnerabilities in order to contribute to sustainable livelihoods through the generation of information and studies to understand the impacts of climate change and the promotion of projects and policies that foment adaptation, among others. To this end, it proposes the implementation of measures related to water resources, food security, ecosystem adaptation, dissemination of information, and further research on adaptation. Other related priorities include the conservation and sustainable use of forests and biodiversity for adaptation and mitigation of climate change; sustainable management of water resources for the achievement of social, economic and environmental objectives; increased use of technology in agriculture and family agriculture for food security with cultural relevance to Mayan, Xinka, and Garifuna peoples, and age and gender considerations; territorial planning for the sustainable use of natural resources, agricultural production and adaptation to climate change and mitigation; among others.

9. These priorities are also reflected in the National Action Plan on Climate Change (PANCC), which is the tool through which the Framework Legislation regulates vulnerability reduction, obligatory adaptation to the effects of Climate Change and the mitigation of greenhouse gases (LMCC)¹.
10. An element that served to develop the PANCC is the Nationally Determined Contributions (NDC), which have been classified as enabling conditions and adaptation measures. Enabling conditions that the GoG has prioritized include the creation or revision of public policies and/or legislation to incorporate flexibility mechanisms to adapt to changes in climate; incorporation of climate science, climate impacts, vulnerability, and climate risks in government, institutional, and territorial planning and management; and systems that communicate relevant information to increase resilience and address the impacts of climate change. Priority adaptation measures include: natural infrastructure based on the use of nature as barriers to either directly or indirectly reduce the adverse effects of climate change and to conserve ecosystem goods and services; and use of new or improved tools or technologies for communicating climate risks such as floods or forest fires (early warning systems).
11. Regarding public policies and/or legislation that allow the mainstreaming of flexibility mechanisms for climate change adaptation, the most conspicuous elements include those aimed at forest conservation and productive development.
12. For conservation, the main policy instrument is the Guatemalan System of Protected Areas (SIGAP). In terms of promoting sustainable forest management, available instruments include incentives provided through the new PROBOSQUE law (focused on commercial plantations, natural forests for production or protection, restoration and agroforestry systems) and the Forest Incentive Program for Small-Holders (PINPEP). There are two main differences between these mechanisms: i) PROBOSQUE has a finite duration of 30 years while PINPEP stems from a perpetual law, and ii) the minimum forest parcel size eligible for incentives under PROBOSQUES is 0.5 ha while under PINPEP it can be as small as 0.1 ha. Natural forest management is promoted through command-and-control mechanisms, for which the main instrument is forest licensing. Forest policy also comprises strategic planning tools, such as the INAB Institutional Strategy, the National Forestry Agenda and more than three recent policies on biodiversity conservation and climate change.
13. Forest policy is advancing in the promotion of plantations, increased investment and employment generation, but lags behind in the management of natural forests, conservation of biodiversity and strategic forest ecosystems, as well as in the promotion of agroforestry systems and the modernization of the forest industry. The low effectiveness of national forest policies in reversing deforestation rates may be due to different factors, such as inefficiency in the application of environmental legislation, deficiencies in the allocation of public budgets for environmental management, among others; these factors can be classified as implementation aspects.
14. Regarding institutional and policy frameworks for water, there are several government organizations with competencies in water use and management. Municipalities are mandated to provide drinking water to the population (Municipal Code 12-2002 and Congressional Reform 56-2002), while the Ministry of Public Health is in charge of drinking water quality, as well as the protection, conservation and rational use of drinking water sources

¹ More information on how the project supports the PANCC is presented in the section E.2.4. Contribution to regulatory framework and policies.

(Health Code, Congress Decree 90-97). The National Institute of Forests (INAB) must assure the provision of ecosystem services, by promoting forest cover in head river basins (Ley Congreso de la República 101-96). Other institutions involved are the Ministry of Environment and Natural Resources and the Ministry of Agriculture, Livestock and Food, both of which formulate policies and coordinate actions in their respective fields. However, Guatemala evidently lacks a single institution able to assure the sustainable use and management of water resources.

15. A national water law is currently being discussed in the Guatemalan Parliament (legislature 2017), and it is expected that this new law will provide a unified institutional and policy framework, as required. In addition to a National Water Policy, the proposed water Law contemplates the creation of a Water Institute (INAgua) as a dependency of the MARN, and establishes several instruments including a registry for water resource users. Indeed, the MARN has already begun to elaborate this register on a voluntary basis, in advance of the Law. Importantly, the draft Law has yet to undergo a full socialization process with key sectors.
16. For watershed management, a series of enabling conditions exist that facilitate public participation and localized forms of governance, with legal frameworks recognizing community-based structures as legitimate platforms for natural resource management. Community Development Councils (COCODEs) are a key figure created under the Law on Urban and Rural Development Councils, and play important roles in territorial management in Guatemala. Community-based Water Committees also exist across micro-watersheds as small and localized management groups of varying composition, usually conformed in areas where water sources or springs are found. Micro-watershed Councils² have also been conformed in several of the target micro-basins, with others still pending. When these Councils acquire legal personality, the most desirable figure is that of a second level COCODE (Article 15 of the Law); for this, however, Municipalities must first undertake the task of *sub-basin micro-regionalization*.
17. In Guatemala, the law establishes that municipalities with more than 20 communities must *micro-regionalize* their sub-basins, yet few have actually done so under a micro-watershed lens. In addition to establishing the right of the population to organize itself, the Municipal Code provides that "the Municipal Council may divide the municipality into distinct forms of internal territorial ordering". The micro-regionalization process is therefore an opportunity for Municipalities to recognize the micro-watershed as the most appropriate land management unit. It can serve to legitimize the role of Micro-watershed Councils and secure their recognition as second level development councils, constituting a valuable cornerstone for achieving water security. Moreover, once in the category of second level COCODE, Micro-watershed Councils can be represented in Municipal Development Councils (COMUDE) and thus have a say in the preparation and follow-up of Municipal development plans.
18. The Xayá-Pixcayá watersheds (the two most important for Guatemala City's water supply) constitute an important precedent in climate-resilient integrated water resource management. The case's success originates from a bottom-up participatory approach, from the availability of sufficient and appropriate technical information and from the convergence of multiple interests, resulting in the design of a compensation scheme for financing water management actions and in the presentation to Congress of a draft Law for the creation of a Watershed Management Authority for the two basins. The management plans for these basins are the only ones to give explicit consideration to climate change and the need to promote EbA amongst adaptation solutions.

C.2. Project / Programme Objective against Baseline

19. Regarding the long-term impacts of climate change in Guatemala, changes in temperature and in the hydrological cycle are expected to impact on ecosystems, causing them to shift from humid forests to dry and very dry forests. It is expected that by 2080, dry and very dry forest areas will increase from 35% of the national territory currently, to 65%. This means that there will be a reduction in humid areas, very humid and rainy forests (waning from 80% to 60% in 2050 to less than 35% in 2080). The most affected areas in the medium term (2050 and 2080) will be the Guatemalan Highlands (mainly the valleys of the Motagua-Cuilco and Selegua basins), the east-west zone in

² Depending on the characteristics of each micro-basin, these structures can comprise municipal representatives, producer groups, private enterprise, Municipal water companies, COCODE representatives, Water Committee representatives, nursery owners and other watershed stakeholders.

the center of Petén (Arco de la Libertad), the northern transverse fringe (*Franja transversal del norte*), as well as other mountain systems (IARNA 2011). This project will target the Guatemalan highlands, focusing on the Motagua-Cuilco and Selegua basins as its main areas of influence.

20. Due to climate change, modifications in the structure, composition and function of ecosystems are expected. This will affect ecosystems' ability to generate goods and services (productivity) and, equally important, their ability to buffer the impacts of climate change (resilience). In areas higher than 1,800 meters above sea level -which are the focus areas for this project- it is estimated that there will be drastic changes in water balances and increases in invasive species, mainly in mixed and coniferous forests, as well as higher frequencies of fires, pests and diseases. **Figure 1** shows expected changes in the Project area in terms of life zones (*sensu* Holdridge), whereby an increase of dry and very dry forest areas, and a reduction of humid forests, is projected.

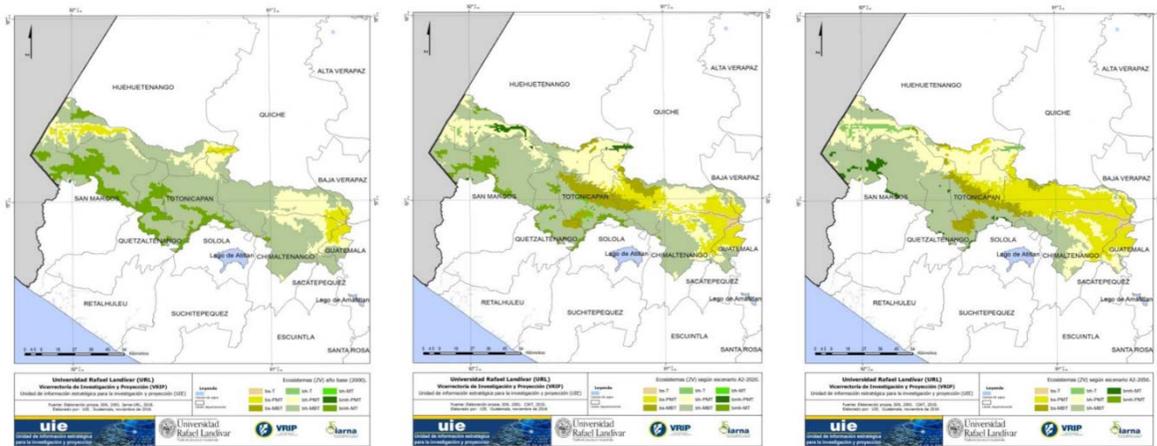


Figure 1: Climate change scenarios in Guatemalan Highlands by life zones (*sensu* Holdridge). Base = year 2000, projection to 2020 and 2050.

21. Changes in precipitation patterns will also affect water availability for social and economic sectors. Indeed, in the year 2000, Guatemala had a positive hydrological balance, i.e. water consumption was smaller than water supply, which was evident by the dominance of wet, very humid and rainy provinces. It is estimated, however, that Guatemala will be predominantly dry in 2080, because potential evapotranspiration will be greater than rainfall. In other words, Guatemala will become a country with a water deficit. The hydrological balance for the years 2015 (estimated base line) and 2050 is as follows:

Hydrological balance in prioritized sub watersheds (2015 and 2050) in million cubic meter/year					
2015					
Prioritized watershed	Precipitation	Evapotranspiration	Recharge	Sub superficial runoff	Superficial runoff
Chixoy	5,295.6	2,076.6	484.0	85.4	2,649.5
Motagua Alto	1,873.8	1,074.3	301.2	53.2	445.3
Pixcaya	879.6	481.2	123.8	21.8	252.9
Coyolate	6,089.6	2,608.7	1,440.5	254.2	1,786.2
Samala	2,751.6	1,268.7	538.1	95.0	850.0
Total	16,890.2	7,509.5	2,887.6	509.6	5,983.9

2050					
Prioritized watershed	Precipitation	Evapotranspiration	Recharge	Sub superficial runoff	Superficial runoff
Chixoy	5,082.6	2,199.9	448.9	79.2	2,354.6
Motagua Alto	1,888.9	1,222.0	281.2	49.6	336.2
Pixcayá	823.6	512.7	110.4	19.5	181.1
Coyolate	5,713.8	2,746.2	1,341.6	236.8	1,389.1
Samalá	2,581.6	1,328.1	495.7	87.5	670.5
Total	16,090.5	8,008.9	2,677.8	472.6	4,931.5

22. Given the country's geological, topographical and soil conditions in general, the vulnerability of its Highland communities depends on the state of its ecosystems. Deforestation and forest degradation create vulnerability by causing soil erosion, reduced infiltration (and greater runoff causing flood risk) and greater chances of landslides. Guatemala's rising deforestation, ecosystem degradation, and alarming soil and water loss and pollution have increased the country's systemic vulnerability, and augmented the risk of being harmed by natural hazards (URL-IARNA 2012).
23. Smallholder farmers who depend on agriculture for both food security and income generation often cultivate marginal lands (e.g., steep hillside slopes, poor soils or areas prone to flooding or water scarcity) and are facing changes in climatic conditions that are expected to lead to significant changes in water availability, increased pest and disease outbreaks, and reduced crop productivity of key smallholder crops, such as coffee, maize and beans (Harvey *et al*, 2017). Climate change projections, identify the entire Guatemalan Highlands as an area likely to suffer from greater water stress in the medium and long term. There is evidence that farmers are already sensing short-term climate variations. For example, peasants in the highlands indicate that their crops have been affected by off-season frost: "hailstones fall in the driest and hottest season, and they also freeze in the off-season" (TNC 2015: 26). Hailstones have been seen to destroy crops, not letting the corn ripen and, in the case of fruit trees, causing flower loss. In addition, highland producers indicate that there has been snowfall in the upper parts of Ixchiguán and the Cuchumatanes ranges, as well as seasons of heavy rains, which cause disease in crops, and changes in the dry season (decrease in precipitation in the months of July-August in addition to having more dry months).

Given these tendencies, there are three critical barriers that the project will address:

24. Even though there are various development initiatives in the Highlands tending to sustainable forest and agroforest management, these have **not addressed medium and long term climate impacts on the hydrological cycle** – a key service that supports local livelihoods in the region of intervention. Unsustainable land use practices remain, due to insufficient and incomplete agricultural and forestry advice from extension workers, municipalities, and community leaders, all providers of technical support to small land and forest owners in the Highlands. For the last 20 years, forest incentives have been channeled in the region with mixed or limited results, and with no measure of their relevance to resilience. **Climate change-related impacts have not been considered when assigning forest incentives**, lacking a strategic adaptation approach that considers priority ecosystem services, vulnerabilities and different land uses and their impact at the landscape level. In addition, there is limited information and technical assistance to the poorest farmers regarding the existence of and access to forest incentives. This is a missed opportunity to enhance the resilience both of ecosystems and communities through sustainable land use practices in light of climate change.
25. Guatemalan Highlands are characterized by a vibrant culture and a dynamic network of community-based organizations, which bring to life Mayan ancestral knowledge related to natural resources. Nevertheless, **grassroots organizations have limited access to financial and technical resources needed to improve their livelihoods in the face of climate change impacts**. Limited information and understanding regarding the

impact of climatic events on their crops, and the consequence of certain practices on soil and water resources result in uninformed decisions leading to inadequate practices which increase erosion, degrade land, and ultimately affecting the watershed hydrological cycle. This situation, which translates into a reduced capacity for adaptation, is only made worse by climate change itself.

26. **Climate change related information is still not well known and used by land use actors, which hinders their capacities to take informed decisions regarding agricultural processes in light of climatic variability.** Key information, including seedling and harvesting seasons, drought, frosts and humidity variations is not reaching the end users, namely the poorest farmers. Furthermore, climatological data is not collected and processed in a way that responds to strategic multi-stakeholder objectives, for instance, the implementation of early warning systems. A network of climatological stations is in place in the target watersheds, run by INSIVUMEH, as well as community-based stations that are owned by universities and other civil society organizations. Despite basic physical infrastructure already in place, there is a need to strengthen existing stations and establish new ones, as well as develop standards and protocols in data handling, so that data can then be fed back into the National Information System on Climate Change. There are also private sector actors (Universities, communities and companies) who own and operate hydro-meteorological stations that are not part of an integrated national network. Additionally, information often remains centralized at the level of the capital and if broadcast, it is done so in Spanish, or in technical language, which makes it inaccessible for the greater majority of local farmers in Guatemalan Highlands.
27. Among relevant projects implemented in the highlands addressing some of these challenges, are the Tacaná and Mi Cuenca Projects implemented by IUCN and partners that focus on investing in social capital at the grassroots level to develop bottom-up approaches to micro-watershed management. A USAID-funded project³ which ran from 2013 to 2017, also generated a successful pilot experience with Highland farmers for an early warning system based on mobile phone alerts, while other IKI- (the International Climate Initiative) and USAID-funded efforts have also sought to improve climate and EbA information availability and relevance for climate-resilient decision-making.
28. Regarding access to finance for local communities for natural resource sustainable management, the debt-for-nature swap initiative started awarding grants in 2006 in four main regions of Guatemala. This has allowed the disbursement of about US\$15 million in investments in community-led actions for the sustainable management of natural resources. This initiative has been accompanied by technical assistance to grassroots organizations on key issues such as communications and information dissemination at local levels, grant access mechanisms and requirements, training in developing project proposals, research and documentation gathering, among others.
29. Regarding climate information, Guatemala has made efforts at the regional (Central America) and national levels to generate and disseminate data for agriculture, food security, biodiversity, water, and energy sectors, among others. At the regional level, *Centro Clima*⁴ is a regional platform which contains unified climatic information as inputs for a better adaptation to climate change and to inform decision makers. At the national level, INSIVUMEH and MAGA have made important efforts in coordinating and complementing information through the development of the Monitoring Crops Roundtable, which gathers several government institutions and produces monthly bulletins to inform national stakeholders on crop prices and climatic information. At the local level, efforts have been made to engage with local community-based organizations (CBOs) through the signing of MoUs with INSIVUMEH for training on data analysis, interpretation and dissemination among local farmers.
30. The current project's overarching objective is to reduce the impacts of climate change on the hydrological cycle in target watersheds through improved land use practices. This will lead to improved water recharge and productivity and contribute to a direct impact on its population's resilience to climate change. The project will focus on scaling-

³ Project "Communities, Nature and Climate in Guatemala", lead by Rainforest Alliance with WWF, TNC, Universidad del Valle, Defensores and Agexport as project partners

⁴ <http://centroclima.org/>

up successful practices on community engagement in natural resources and watershed management to implement climate change adaptation in the Highlands. It will mainstream water security issues into forest funding mechanisms and policy/legal instruments for watershed management, and introduce pertinent capacities (physical and technical) to better equip for climate-smart decisions and restoration interventions at the landscape level. It will also build on existing local capacities and institutions, both at community and government levels, as well as on the country's priorities and commitments, multi-stakeholder platforms and initiatives, and studies developed recently on climate change impacts in agriculture and watershed hydrological balance.

The approach entails developing three strategic subcomponents:

31. The **first subcomponent will address the unsustainable land use practices** that currently prevail in prioritized watersheds. GCF resources will be used to restore key micro-watersheds, whose degradation in the context of climate change threatens the provision of key ecosystem services, mainly water, further impoverishing the livelihoods of present and future communities. Under this subcomponent, strengthening of local capacities at the government and community level will be undertaken, specifically among providers of technical extension services to local farmers, who are the key agents to be engaged for positive changes in land use practices to be achieved. The GoG has committed US\$5 million under the PROBOSQUE forest incentive program, to be combined with incentives under the PINPEP in order to develop sustainable management practices across 12,500 ha in the project's target area, as well as building capacity and monitoring of management plans developed with GCF resources.
32. The **second subcomponent aims to increase climate action locally** by taking advantage of the strong CBOs present in the area. For this purpose, a grant facility will be developed with GCF and KOICA resources to contribute to sustainable watershed management practices developed under the first subcomponent. The facility will operate both medium and small grants to implement EbA and other adaptation measures across 10,000 ha in prioritized micro-watersheds. Gender considerations will be mainstreamed in the selection criteria, with a capacity building program and a strong monitoring system installed so as to ensure that affirmative actions are taken in order to contribute to women's empowerment in the rural context.
33. Lastly, supporting the two previous subcomponents, a **third subcomponent will upscale regional and national efforts regarding the generation of climate information** to guide decision making regarding watershed management practices for agriculture, forestry and conservation purposes to target users. Culturally-adapted early warning systems will improve access to information which will have a direct impact on the adaptation capacities of local communities living in the target watersheds. Strengthening of existing meteorological stations will take place as well as continuing with the establishment of new hydrological and meteorological stations, and seeking mechanisms and agreements to integrate both public and non-public hydro-meteorological monitoring efforts. Important steps will be taken in developing early warning systems that effectively couple scientific climatic data and local cultural practices and knowledge. This will be achieved by promoting partnerships between CBOs and INSIVUMEH, and developing tailor-made products as part of the early warning system, with gender considerations targeting different intended audiences.
34. Assumptions for realizing the paradigm shift outlined in section H1.1 relate to the continuity of policy and economic conditions; and focus on mid- to long-term actions when facing extreme events and increased variability. As well as on ensuring buy-in for climate-smart approaches and promotion of best traditional practices. The potential for upscale and replication is elaborated further in section E.2, para.89. The Theory of Change supporting the Project can be seen in figure 2.

BUILDING LIVELIHOOD RESILIENCE TO CLIMATE CHANGE IN THE UPPER BASINS OF GUATEMALA'S HIGHLANDS

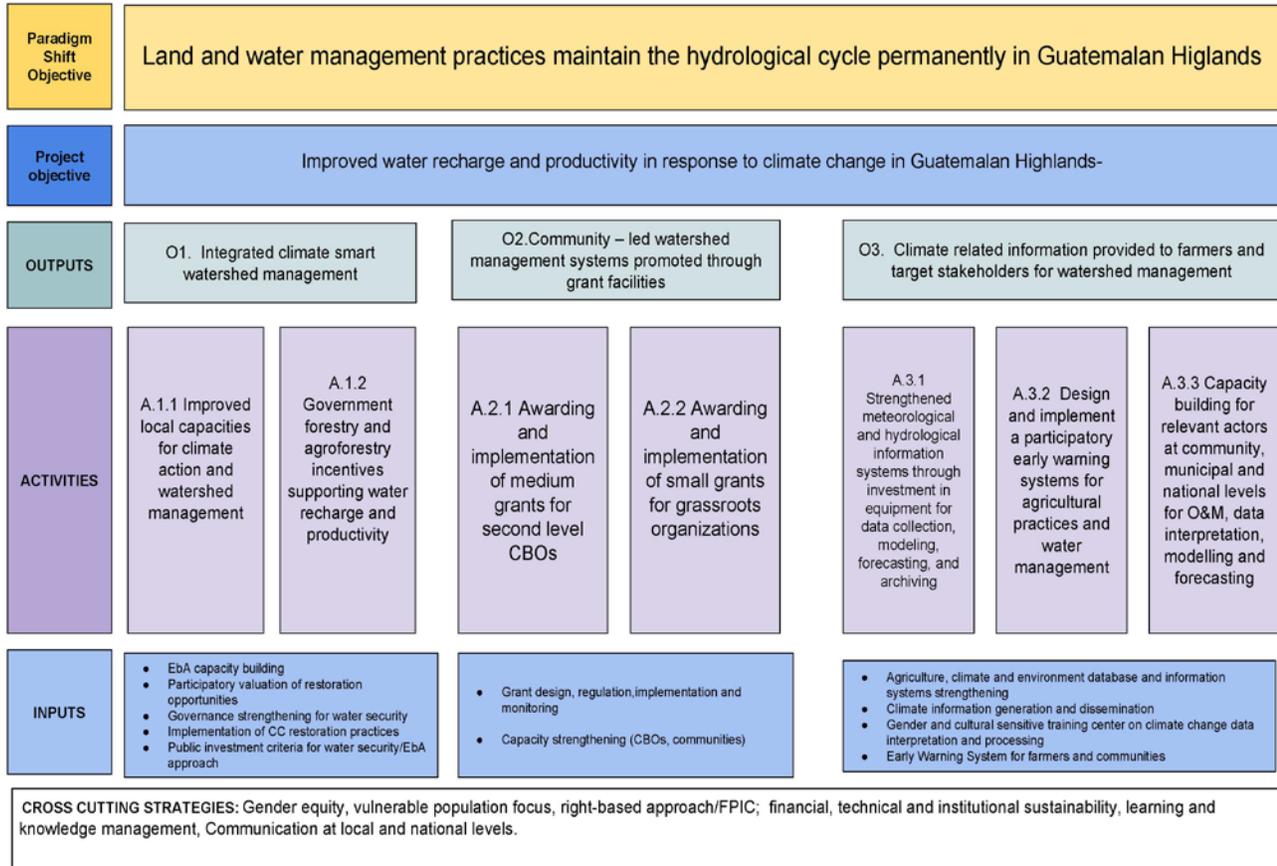


Figure 2. Theory of Change Supporting the Project

35. Outputs will be delivered by means of **Investment Packages** which will comprise investments in financial and technological assistance for climate action, and investments in social capital and the knowledge base for climate change adaptation and watershed management. Complementary to these core investments is the project’s targeted technical assistance, intended to maintain a focused and coherent technical approach and achieve the required level of up-scaling and policy uptake.

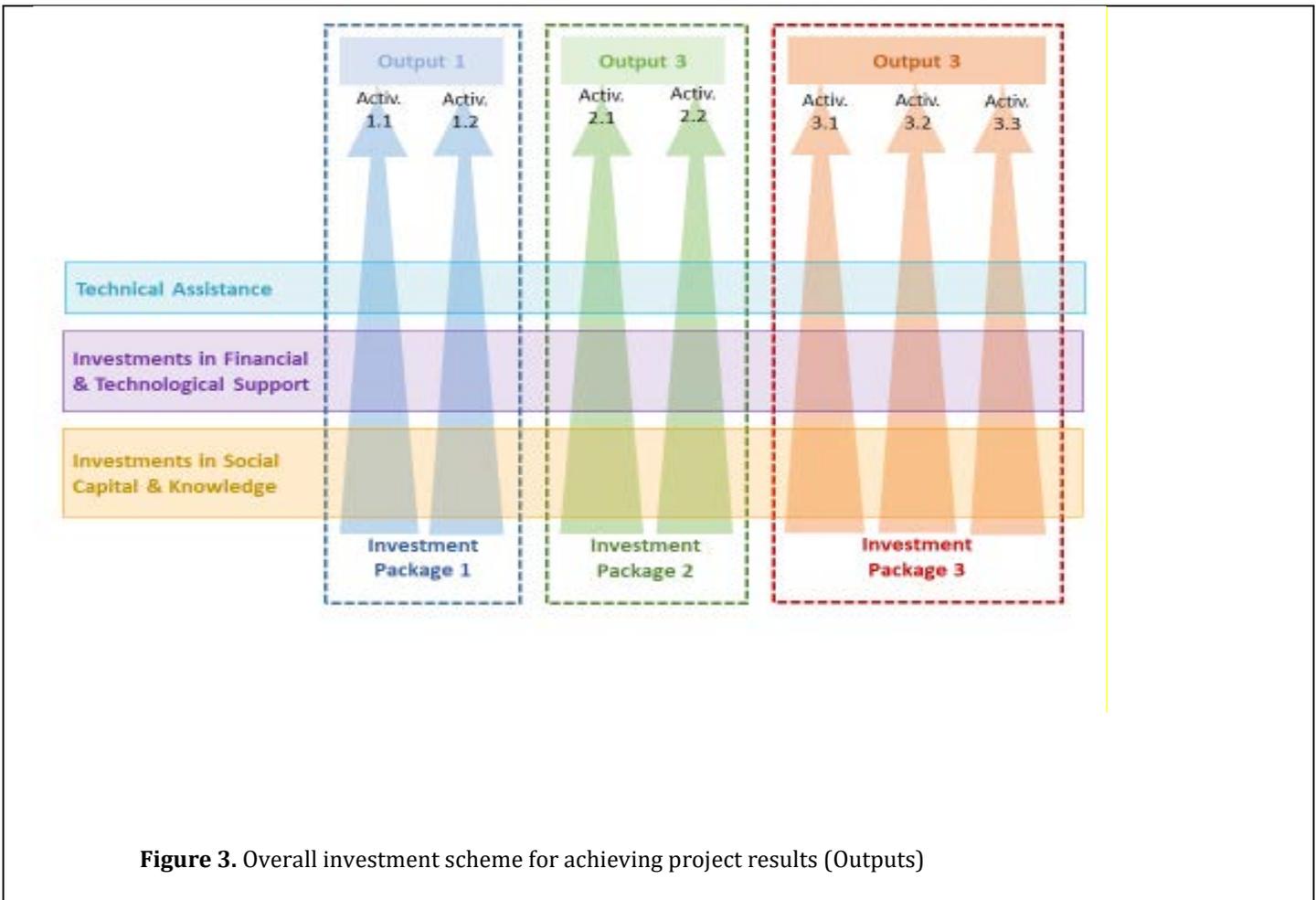


Figure 3. Overall investment scheme for achieving project results (Outputs)

C.3. Project / Programme Description

36. Climate impacts on the hydrological cycle in the Highlands of Guatemala, compounded by inappropriate land use, increasingly affect the landscape's infiltration capacity and water availability, erosion control, sediment retention and other water-basin related ecosystem services. Therefore, the project's overarching objective is to reduce the impacts of climate change on the hydrological cycle in target watersheds through improved land use practices. This will lead to improved water recharge and productivity and contribute to the population's and ecosystem's increased resilience to climate change. Project activities will be carried out in upper watersheds Samalá, Pucá Cacá, Motagua Alto, Xajá and Pixcayá. A map is provided in Annex 10.⁵

37. With a lifespan of seven years, project activities will be implemented in three phases under the following logic: year 1 will have a main focus on inception activities, including setting the project's baseline, and leveling the field in terms of startup capacities for the existing and proposed steering structures and stakeholders to guarantee full implementation potential. During year 2 through year 7, main implementation of field activities and continued capacity building will take place. From year 6, the exit strategy will be implemented together with MARN and members of the National and Local Steering Committees, to include the development of knowledge products and sustainability arrangements, operational and maintenance plans, and measurement of project impacts at the outcome level.

38. In terms of funding, GCF financial support is envisaged to achieve all outputs, with co-financing for this project provided by the Korean Cooperation Agency for Development (KOICA), and the Government of Guatemala (GoG)

⁵ A detailed description of the prioritization process is described in Chapter 7 of the Feasibility Study – Annex 2

through its Forest Incentives Program PROBOSQUE. Under each output a short description of proposed activities for achievement is provided. For clarity, in-cash contribution from each party under every activity is indicated in parenthesis.

39. The GoG has estimated its in-kind support to total US\$6 million and will be provided mostly in the form of personnel for institutional involvement and support to the project (both from central and departmental offices) and operational cost of field activities. This in-kind contribution is supported by letters from MARN, INAB, MAGA and INSIVUMEH. See Annex 4.
40. IUCN will use its accreditation level with the GCF to incorporate a grant-making mechanism for watershed resiliency projects as a means to provide community-based organizations with direct access to climate finance. The grant mechanism will integrate successful lessons from the national experience of the FCA debt-for-nature swap initiative⁶. It will also build on IUCN's successful global and regional experiences including the Mangroves for the Future Project and the Danida Research and Policy Influence Fund⁷. The FCG (the Guatemalan Foundation for Environment and Natural Resources Conservation) will also be a key executing partner based on its experience in the management of small grants. The grant mechanism will capitalize on the capacities of second level organizations with proven experience and local ownership in the project area.
41. The Project will achieve its objective addressing three result areas: 1) integrated climate-sensitive watershed management adapted to the local context of the Highlands, as a central element; 2) community-led implementation of climate actions in priority areas through funding from the grant mechanism; and 3) improved multi-level and multi-stakeholder access to climate information that enhances agricultural and water management practices and programs. All 3 result areas (Outputs) will be supported by a cross-cutting capacity building program that will deliver new knowledge and information to a suite of technical and non-technical beneficiaries, using means such as exchanges, workshops, "breathing lab" approach, short courses, field trips and training-of-trainers. The main characteristics of the capacity building program, which is part of investments in social capital and knowledge. are laid out in Annex 22.
42. The project will deliver adaptation benefits on several scales by combining EbA practices in plots, farms and forests with measures at the landscape and micro-watershed level. In summary, the mechanisms to implement and upscale EbA consist in: (i) mainstreaming EbA in the context of integrated water resource management, using micro-watershed governance structures and management instruments to provide a framework for guiding EbA funding decisions regarding watershed services; (ii) small- and medium-sized grants for applying EbA directly in smallholder farming, agroforestry and forest systems, to be awarded to grass-roots producer organizations and CBOs, respectively, in accordance with sub-basin priorities; and (iii) forestry incentives to be awarded to local communities and smallholders who manage, restore or maintain forests in key water catchment areas, also in accordance with sub-basin priorities.
43. These three main avenues for delivering EbA will be underscored by two crucial support mechanisms: (a) support to and training of municipal staff, agricultural and forest extension workers, CADERS and forest regents in order to strengthen their capacities to provide technical assistance to local producers and forest managers; and (b) dissemination and use of hydro-meteorological ("climate") information and deployment of an early warning system to facilitate timely decisions by agricultural and forestry producers aimed at safeguarding livelihoods, maximizing yields and reducing exposure to extreme events. An additional "grey" adaptation measure to complement EbA efforts in productive landscapes will take the form of technical assistance and technological packages for increased water use efficiency. This overall scheme is shown in **Figure 4** in section E.2 and further described in Annex 21.

OUTPUT 1. Integrated climate smart watershed management (GCF, GoG)

44. Under this output, a total of 50,000 people will be directly benefited by improved land use practices. A total of

⁶ Fund for the Conservation of Tropical Forests of Guatemala (FCA):

<http://www.fondofcaguatemala.org/documentos/ElementosTecnicoConceptualesParaOrientarInversionesFCA.pdf>

⁷ <https://www.mangrovesforthefuture.org/grants>;

https://www.iucn.org/sites/dev/files/import/downloads/reglamento_oficial_del_fondo.pdf

12,500 hectares will be rehabilitated through EbA approaches and natural infrastructure interventions such as riparian forest restoration and conservation/rehabilitation of recharge areas; as well as soil conservation practices, terracing, erosion control and hybrid engineering.

45. The GoG through the National Institute of Forests (INAB) has two forest incentive programs in place called PROBOSQUE⁸ and PINPEP⁹ to promote forestry and agroforestry systems. In the past 6 years, INAB has invested over US\$20 million in the area of influence of this project and has currently formally committed at least US\$5 million to be invested in the project area during the life of the project. The project will scale up PROBOSQUE's innovative approach which considers the contribution of forests to water-related ecosystem services. Through the incorporation of EbA criteria into both the PROBOSQUE and PINPEP incentive mechanisms, climate impacts on forests and agroforestry systems will be reduced, water provisioning services will be assured and improved, and the resiliency of livelihoods in targeted watersheds increased.
46. While the GoG has carried out significant efforts in restoring landscape functionality through its forest incentives programs, there is still a need for increased capacities and investments to meet a growing demand for restoration activities in light of increasing water scarcity scenarios¹⁰. Building on local and institutional experiences¹¹, GCF resources will be used to upscale institutional and local capacities that support the implementation of best land use practices in agricultural systems and water recharge areas across the project's intervention landscapes. Both the strengthened GoG incentives programs and the field actions to be developed under the Grant Facility in Output 2 will work in unison to contribute to the overall goal of integrated climate-smart watershed management of the Highlands.

Activity 1.1. Improved local capacities for climate action and watershed management (GCF)

47. A key activity underpinning the paradigm shift of mainstreaming EbA into land management in order to maintain the hydrological cycle permanently in Guatemalan Highlands, is the development of the necessary practical capacities for climate-smart action, at local and national levels as well as within the relevant institutions, support organizations and communities in the prioritized areas. Important inputs that will guide the selection of EbA/restoration measures and investments include Restoration Opportunities Assessments that will prioritize upland and riparian forests in important water catchment areas, and IUCN's database of restoration species¹² that contains a comprehensive list, and their characteristics and needs, of trees and shrubs that can be used to enhance soil conditions, water capture, productivity, and/or biodiversity. In terms of physical capacities, diversified forestry nurseries will be established at municipal level to ensure adequate inputs for restoration actions in watersheds and agroforestry activities. In order to address the availability for producers of seeds that can adapt to the changing climate, a seed bank will be installed, and be supplied with local genetic materials informed by traditional knowledge, gender-specific priorities and needs, and local adaptation practices.
48. Sustainability will be ensured by building on existing institutional structures that include Ministry of Agriculture (MAGA) Rural Development Learning Centers (CADERs) and agricultural extension workers, municipal forestry offices /environment units, MARN's environmental education decentralized services, and INAB's local forestry extension support. The project will engage institutional gender focal points and municipal gender offices to support empowerment of women producers, leading to increased participation in productive projects. The strengthening of CADERs through the National System of Rural Extension (SNER) will be central to the uptake of EbA practices. CADERs aim to increase the productivity of rural families and are based on a methodology of "learning by doing", using farmer-to-farmer exchanges together with demonstration plots to promote the adoption of new practices and technologies (further information in Annex 22).

⁸ PROBOSQUE: Promotion for the establishment, recuperation, restoration, management, production and protection of forests in Guatemala.

<http://ww2.oj.gob.gt/es/QueEsOJ/EstructuraOJ/UnidadesAdministrativas/CentroAnalisisDocumentacionJudicial/cds/CDs%20leyes/2015/pdfs/decretos/D02-2015.pdf>

⁹ PINPEP stands for Incentive Program for Small-scale forest and agroforest tenants

¹⁰ V State of the Region Report, p.208, 235. <http://www.estadonacion.or.cr/erca2016/assets/cap-5-erca-2016-ambiental.pdf>

¹¹ Local CBO with experience and legitimacy in the Highlands have been identified, mainly: Uzt'che, CDRO, Sotz'il and Calmecac

¹² www.especiesrestauracion-uicn.org

49. Successful lessons from IUCN's WANI-Tacaná and Mi Cuenca Projects¹³ which build on local community capital will feed a bottom-up integrated water resource management model that aims to increase riparian forest cover and restoration of water recharge areas. Micro-basin committees will be created and/or strengthened in accordance with the existing legal framework for public participation (which includes the Law on Urban and Rural Development Councils, and Municipal codes and ordinances) and with a view to incorporating climate change adaptation variables and updated climate/water information into their planning, operations and strategic decision making. Additionally, management capacities of municipal water offices and local development committees (COCODEs) that administer water supply systems will be strengthened in coordination with the above micro-basin structures, leading to more efficient water use that connects the local level to the broader landscape.

Table 1. Agricultural practices that promote ecosystem-based adaptation, listing relevant species

Practice type	Description
Agroforestry systems	<p>What is proposed in this practice is to improve existing production systems that already include shrubs in agricultural parcels. These improvements are aimed at improving the soil conservation structures, incorporating trees in the borders of the plots, both timber and fruit trees, that allow to improving productivity and reducing the negative impacts of agricultural production on non-suitable agricultural lands.</p> <p>For the proper management of agroforestry systems, priority will be given to the water recharge areas, followed by areas with greater connectivity and also, in other agricultural areas, to improve production systems. The practices will consider traditional knowledge as well as prioritizing the use and rescue of native species.</p>
<p><i>Main tree species: Pinus sp, Alder (Alnus accuminanta), "palo de pyto" (Erytrina nerteoana), elder (Sabuscus nigra) associated with Maize, beans, vegetables.</i></p>	
Silvopastoral Systems	<p>According to the soil use capacity, silvopastoral systems will be promoted in those areas with slope, rocky and/or with internal drainage limitations; including trees in pastures, and fodder banks for cattle and small ruminants in particular for the dry season. Agro-silvopastoral practices will generate direct benefits from cattle production, providing at the same time organic compost for soil fertilization; thereby avoiding the use of agrochemicals.</p>
<p><i>Main tree species: "Palo de Pyto" (Erytrina berteroa), oak (Quercus sp), Alder, (Alnus acuminata), Pine (Pinus sp), associated with fodder species. The livestock program of ICTA, based in the Western Highlands (Quetzaltenango, San Marcos and Huehuetenango), identified 95 plants with forage potential, most of them woody. The research reports that the most common form of use is through cutting and hauling, and that trees are distributed mainly in understory areas or planted as live fences. Among the species that stood out for their content of crude protein and in vitro digestibility of dry matter are the yellow elder (Sambucus canadensis), Chilca (Bacharis salicifolia), black elder (Sambucus mexicana), and "engorda ganado" (Bohemeria sp.)¹⁴</i></p>	
Forest conservation actions	<p>The management of landscape forest for its restoration will include natural regeneration, and protection and conservation of those existing natural forests (including indigenous communal forests) for water regulation. More attention will be paid to those that are located in the high water recharge areas.</p>
<p><i>Main tree species: A great diversity of conifers can be found in the Highlands, 19 species in total (families: Pinaceae, Cupressaceae and Taxodiaceae), oak (Quercus sp), birches and poplars (family Betulaceae, gene: Ostrya and Carpinus) and the endemic species of trees such as the pinabete (Abies guatemalensis) and Huito (Juniperus standleyi).</i></p>	

¹³ https://cmsdata.iucn.org/downloads/estudio_caso_tacana.pdf

¹⁴ <http://www.funsepa.net/quetzal/doc/alimentacionOvina.pdf> Pag 23

Restoration and conservation of water recharge areas and riparian forests	<p>In areas adjacent to natural forests and rivers water recharge zones will be prioritized so as to also improving connectivity.</p> <p>The processes of restoration of forest cover will be carried out by means of reforestation processes, including small forest plantations and management of natural regeneration, including traditional practices.</p>
<i>Main tree species: Sauco or elder (Sabuscus nigra), Alder (Alnus Acuminata)</i>	
Practices aimed at harvesting rainwater in areas of severe water shortages	<p>The main agronomic practices aimed at improving the infiltration and retention of rainwater in the cultivation areas will be identified in a participatory manner in the cultivation areas and the storage of rainwater will be promoted to reinforce the production of food and seasonal crops, by means of small community reservoirs.</p>
Soil conservation, best practices of land use	<p>With these practices, which can incorporate local knowledge, in addition to avoiding soil erosion the indigenous and farmer families of Guatemala's highlands will improve the productivity and thereby better benefit from nutrients and water.</p> <p>In addition, these practices will prevent landslides when heavy rains occur, including of contour lines, terraces and establishment of live barriers.</p>
Restoration of degraded lands through natural regeneration	<p>Through the management of natural processes in disturbed sites, a set of silvicultural practices will contribute to the restoration of services provided by the forest cover</p>
<i>Main tree species: Pinabete (Abies guatemalensis), Alder (Alnus Acuminata), Oak (Quercus sp),</i>	

50. To support this Activity, specific trainings will be provided on topics such as EbA, vulnerability assessments, gender and water resource management to both central and local level institutions. The initial outline for a capacity building program is provided in Annex 22, with specifications on the main characteristics, target groups and topics for capacity building efforts.

Activity 1.2. Government forestry and agroforestry incentives supporting water recharge and productivity (GoG)

51. This activity will channel the US\$5 million in forest incentives that have been earmarked by INAB for the Highlands. The activity will ensure the promotion, under PROBOSQUE, of modalities for climate change adaptation in the context of agroforestry systems in agricultural lands and livestock areas, and forest restoration activities in watersheds, riparian forests and recharge areas. These modalities will contribute to reducing vulnerabilities related to increased erosion and sediment export, as well as reduced infiltration and water recharge rates. However, \$5 million is a conservative amount considering the historic allocation of funds in the area, since Probosque runs on an on-demand fashion, the project will create the enabling conditions to disseminate information about probosque, hence a 2 fold amount will be potentially leveraged. This leverage will be properly documented.

52. As part of PROBOSQUE and PINPEP implementation, INAB and municipal forestry office /environmental unit personnel with increased knowledge and infrastructure provided under Activity 1.1, will support sustainable land use practices through its extension network to beneficiaries, as an additional in-kind contribution. The enhancement of existing extension support to be provided under the project, including the role of forest regents, will improve the efficiency, effectiveness and equity of incentive mechanisms. It will include institutional capacity building and incentive program dissemination to provide increased coverage of beneficiaries; strengthening of community structures in the preparation for access; development of technical and social instrumentation tailored to the priority areas; and increased coordination and alignment of incentives program priorities with microbasin management plan processes.

53. The interventions in the territory will include environmental and economic EbA practices that will allow improving livelihoods according to their social and cultural values. In the table below are the type of productive and conservation systems that will be promoted through local technical assistance and through the preparation and approval of Forest Management Plans to access PROBOSQUE /PINPEP funding; the links between these practices and EbA are further described in Annex 21. Management plans will be designed in a participatory way

and submitted to the PROBOSQUE and/or PINPEP financial mechanisms, for smallholders to benefit from the payment of forest incentives in which criteria of climate smart agroforestry and natural forest management will be included. Some of the practices that will be promoted include: trees in association with annual crops; trees in association with perennial crops; and lined up trees in the form of living fences, windbreaker barriers, or planted trees in the boundaries of the plots.

54. Specific actions will help maximize human, technical, economic and natural resource potential. Institutionally, these are aimed at improving capacities for follow-up on the development, processing and approval of incentives, as well as strengthening of the processes for certification and monitoring of beneficiary management plans. A communication strategy for promotion and socialization of the incentives program will raise awareness amongst local stakeholders, thus enabling improved access to the program. The links between the incentives programs and EbA will also be reinforced through the capacity building program (outlined in Annex 22), with extension workers, CADERs, forest regents and municipal staff trained in the promotion of adaptation practices in productive landscapes.

OUTPUT 2. Community – led watershed management systems promoted through grant facilities. (GCF, KOICA)

55. Output 2 will provide community based organizations (CBOs) with direct access to funding for sustainable land use practices that reduce climate impacts on the hydrological cycle in target watersheds. Field actions financed with both GCF and KOICA funds will take into account cultural, economic and institutional aspects particular to the Guatemalan Highlands in their design and implementation. Affirmative gender actions will be incorporated within the grant facility by identifying female headed households and women’s local organizations to be targeted as beneficiaries. The grant mechanism will be aligned with GCF investment criteria while addressing national and local priorities. At least an additional 10,000 hectares will be restored under this output.

56. GCF resources will deliver a minimum of 17 grants supporting climate change adaptation actions with a maximum of US\$400,000 per grant, under a medium-size grant window. This scheme will foster efficiency and scale by working with second level CBOs with proven local capacities, and the ability to gather multiple producer associations. A second scheme financed with KOICA resources will deliver a minimum of 52 grants with a maximum of US\$45,000 per grant, under a small-size grant window, tackling inequity by reaching small-scale producer associations with more limited access to funding. The medium- and small-size grants are complimentary as they can both be applied across the different target areas of the project and promote the same type of sustainable land use practices. Specific regulations for the Grant Facility will be developed based on IUCN’s Policy for Grant Making under the GCF accreditation level (attached as Annex), and building on successful lessons from the FCA debt-for-nature swap initiative in place since 2006. The Grant Facility will incorporate a strong technical support component as well as a robust monitoring and evaluation system to ensure both sustainability and efficient accounting of results. This grant mechanism is expected to strengthen investments in favor of the communities and farmers involved in Output 1 and also to benefit other farmers and communities involved in the early warning system (Output 3). The governance structure of the grant mechanism is provided in Annex 14.

Table 2: Criteria for Grant facility for Community-led climate action in Guatemalan Highlands

- **Purpose of grant mechanism:** To address impacts of climate change of the hydrological cycle through channeling of finance for implementation of community-led sustainable land use practices
- **Geographic coverage:** prioritized microbasins and recharge areas of the Guatemalan Highlands
- **Finance windows available under grant mechanism:** Medium- and small size grants

Technical approach - modalities for climate change action:

- Protection of natural forests for provision of water-related ecosystem services
- Forest restoration of watersheds and riparian forests
- Agroforestry systems in agricultural lands
- Restoration of degraded lands through natural regeneration

Grant sizes:

Medium-size grants: US\$100,000-US\$400,000;

Small-size grants: US\$10,000-US\$45,000

Duration of grants: Up to 2 years

Mode of implantation for finance windows:

- Medium-size grants will be implemented by second-level community based organizations which will provide technical support and channel finance to their associated producer associations
- Small-size grants will target small producer associations that have more limited access to finance

Eligibility criteria:

- Interventions must be aligned with local planning instruments (water, land use, development)
- Projects must demonstrate replicability potential and incorporate provisions to guarantee sustainability beyond their implementation timeframe
- Grants should take gender considerations within their design and follow any other specific guidelines on women's participation in order to promote equitable participation and benefit sharing
- Medium-size grants
 - Second-level community based organizations that:
 - Gather local associations of producers (any size)
 - Possess experience in management of grants, project funding and microcredits in the project area and the corresponding administrative capacity
 - Can provide annual financial statements of the previous 3 years
- Small-size grants
 - Local producer associations of any size that:
 - Possess legal status

Activity 2.1. Awarding and implementation of medium grants for second level CBOs (GCF)

57. Under this activity, there will be information sharing meetings about the Grant Facility mechanism, to be held in the prioritized watersheds with identified CBOs. A diagnostic phase will be carried out to identify specific needs and lay out priorities for the requirements and impacts envisaged in the grant facility, so that terms for the call-for-proposals will take into account vulnerability assessments carried out in each micro-watershed using CRiSTAL, areas identified as having the highest hydrological restoration potential, and priorities contained in each micro-basin's Integrated Management Plan. Capacity building with the potential grantees will include a series of workshops focused on the development of eligible projects to be carried out with CBOs. A total of three call-for-proposals will be announced during the lifespan of the project.

Activity 2.2 Awarding and implementation of small grants for grassroots organizations (KOICA)

58. Under this activity, KOICA funds will be channeled through three call-for-proposals during the duration of the project to provide climate finance to grassroots organizations under a guided, informed and trained process. With the technical and operational support from second level CBOs, information sharing meetings on the grant facility for small-size grants will be carried out with sufficient time prior to the call, in the main population centers of the Highlands. Likewise, workshops in all 5 main administrative regions will be carried out with differentiated tailor-made methodologies adjusted to support the local needs of potential grantees, to assist in grant formulation. As with Activity 2.1, grant requirements will be shaped by priorities defined in Integrated Micro-watershed Management Plans, vulnerabilities assessed using CRiSTAL and areas prioritized for restoration based on hydrological potential.

OUTPUT 3. Climate related information provided to farmers and other target stakeholders for watershed management (GCF)

59. This output focuses on improving collection, interpretation and dissemination of reliable climate information for application to adapted agricultural, agroforestry and forestry practices by local producers as well as water resource management and restoration at landscape level. Under this activity additional 50,000 people will directly benefit from improved access to such information.

60. The project builds on capacities, tools and investments made under the Regional Climate Change Program (RCCP) to develop Centro Clima¹⁵, an online regional platform gathering climate information from National Meteorological Institutes of Central America and well as other innovative decision making tools for farmers. During the first phase of the project, resources will support the rehabilitation of the existing hydro-meteorological network in the project area under the coordination of the National Institute on Seismology, Volcanology, Meteorology and Hydrology (INSIVUMEH). While INSIVUMEH provides the institutional coordination, linkage to ongoing climate information initiatives and systems, and development of standards, the participation of the local organizations helps to ensure that climate-relevant information reaches local farmers and feeds back information so that policies are responsive to actual climate change and climate variability impacts.
61. A participatory early warning system will be developed for the Highlands, building on national early warning platforms on agriculture and food security¹⁶ in the prioritized territories, and other experiences using early warning systems in an agricultural context, to inform local producers and watershed management structures regarding extreme hydro-meteorological events. Customized ICT mechanisms and mobile platforms will also be developed to support extension workers, municipal staff and community leaders to provide climate related information to the final user in a timely manner. Capacity building of relevant technical staff belonging to local NGOs and local government institutions with a role in hydro-meteorological monitoring will be key to ensure that operation and maintenance (O&M), data collection, interpretation, projections and forecasting activities continue during and after the lifespan of the project.

Activity 3.1 Strengthened meteorological and hydrological information systems through investment in equipment for data collection, modeling, forecasting, and archiving (GCF)

62. Under this activity, the INSIVUMEH¹⁷ database and information system will be strengthened and linked to agricultural, irrigation and environmental information systems through signing of cooperation agreements for the development of joint protocols for data collection, exchange, processing, analysis and risk assessment. On the basis of the protocols, institutions owning meteorological stations (in addition to INSIVUMEH, this includes Universities, Municipalities, communities and private companies) will be endowed with the right equipment for data gathering, processing and archiving. At the local level, existing community-based hydro-meteorological stations will be assessed and complemented with the right equipment and linked to the INSIVUMEH network to ensure that precise climate related information at the farm level is able to feed into national systems. An O&M plan for the acquired equipment for the lifespan of the project and beyond will be designed and implemented, envisaging the conformation of local multi stakeholder oversight committees. Resources will be used to rehabilitate and equip INSIVUMEH meteorological networks and to strengthen local non-government hydro-meteorological networks. Efforts will also be made to approach private companies that own and operate hydro-meteorological stations with a view to increasing network coverage by integrating public and non-public monitoring systems.

Activity 3.2 Design and implement a participatory early warning system for agricultural practices and water management. (GCF)

63. The need to increase accessibility and impact of official climate information has been identified by the Regional Climate Forum as a critical aspect to improve adaptation decision making at the local level. The implementation of the participatory early warning system will allow for producers to make informed sowing and harvesting decisions and water managers to improve planning. This activity will rely heavily on participatory methods that take into account indigenous, gender considerations and local knowledge and harmonize it with science-centered approaches to early warning systems. Under the execution of URL-IARNA, characterization of current productive systems used by women and men and climate-related threats will be undertaken, taking into account production calendars, seeds and sowing, productive cycles and existing technologies and practices. Additionally, seasonal

¹⁵ <http://centroclima.org/>

¹⁶ Famine early warning system network <http://www.fews.net/es/central-america-and-caribbean/guatemala>; MAGA crop and harvest forecasting: <http://web.maga.gob.gt/diplan/download/smc/2011/06.%20Boletin%20SMC%20-%20Noviembre%20-%202011.pdf>; SESAN food and nutritional security Centinel Sites: <http://www.siisan.gob.gt/SitioCentinela>

¹⁷ <http://www.insivumeh.gob.gt/>

forecasting related to water availability will be made available to basin-management bodies as well as local water supply administrating entities. An Agro-climatic Observatory will be established in the project area within installed capacities of the University Rafael Landivar (URL), of which IARNA is a part, in close coordination with INSIVUMEH Climate Forums in the prioritized watersheds will be organized to bring regional forecasting undertaken by the Regional Climate Forum to the local level, in order to inform about relevant phenomena such as drought season or El Niño, in close coordination with the relevant institutions at national and local levels.

Activity 3.3 Capacity building for relevant actors at community, municipal and national levels for operation and maintenance, data interpretation, modelling and forecasting. (GCF)

64. Under this activity, capacity building will take place to ensure that protocols on O&M are followed by communities in charge of hydro-meteorological stations as well as technicians from municipalities and central offices with a relevant role in equipment maintenance. Data interpretation, modelling and forecasting capacity building will be tailored to different stakeholders: leaders and farmers at community level as final data users as well as providers of updated information; GoG technicians in charge of modelling, forecasting and archiving climate data, particularly within INSIVUMEH; and extension staff who provide technical support to farmers, to strengthen institutional capacity and existing information systems.

65. Municipal water companies will be introduced to the Seasonal Water Yield Model developed by InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs), which allows seasonal water yields to be estimated under different land use change scenarios. This model will offer Municipalities a means to track seasonal water yields during the life of the project and project future scenarios based on the conservation and restoration efforts taking place across each micro-watershed (positive land use change). It is assumed that within a 10 year timeline, the project's impact over 22,500 ha will translate into improved seasonal water yields which Municipal water companies should be able to observe, thus allowing corroboration of the project's theory of change.

66. The information generated under this output will allow for delivery of recommendations and good practices related to watershed management through tailored training toolkits for different audiences. Information generated under this activity will feed into the National Climate Change Information System, under MARN's Unit of Environmental Information.

67. The project will capitalize on existing government-led initiatives, mainly the Crops Monitoring Roundtable which informs on a monthly basis relevant stakeholders at the national level on climatic and market factors affecting key crops, mainly beans and maize, through its crops monitoring bulletin. Under this activity, bulletins will be adapted to local cultural and linguistic contexts in the prioritized watersheds, and will inform on relevant crops and climatic phenomena. Existing community-based efforts will be strengthened and developed, for dissemination of climate information having an impact on agroforestry systems.¹⁸ The development and implementation of customized products for different users such as monthly bulletins, daily radio and weekly press releases in local indigenous languages will provide precise information tailored to crop characteristics (cycle length, resistance to drought, and the timing of harvesting, etc.) and focusing on prevention actions.

C.4. Background Information on Project / Programme Sponsor (Executing Entity)

68. The project executing entity is the Ministry of Environmental and Natural Resources (MARN), through its Viceministry on Climate Change, particularly its Climate Change Department. Whereas decision making and strategic guidance is guaranteed to be under MARNs, at the request of the GoG, and in accordance with clause 10.01 of the Accreditation Master Agreement (AMA), operative issues of project execution will be carried out by IUCN's Guatemala Office, according to IUCN standards and regulations. This modality will facilitate project management, communication and coordination with multiple stakeholders.

69. MARN was created in the year 2000, under the decree 90-2000 and its mission is to be the state agency that coordinates, fulfills and reinforces compliance in the country with the legal and policy frameworks related to

¹⁸ CDRO organization has developed experience in community-based and culturally appropriate early warning systems and has been identified as a potential subcontractor.

contamination prevention, as well as conservation, protection and improvement of the environment to ensure a rational, efficient and sustainable use of natural resources. In relation to climate change, MARN defined its priority for 2017 as decreasing environmental vulnerability to hydro-meteorological events¹⁹. MARN is the focal point for GEF and GCF multilateral mechanisms, and is in charge of delivering the national communications under the UNFCCC, including the INDCs.

70. Following its legal mandate, MARN's role in field projects is to ensure compliance with national priorities, policies and laws, and to manage and disseminate relevant environmental and climate change information. MARN's lead role as executing agency is reflected in its chairing position within the Steering Committee of the project where strategic monitoring, evaluation, and recommendations will take place. GoG will as well have a guiding role in the Grant Facility Mechanism as chair of its governing body, as described in Annex 14.

Background information of the three implementing entities:

71. **IUCN Guatemala Office**, IUCN has worked in Guatemala for more than 20 years under an International Mission status, executing field projects in close partnership with Government institutions in the areas of forest management, biodiversity conservation, water governance, climate change adaptation, among others. IUCN has fulfilled a convening role and technical expertise provider in Guatemala and has served as a neutral platform for multi stakeholder dialogue and consensus building around topics such as: Forest Incentives Program Law, REDD+ National Strategy, gender considerations in the REDD+ National Strategy, and the FLR National Strategy.
72. IUCN Guatemala Office is led by a country coordinator and includes a team with expertise in financial, administrative, and operative areas that has ensured efficient project execution for over two decades. Guatemala-based technical staff has expertise in areas including climate change adaptation, water and forest governance, restoration, gender, and agribusiness. IUCN has successfully implemented a micro-watershed basin governance approach in the Highlands of Guatemala, and an EbA bottom-up strategy to support sustainable use of natural resources to address local and national challenges related to climate change. Guatemala based staff is supported by a qualified team of technical experts from the IUCN Regional Office for Mexico, Central America and the Caribbean, based in San José, Costa Rica. The project will capitalize on the experience and expertise of regional projects mainly in the area of EbA including restoration and watershed governance. Additionally, the IUCN Guatemala Office will have the technical support of the IUCN's Global Programs on Forest and Land Use, Water, and Gender.
73. **FCG (Fundación para la Conservación de Guatemala)**. FCG was created on March 27th, 2000, as a financial mechanism for sustainable development and the environment, conservation of biodiversity, and climate change adaptation and mitigation actions. Since 2008, FCG has administrated funds totaling over US\$19 million through medium and small grants mechanisms, providing technical expertise, monitoring and oversight services. Transparency of its operations is supported by annual external audits and its capacities, in nine institutional dimensions, were certified in 2014 and 2016 by the SGS Certificate of Good Practices.
74. **IARNA (Instituto de Agricultura, Recursos Naturales y Ambiente)**. IARNA is part of the prestigious University Rafael Landívar, and is a leading think tank on climate change issues. It carries out strong policy advocacy and research related to the subject, including, in 2015, the "National Hydrological and Water Balance", which served as the basis for the "Analysis and Proposal of Strategic Environmental Reserves in the framework of the National Plan of Territorial Ordering" implemented in the context of the National Development Plan K'atun 2032 of the Secretariat of Planning and Programming of the Presidency of the Republic (SEGEPLAN). IARNA has installed physical and technical capacities in the project zone and proven coordination with government and civil society organizations, including INSIVUMEH.

C.5. Market Overview (if applicable)

¹⁹ https://issuu.com/libkarush/docs/memoria_de_labores2015

75. N/A, since activities are planned to be carried out with a focus on improving hydrological cycle of watersheds, engaging with local communities in their farming system.

C.6. Regulation, Taxation and Insurance (if applicable)

76. With respect to taxation of the requested project Grant, IUCN holds an International Mission status and therefore is exempt from all direct taxes in Guatemala according to the National Fiscal Authority (IVA, ISR, TIMBRES). Therefore the project will have full tax exemption on all goods and services, except for the salaries of the project implementation staff and 10% of INGUAT Tax. PMU employees are entitled to life and medical insurance that will be contracted through a private company of recognized reputation within the country. Information about the coverage and conditions of use for the holder will be clearly specified in the content of the policies negotiated and contracted by IUCN. The Regional Coordinator of the Human Resources Unit will annually conduct a market study in which the benefits and costs of insurance companies will be compared and, in consultation with the Regional Office, will select the most suitable alternative for staff. Travel insurance is provided by IUCN for members of staff required to undertake work-related travel, covering medical assistance, evacuation and repatriation. Travelers are also required to be familiar with the IUCN security policy. It should be noted that these benefits do not apply to temporary work contracts (such as consultants). Besides life and medical insurance, IUCN has policies on: third-party liability and vehicle insurance. Regarding permits from the GoG needed for project execution, the only permit that needs to be obtained is the management plan licenses for Probosque access. To comply with this requirement, the project will support technically and financially potential beneficiaries to get those licenses, in full compliance with Probosque Law and INAB requirements.

C.7. Institutional / Implementation Arrangements

77. In this section details are provided regarding the project's governance structure, as well as the main contractual agreements. The present project is supported by GCF funds and co-financed by KOICA and the GoG. For reporting, administrative and operative purposes, IUCN will sign separate agreements with each party and report accordingly.

78. Accredited entity functions will rely on IUCN HQ (GEF /GCF Coordination Unit), supported by IUCN's Financial and Administrative Hub (FAH) for Latin America, which has a direct reporting line with HQ management. These functions include overall management and oversight of operational, administrative, and financial issues of the project, according to IUCN rules and procedures approved by the GCF and outlined in the AMA.

79. The GCF National Designated Authority, the Ministry of Environment and Natural Resources (MARN), as per its mandate as the national authority of environmental issues in Guatemala, will have a leading role as executing agency, ensuring that the Project is being implemented according to the proposed objectives as well as alignment with overarching national policies. Country ownership by the NDA will be guaranteed in its position as chair of the Project National Steering Committee, and of the Executive Board on the Grant Facility. IUCN Guatemala Office is listed as a second executing entity, as it will manage the funds from the Project.

80. Implementing entities will lead implementation of infield activities under the different outputs based on expertise and know-how, as follows:

- Output 1: IUCN Guatemala Office will lead implementation of Output 1, based on its experience with watershed management projects and convening of multi-stakeholder groups.
- Output 2: FCG will execute activities under the Grant Facility mechanism as a Guatemalan organization with wide experience in the management of granting mechanisms in Guatemala. FCG's role includes monitoring and evaluation of day to day activities related to output 2.
- Output 3: URL through its IARNA institute will lead of activities 3.2 and 3.3 related to climate information for capacity building and early warning systems. Activity 3.1, which is focused on strengthening the INSIVUMEH network and physical capacities, will fall under the execution of IUCN Guatemala Office in close coordination with INSIVUMEH.

81. The project will establish a Project Management Unit (PMU) headed by a National Project Coordinator who will ensure the project's overall coordination, guaranteeing a strategic approach and coherency among the different

outputs and partners. The PMU will be responsible for overall coordination, budget monitoring and control, and annual planning. Project Execution Units (PEU) will be established in-the-field in target zones, to guide day to day activities and budget expenditure under each output and will be led by corresponding co-executing partners. PEUs will respond to PMU technically, operationally and financially.

82. In accordance with IUCN regulations, a due diligence review has been conducted of implementing partners to guarantee that appropriate financial, procedural, and administrative capacities are in place to manage GCF funds.

83. Project governance relies on the establishment of three advisory committees to support project execution, which will involve government, academic and civil society at national and local levels, to ensure that the project's orientation and execution are aligned with country /local needs and priorities. Each committee is described below.

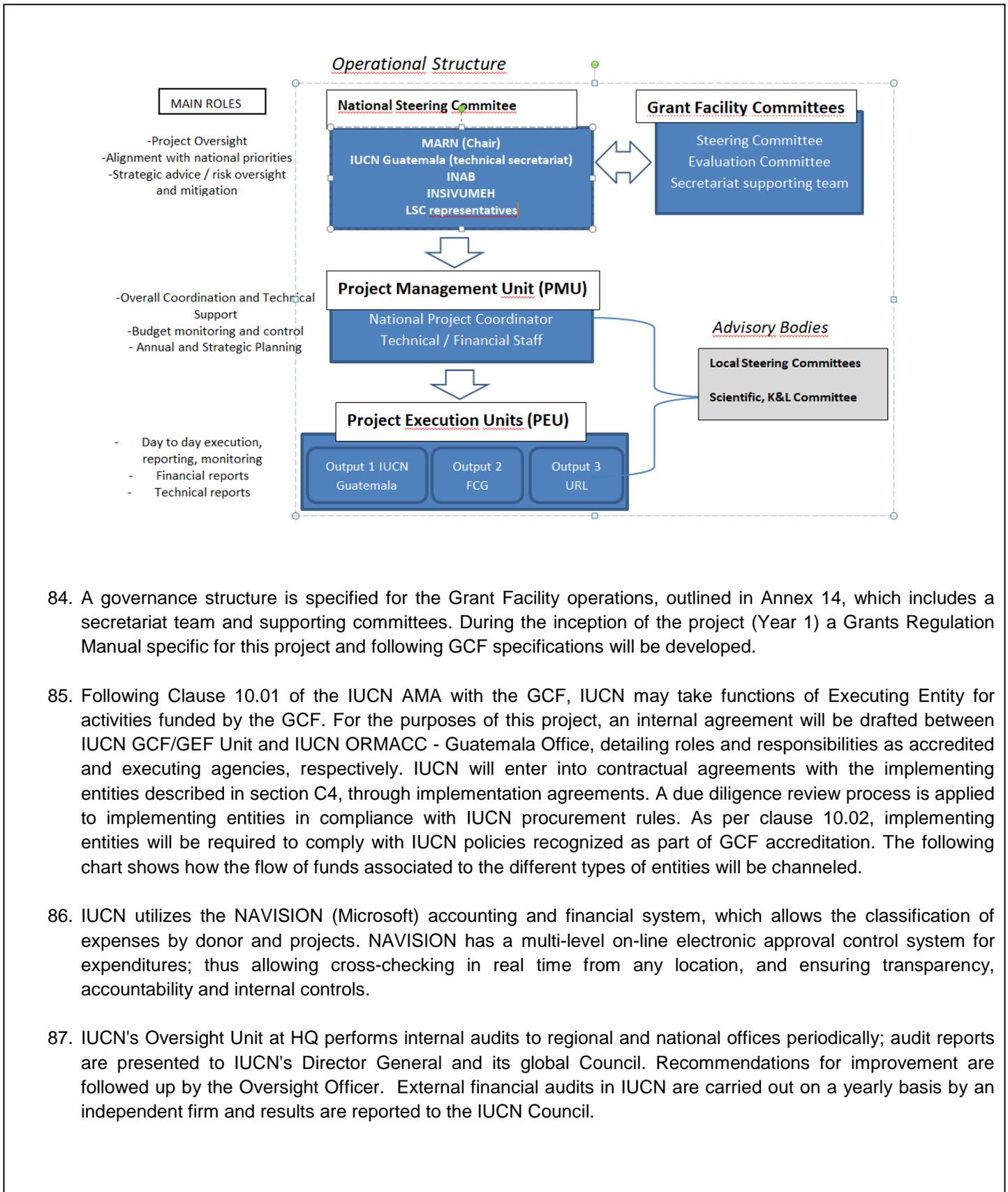
National Steering Committee (NSC): Chaired by the NDA, MARN (through its Climate Change Department), one representative of the National Institute for Forests, the Meteorological Authority and key Government organizations. The NSC will meet at least twice a year to strategically analyze project advances and priorities, and approve annual plans and project reports presented by the PMU. IUCN Guatemala Office will have a role of secretariat in order to ensure follow up, monitoring and strategic coherence of project implementation. The committee's recommendations will make it possible to guide results-based management, foster ownership and prepare national authorities to address climate change priorities, ensuring the justice, integrity and transparency of processes.

Local Steering Committees: These will be set up in three project zones: i) Samalá basin (Quetzaltenango); ii) Xayá Basin (Chimaltenango) and iii) Motagua Basin (Quiché), and will comprise representatives of the main local stakeholder groups (communities and local entities, municipalities, subnational MARN delegates, projects, private sector, government institutions, etc.) as well as the Project Executing Units (PEUs) present in the territories. These committees will support in-the-field project supervision and monitoring to ensure a bottom-up feedback to the National Steering Committee and that local implementation is aligned with the work plans of the micro-basin councils.

As an affirmative action, at least two women elected in decision-making positions within the micro-watershed council directives will be involved in each local steering committees of the project. In addition, at least two representatives of municipal women's offices will participate in each of the project areas, prior to this a network of municipal women's offices will be promoted by area, in order to plan activities, make proposals and exchange experiences. These proposals will be discussed and submitted to the national steering committee so that women have better access to the project's technical and financial activities at decision making level. With this affirmative action, enforcement of Article 96 of the municipal code is enforced, which establishes the attributions of the women municipal offices.

Scientific and Technical Committee (STC): Comprised of high-level scientists in different fields, including natural and social sciences of the IUCN Commission on Environmental, Economic, and Social Policy (CEESP), experts from the Universidad Rafael Landivar, as well as experts from the Environmental Information Unit within MARN. Other experts will be brought in when necessary. The aim of this advisory committee is to provide scientific and technical support for project strategies and activities; promote dialogue on technological approaches, innovation and best science; contribute strongly to knowledge management and learning; and help track advances. This role may contemplate field visits and analysis of project results. The committee will provide technical advice on documents prepared within the frame of the project, and technical recommendations when so requested. The chair will rotate according to the agenda and theme under consideration.

Figure 4. Project Governance and Operational Structure



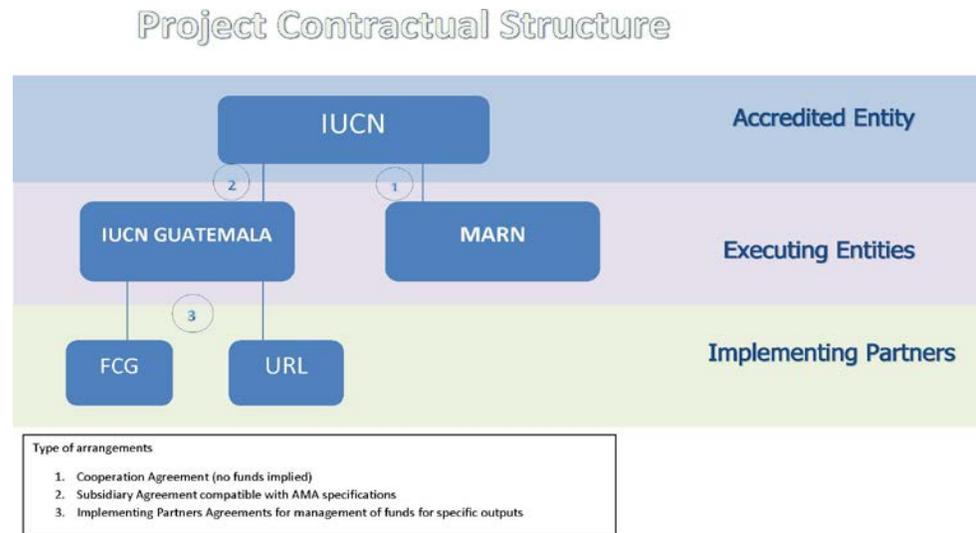
84. A governance structure is specified for the Grant Facility operations, outlined in Annex 14, which includes a secretariat team and supporting committees. During the inception of the project (Year 1) a Grants Regulation Manual specific for this project and following GCF specifications will be developed.

85. Following Clause 10.01 of the IUCN AMA with the GCF, IUCN may take functions of Executing Entity for activities funded by the GCF. For the purposes of this project, an internal agreement will be drafted between IUCN GCF/GEF Unit and IUCN ORMACC - Guatemala Office, detailing roles and responsibilities as accredited and executing agencies, respectively. IUCN will enter into contractual agreements with the implementing entities described in section C4, through implementation agreements. A due diligence review process is applied to implementing entities in compliance with IUCN procurement rules. As per clause 10.02, implementing entities will be required to comply with IUCN policies recognized as part of GCF accreditation. The following chart shows how the flow of funds associated to the different types of entities will be channeled.

86. IUCN utilizes the NAVISION (Microsoft) accounting and financial system, which allows the classification of expenses by donor and projects. NAVISION has a multi-level on-line electronic approval control system for expenditures; thus allowing cross-checking in real time from any location, and ensuring transparency, accountability and internal controls.

87. IUCN's Oversight Unit at HQ performs internal audits to regional and national offices periodically; audit reports are presented to IUCN's Director General and its global Council. Recommendations for improvement are followed up by the Oversight Officer. External financial audits in IUCN are carried out on a yearly basis by an independent firm and results are reported to the IUCN Council.

Figure 5. Project contractual arrangement between partners



88. For the activities of the project implemented by IUCN Guatemala Office, IUCN HQ will provide monitoring and oversight conducted by the FAH:
- a. Monitoring on a monthly basis of accounts and bank statements from country offices through NAVISION, and cross-checking bank information. FAH ensures that expenditures, contracts, and procurement procedures comply with IUCN procurement policies as well as specific donor requirements.
 - b. Revision and approvals of quarterly financial reports submitted by the IUCN Guatemala Office.
 - c. The FAH will conduct field visits to ensure that project implementation is consistent with the technical and financial reports.
89. For those activities under the responsibility of implementing entities, IUCN will sign implementing agreements following its Procurement Policy for goods and services, which includes:
- a. A due diligence process to be performed to partners receiving funds. This step was fulfilled during the preparation of this project. A risk assessment is conducted to review each organization's legal and operational capacities, financial stability, governance and management, internal controls, policies and procedures, and accounting and reporting systems.
 - b. As part of monitoring and oversight, IUCN FAH will conduct periodic follow-up visits to co-executing partners and evaluations to ensure compliance with IUCN policies and provide recommendations for improvement and guidance in case these are needed.
 - c. IUCN FAH provides regular support to co executing partners related to budget execution, request for funding, and approval of quarterly financial reports.

C.8. TIMETABLE OF PROJECT/PROGRAMME IMPLEMENTATION

See Annex 11

D.1. Value Added for GCF Involvement

90. While the Government of Guatemala (GoG) has made remarkable efforts in building a policy and legal framework to enable sustainable natural resource management and climate change action (as described in section C1), a significant implementation gap still prevails. Public spending in climate change related issues has been fairly low, representing between 0.60% y 1.59% of the national budget for the period 2011-2014. From this budget allocation, central government has received around 43%, departmental governments around 16%, and municipal governments 41% of the total. Meanwhile, economic losses as a result of drought and floods have reached US\$1.3 billion in the last decade. Per capita public financing on environmental issues in Guatemala stands out as the lowest in the Central American region.²⁰ The importance of GCF support is paramount under the current situation.
91. Additional funds for climate change adaptation in Guatemalan Highlands have been leveraged. This includes existing funds from the PROBOSQUE Program which have been committed by the GoG (US\$5 million), as well as an additional US\$4.5 million from KOICA. GCF is therefore a catalyzer of additional resources for climate change adaptation in Guatemala.
92. Despite the existence of community based organizations in the Highlands devoted to the sustainable use of natural resources, there is still a need for improved access to financing and consolidated management experience. This is mainly due to insufficient organizational capacities and warranties which would make them fit for credits or loans. GCF involvement represents therefore a unique opportunity to empower local and grassroots organizations through improved capacities and governance experience, building resiliency, and unlocking community-led climate action.
93. GFC offers the distinctive possibility of undertaking a 7-year project that combines in-the-field investments with institutional capacity building, all within a timeframe that envisages concrete climate change adaptation outcomes and results to be measurable within the duration of the project. Lastly, the GoG has not yet developed direct access mechanisms for the GCF, a topic that will be discussed during the implementation of the Readiness support, under the leadership of the NDA. Therefore, this project represents an opportunity to demonstrate the GCF's catalytic role in climate action and help set a precedent for future ventures.

D.2. Exit Strategy

94. Exit strategy activities will begin to be implemented at the beginning of 6th year of the Project. The sustainability of project actions has been an underlying precondition during the design and development of the Project. Another important criterion was to capitalize on existing governance structures and initiatives at the local and national levels, and engage with organizations with ingrained interests, stakes and mandates related to climate change action in the Highlands. It is worth mentioning the following activities:
- a. The project's alignment with country policies on climate change and the engagement with the Climate Change Department within the MARN, ensures that it responds to national priorities, combined with capacity building as a constant in every activity and at different levels, guaranteeing country ownership. In its last year, the project will also reinforce political commitments to continue to seek means to further close policy implementation gaps after project finalization.

²⁰ <http://www.marn.gob.gt/Multimedios/2547.pdf>

b. Engagement with the forest authority which has committed to invest part of the forest incentive program to the project's outputs, will allow for mainstreaming of EbA criteria into the country's newest forest program, bringing long-term sustainability to the impacts initiated by the project, given that PROBOSQUE has a lifespan of 30 years.

c. The project will strengthen existing decentralized extension services for local farmers and producers, mainly the CADER (ender MAGA) and the municipal forestry, water and gender offices. New knowledge and technical capacity will be installed in these institutions, and in application, long before project closure.

d. Sound scientific evidence on climate change in the highlands will be produced that will be free and available to a wide range of users to inform climate action and decisions; knowledge on how to package information for different audiences and in different local languages will also remain with the institutions involved in dissemination actions.

e. Since the project will complement existing physical capacities, sustainability of operation and maintenance of acquired hydro-meteorological equipment will be guaranteed in the budgets of the beneficiary institutions. A capacity building program throughout the lifespan of the project focused on the O&M will establish and consolidate capacities for the long term.

f. The project will provide direct access to community-based organizations (CBO) in the Highlands to lead culturally appropriate climate action, enhancing CBO's organizational, financial and operational capacities. This provides an opportunity for future allocation of resources based on this model, either from international cooperation sources, debt-for-nature swap initiatives, but also domestic initiatives. Future GCF projects both under credits and loans modalities will be able to call on a strong CBO network and a proven model of engagement with grassroots communities.

E.1. Impact Potential

Potential of the project/programme to contribute to the achievement of the Fund's objectives and result areas

E.1.1. Mitigation / adaptation impact potential

95. In this section we analyze the project in light of the adaptation impact based on the factors of the GCF performance measurement framework (PMFs). The context for analysis is that climate change will alter the hydrological cycle of the Guatemalan Highlands. Therefore, for effective adaptation to be achieved, it is essential to promote sustainable land uses that improve the capture and regulation of water. To this end, the project will develop a series of actions that will allow ecosystems to maintain flows both in the rainy season (through infiltration and recharge of aquifers) and in the dry season (through a gradual release of stored water). This series of actions will support the PMF-A4.0 (Improved resilience of ecosystems and ecosystem services).
96. Under PMF-A4.0 the project will have a positive impact on the water cycle at watershed level. Restoration actions from the project will reduce erosion, which will in turn reduce the export of sediments from the restored areas, and will thus diminish the amount of sediments that will flow downstream. This increased sediment retention can be measured by looking at the decreased quantity of sediments contained in water that is captured as drinking water for lower lying urban areas. The municipal water companies (the municipalities) can measure this impact by looking at the change in nephelometric turbidity units (NTU)²¹. The decrease in the indicator (NTU) allows measuring the impact of the restoration actions on:
- i) Decreased sediment export, and thus increased quality of drinking water and decreased water treatment costs;
 - ii) Decreased erosion; and
 - iii) Decreased loss of soil organic matter, and thus increased water infiltration rate, which increases water recharge
97. Another effect of climate change is the reduction of crop yields and crop losses (especially subsistence crops, due to longer heat waves) which is why ensuring ecosystem resilience and a steady flow of hydrological services is paramount. This initiative will contribute to PMF-A1.0 (Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions). In this line, the project will also develop actions in strategic agroecosystems that will not only support the regulation of the hydrological cycle but will also generate income and improve the livelihoods of prioritized communities. In support of these actions, activities will also be implemented to improve technical assistance capacities and ensure that government extension service providers have the knowledge and tools to deal with the effects of climate change. In order to carry out the rehabilitation of ecosystems and the sustainable management of agroecosystems, a grant mechanism will be developed (Output 2), which will allow farmers to have funds to develop forestry, agricultural, agroforestry and conservation activities through which ecosystems and livelihoods resilience will be promoted.
98. In addition, the project will respond to PMF-A6.0 (Increased generation and use of climate information in decision-making) through a participatory early warning systems for agricultural practices and water management. For this purpose, meteorological and hydrological information systems will be strengthened with equipment for the collection, modeling, forecasting and storage of data. In order to ensure the long-term sustainability of the system, and for information to reach the communities in a timely manner, the capacities of the relevant actors at the community, municipal and national levels will be strengthened for the operation and maintenance of equipment and systems, data interpretation, modeling and forecasting.

²¹ According to the World Health Organization drinking water should have a turbidity of 5 NTU or less and ideally below 1 (http://www.who.int/water_sanitation_health/dwq/gdwqvol32ed.pdf)

99. The three Outputs will directly impact PMF-A7.0 (Strengthened adaptive capacity and reduced exposure to climate risks), as sustainable management and restoration of ecosystems will ensure that the benefits of adaptation are achieved, specifically the ability to regulate the storage and adequate distribution of water. Similarly, strengthening the resilience of agroecosystems and introducing new livelihood options will allow beneficiaries to adapt to climate variability and climate change. On the other hand, with more accurate and timely information on climate and early warning systems available, beneficiaries will have the tools and knowledge to make better adaptive livelihood decisions (for example, when to plant and what crops to prioritize in a given season). Additionally, use of weather forecasts and early warning systems should also reduce climate risks and impacts.
100. The project will also focus on PMF-A8.0 (Strengthened awareness of climate threats and risk-reduction processes) through the establishment of micro-watershed committees and management plans, which will enable beneficiaries to understand the threats and risks posed by climate change, as well as the strategies that can be followed to reduce these risks. Beneficiaries will also gain insights into how climate change and variability threaten their livelihoods, and will gain access to climate resilient management practices, and opportune information and warnings.
101. To conclude, it is important to clarify that this project will not deploy long term, high emission or climate vulnerable infrastructure. The main infrastructure to be installed are automated agro-meteorological stations that have no environmental impact and have no emissions. This infrastructure is not vulnerable to climate change or extreme weather events.

E.1.2. Key impact potential indicator

Provide specific numerical values for the indicators below.

	<i>Expected tonnes of carbon dioxide equivalent (t CO₂ eq) to be reduced or avoided (Mitigation only)</i>	<i>Annual</i>	
		<i>Lifetime</i>	
<i>GCF core indicators</i>	<ul style="list-style-type: none"> <i>Expected total number of direct and indirect beneficiaries, disaggregated by gender (reduced vulnerability or increased resilience);</i> <i>Number of beneficiaries relative to total population, disaggregated by gender (adaptation only)</i> 	<i>Total</i>	<ul style="list-style-type: none"> - 30,000 people in the target communities will have access to climate smart agriculture and agroforestry practices (30% women) - 20,000 people benefit from incentives for forest conservation in strategic water catchments (30% women) - At least 32,000 people benefit from the grant facility (30 % women) ²² - 50,000 people benefit from a participatory early warning systems for agricultural practices and water management (30% women)²³ - 7,500 hectares of agroforestry systems

²² In order to avoid double accounting, this figure includes only those additional beneficiaries not included in Results 1.

²³ In order to avoid double accounting, this figure includes only those additional beneficiaries not included in Results 1 and 2.

			<p>supporting water recharge and productivity</p> <ul style="list-style-type: none"> - 5,000 hectares of forest restored and maintained to provide hydrological services -In addition approximately 10,000ha will benefit from grants for productive and restoration activities directed toward water security,
		<p>Percentage (%)</p>	<p>24% of area inhabitants (132,000 persons of which 30% women who will benefit from the 3 outputs implementation)</p>
<p>Other relevant indicators</p>	<ul style="list-style-type: none"> • <i>NTU</i> • <i>Seasonal Waterflow in targeted micro watersheds</i> • <i>Water quantity and quality will improve and women will not have to spend as much time collecting it</i> • <i>Increase in women's active participation in formulating and making decisions about watershed management</i> • <i>Increase in women's access to restoration practices, incentives and grants</i> • <i>Expected increase in the number (%) of households that adopt a broader variety of livelihood strategies</i> • <i>Expected increase in the percentage of households with food security (reduction of food gaps and improved nutritional conditions for children)</i> 		
<p><i>Describe the detailed methodology used for calculating the indicators above.</i></p> <p>In 2017 the population in the area of influence was estimated based on projections of the 2002 population census (the most recent available) and the database associated with the geographic information system. From this it was concluded that the number of inhabitants in the zone prioritized by the project is 989,000 (50-60% are women), of which 593,400 are rural.</p> <p>The number of people benefiting from forestry, agroforestry and climate-smart agricultural projects was estimated based on INAB statistics indicating that the average parcel size in the work zone is 0.25 ha (equivalent to 4 people benefitted per hectare). This information can be found at http://186.151.231.170/inab/index.php/45-servicios-inab/74-pinfor and in http://186.151.231.167/Paginas%20web/Pinpep.aspx. That value was multiplied by the area prioritized for forest restoration and protection activities (5,000 ha), and areas to be dedicated to climate-smart farming and agroforestry (a total 7,500 ha), obtaining values of 20,000 and 30,000 beneficiaries, respectively. Based on the grant mechanism, in addition to the beneficiaries and areas already included, it is expected that additional 10,000ha will benefit from the grant mechanism (see Output 2). The details will be defined once the grant mechanism priorities in the ground be analyzed.</p> <p>The estimation of the number of people benefiting from the grants facility is based on the IUCN's experience with other mechanisms developed for similar purposes in similar contexts. Beneficiaries (individual or associated families) were granted with amounts averaging US\$600/ha.. Taking into consideration that the total amount of the facility will amount 9, the number of beneficiaries is estimated at 32,000.</p> <p>The estimation of beneficiaries from the early warning system is based on data from similar projects carried out in the region (https://www.cne.go.cr/CEDO-CRID/CEDO-CRID%20v2.0/CEDO/pdf/spa/doc12116/doc12116-6.pdf). To avoid overestimation, a population equal to 75% of that covered by those projects was assumed, ranging from 130,000 to 150,000 people. Of these, 82,000 are included in results 1 and 2 and 50,000 are new beneficiaries.</p>			

The areas prioritized for the implementation of climate-smart farming and agroforestry practices (7,500 ha) and areas for restoration and protection activities (5000 ha) were obtained by overlapping maps of priority zones due to climate change-induced ecosystem changes, priority areas for water recharge, the current soil use and coverage map, and the zones with restoration potential. Additional 10,000ha are expected to be restored through also the application of the small grant mechanism to expand the area. The specific figures will be defined at the project start up.²⁴

The impact of restoration actions on reducing flood risk and increasing dry season water flow will be modelled using the InVEST's²⁵ 'Seasonal Water Yield Model'²⁶. With the use of this spatial model, the potential impacts of the restoration actions (reforestation, natural regeneration, agroforestry and silvopastoral systems) can be modelled for the entire intervention area. Local data collection will be used to calibrate the model. First, the baseline will be modelled under current land use (at project start). In a second and third stage (at project mid-term and end), the seasonal water flow will be modelled again under a new land use scenario. The difference between both models provides an indicator of change in both the quick flow, which occurs during or shortly after rain events, and the baseflow, which occurs during dry weather. The model generates maps of the quickflow, baseflow and of local recharge. All results are given in mm. The expectation is that under a restoration scenario, local recharge and dry seasonal baseflow will increase, while percentage change in quickflow (in relation to average rainfall) will decrease.

Describe how the project/programme's indicator values compare to the appropriate benchmarks (i.e. the indicator values for a similar project/programme in a comparable context).

The IUCN's Mi Cuenca project in the Guatemala highland can be used as framework for comparison (benchmark), wherein 18,172 people benefited from an investment of US\$ 5 million. This project's impact will be greater due to beneficiaries of the early warning system and the direct application of part of the grant mechanism to benefit additional areas than those included in Output 1.

E.2. Paradigm Shift Potential

Degree to which the proposed activity can catalyze impact beyond a one-off project/programme investment

E.2.1. Potential for scaling up and replication (Provide a numerical multiple and supporting rationale)

102. As detailed in section C.2, the intended paradigm shift for the "Building livelihood resilience to climate change in the upper basins of Guatemala's Highlands" project is to connect watershed governance mechanisms and stakeholders with funding sources that have previously lacked an EbA approach so as to ensure that the functions and services associated with the hydrological cycle are maintained through improved land and water management practices that mitigate the impacts from climate change and climate variability.

103. Unsustainable land uses related to agricultural practices are prevalent in rural areas across Guatemala. Specifically for the Guatemalan Highlands, areas of low or decreasing forest cover generate increased erosion and sediment export, thus hindering rainfall infiltration and reducing the rate of aquifer recharge. The issue becomes more critical as these problems are augmented both in the short term by the impacts of climate variability and in the mid- to long-term by the impacts of climate change. With respect to agricultural activities a negative feedback loop is generated, as soil loss, reduced dry season flow, and lessened water quality and availability lead to reduced productivity and affected local livelihoods.

104. Within an integrated water resource management (IWRM) framework that defines basins, sub-basins and

²⁴ <http://orton.catie.ac.cr/repdoc/A11145e/A11145e.pdf>http://pmcarbono.org/pmc/publicaciones/Libro_Merida_2014_PMC_ISBN-web.pdf<http://orton.catie.ac.cr/repdoc/A11541e/A11541e.pdf>http://uvg.edu.gt/investigacion/ceab/cea/doc/informes%20de%20proyectos/Informe_Carbono_2.pdf

²⁵ The 'integrated valuation of ecosystem services and tradeoffs' (InVEST) software has been developed by the Natural Capital Project (<https://www.naturalcapitalproject.org/>) to generate spatial models of ecosystem service provision at the landscape level.

²⁶ http://data.naturalcapitalproject.org/nightly-build/invest-users-guide/html/seasonal_water_yield.html

micro-basins as the geographic units for intervention, ecosystem based adaptation (EbA) is put forward as an approach to mitigate climate impacts and help increase resilience of ecosystems and people. This work entails at least three aspects: (i) a territorial approach to the delimitation of the environmental service to be promoted; (ii) developing a strategy for the restoration or recovery of the agricultural-forestry landscape, in order to promote land uses that ensure the provision of environmental services; and (iii) proposing technical and financial mechanisms to promote such land use among farmers. The overall model for delivering adaptation benefits and implementing EbA on a large scale, is described in Annex 21, and summarized in **Figure 6** below together with **Table 3**.

Figure 6. Scheme depicting project EbA mainstreaming and implementation mechanisms and impact pathways

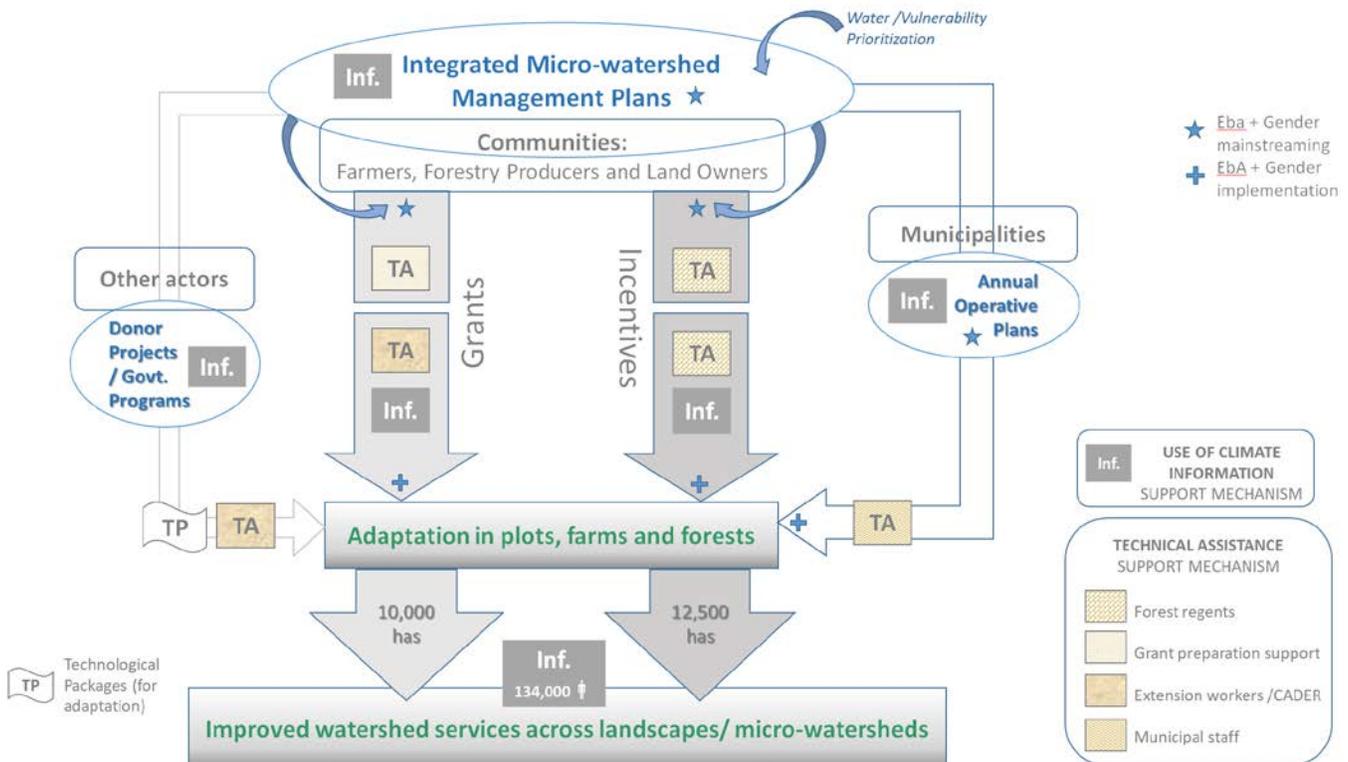
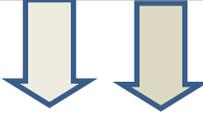
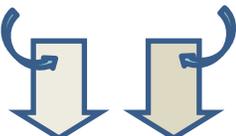
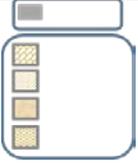
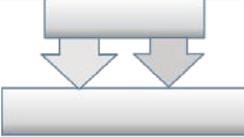


Table 3. Technical rationale behind the Impacts pathways depicted in Figure 6.

Impact Pathway	Graphic representation
<p>IWRM is intended to provide an overarching framework of action that will link funding priorities (the Grant Facility and Incentives Mechanisms) with water management priorities.</p> <p>The guiding instruments will be the Integrated Micro-watershed Management Plans prepared in the first year of the project, which will be informed by ROAMs and biophysical assessments (shown as a curved arrow: Water /Vulnerability prioritization) to determine key water catchment areas in need of restoration and analyse the transition costs (from a degraded land use state) of different restoration options (reforestation, agroforestry, natural regeneration, etc.).</p>	
<p>While “Communities” (made up of smallholder farmers, forestry producers and land owners) are the main target group for the funding mechanisms, they are also integrated into Micro-watershed councils as individuals or represented by local institutions, and are therefore watershed stakeholders too.</p>	
<p>The two funding mechanisms intended to spur EbA implementation are shown as thick downward arrows: Grant = Grant Facility supported by GCF and KOICA, and Incentives = Forest Incentives from the GoG PROBOSQUE /PINPEP programs. Each arrow is divided into two parts, symbolizing a preparation phase and an implementation phase.</p>	
<p>To mainstream EbA into the Grant Facility and Incentives Programs (curved arrows), the allocation of funding will focus on the ROAM-prioritized micro-watersheds, will respond to priorities expressed in the Integrated Micro-watershed Management Plans, and will be further informed using CRiSTAL vulnerability assessments across groups of communities to identify, in prioritized areas, zones of high climate change vulnerability as well as solutions proposed by the communities. These inputs will shape the terms of reference of each call-for-proposals, and ensure the approval of incentives in critical water catchment areas.</p>	
<p>The Support Systems for the funding mechanisms are based on boosting existing technical assistance and climatic information networks. Technical assistance agents are drivers of change and therefore an essential part of mainstreaming ★ and implementing + both EbA and gender criteria.</p>	
<p>Additional mechanisms exist for implementing the Integrated Water-shed Management Plans, resulting from Municipal, Ministerial and donor-funded efforts. The main examples are Municipal planning instruments, MAGA's Organic farming, CADER and women's empowerment programs, and ongoing donor-funded projects. The project will channel grey adaptation technologies (for rainwater harvesting and irrigation systems) via the CADER network.</p>	
<p>As a result of the funding provided, sustainable practices with an EbA approach at the plot, farm and forest level can be summed to accrue adaptation results on a landscape scale. Hence EbA can be up-scaled across micro-watersheds, and further reinforced through IWRM.</p>	

105. The potential for scale-up and replication will be derived from an integrated water resource management (IWRM) model, productive landscape restoration, and improved and targeted climate information as put into practice in the project intervention logic. As the Theory of Change indicates, the project seeks to reduce climatic impact on the hydrological cycle the project Outputs and corresponding Activities are designed to demonstrate the impact at scale in the field through this model, by strengthening the associated ecosystem services. Upscale of the approaches and investment in other regions of Guatemala is to be achieved via a two-fold path. First, through institutionalization of the project's technical approaches that is supported directly by the project partnership with MARN and INAB.
106. By promoting the implementation of the climate impact-mitigating restoration modalities within the INAB Probosque /PINPEP mechanisms, their multiple benefits will be demonstrated so they can be replicated in other areas of the country. As the modalities and the benefits to water resources and soil conservation are relevant and applicable not only to drought-stricken territories, they can be implemented beyond the Altiplano in all areas where Probosque has been prioritized. Secondly, through the second-level CBOs implementing the grant facility that either work at national level or possess networks that can support dissemination of lessons learned and promotion of the implemented approaches. As well as promoting the use of grant mechanisms, both of medium and small scale, for other local organizations to utilize in their own programs or incorporate in new funding proposals. Both paths for upscale are to be supported by the project's monitoring and evaluation system and a strong emphasis on systematization of technical results and methodologies, and financial and policy mechanisms.
107. The scaling-up strategy is linked to activities A.1.2, A.2.1 and A.2.2., where both public (PROBOSQUE/PINPEP incentives) and private (grant facility) financial mechanisms are implemented to support climate-smart agriculture, reforestation and restoration activities that specifically target the recovery and strengthening of water-related ecosystem services and thus the overall hydrological cycle in the Highlands, under an EbA approach. Intended restoration activities will preserve natural forests, riparian forests and recharge areas, and support natural regeneration processes; while agroforestry and silvopastoral systems improve agricultural practices. This menu of interventions, both available under the GoG incentive mechanisms and the Grant Facility will tackle at scale the problems of soil erosion and reduced infiltration, leading to the maintenance of land productivity and provision of water both in terms of quality and quantity.
108. Within the public sphere (Output 1, A.1.2), Guatemala's two financial instruments through which the State invests more than US\$25 million annually for forest management and reforestation provide a unique opportunity for replication and upscale. The project's intervention and work through Micro-Watershed Councils as well as accompanying capacity-building processes in the pertinent agencies (INAB and CONAP, among others) will inform the prioritization and adjudication of incentives, as well as the identification of sites in other Highlands areas not targeted by the project as well as to other vulnerable regions within Guatemala that will be able to replicate the EbA-focused criteria. As public forest financing instruments promote their EbA-supporting modalities, it can be argued that the project will have provided guidelines for the replication of climate-smart actions supporting the maintenance of the hydrological cycle at national level.
109. Important contributions will be made towards more climate-responsive policy and legal frameworks in Guatemala. At the national level, the legislature's current discussions of a draft Water Law provides a valuable opportunity to mainstream climate change adaptation in general, and natural infrastructure /EbA in particular, including funding mechanisms, into the new Law. Likewise, the updating of the National Climate Change Plan (PANCC) is a further opportunity to specify and re-prioritize actions based on knowledge derived from the project. Given past experience with the promulgation of laws to create regional Management Authorities for watersheds or specific water bodies, there may be room for the project to prompt further results in this arena. At a more local level, Municipalities may also issue new ordinances to establish rules for watershed management (for example, obligating that all COCODEs include women, or designating certain recharge areas for protection) or may initiate micro-regionalization processes that are conducive to better

watershed governance, and hence improvements in the hydrological cycle.

110. Project components are also organized to enhance the possibilities of replicating project results. In Output 1 (Integrated climate smart watershed management), climate-smart agriculture as well as cost-effective forest options will be promoted, in order to enable farmers to reduce the vulnerability of their productive system. The project will work directly with 50,000 producers, but when linking governmental agencies and NGOs in target zones, the actions could be increased by at least 32,000 additional producers. The project is considering specific actions to train and engage community grassroots organizations, NGOs and government organizations. Likewise, additional activities are considered to systematize local and indigenous knowledge related to adaptation to climate change, as actions that have more uptake potential by local producers.
111. Under Output1, 12,500 hectares will receive funding through national forest incentive programs (PINPEP and/or PROBOSQUE), will be funded by the project for climate smart agriculture and agroforestry. This output will implement capacity building activities for extension officers from government institutions (INAB, MAGA and MARN) as well as for local farmers in climate related actions. Likewise, Output 1 will provide lessons that will be collected and disseminated to public institutions, civil society organizations and academia. Capacity building for extension officers and local farmers are actions that can be up scaled beyond the project's zone of influence, by establishing mechanisms for the programme's adoption in other regions of the country. It should be noted that forestry incentives include various production modalities, including agroforestry systems, timber plantations, energy plantations, forest restoration and management of natural forest for protection or production purposes.
112. The Grant Facility (Output 2, A.2.1 and A.2.2) will demonstrate how landscape restoration interventions can reach small producers and vulnerable communities both through second level organizations and directly through grassroots organizations. This can provide a blueprint both for future public and private programs that aim to improve productivity and local livelihoods while recognizing the climate impact dimension. The awareness raising and capacity building components of the Facility will also serve as guidelines for engaging stakeholders and promoting adaptation actions in any other vulnerable areas in Guatemala.
113. Actions to be developed in Output 2 include strengthening of producers and farmer/communities networks through medium-sized grants and unlocking finance for small producer organizations through small grants. These financial mechanisms will allow the implementation of restoration practices also developed in Output 1, with local CBOs already working with the topic in the Highlands region. In Guatemala this type of funding is not being implemented because the private banking system does not recognize its importance or because they consider the "clients" to be high risk. This highlights the relevance of developing these lines of action in the country.
114. In Output 3 related to the provision of climate information for farmers and other territorial actors, participatory early warning structures will be implemented in project area. These experiences related to the early warning system for agricultural practices, and to climate change information management will be disseminated at the national level. The capacities of technicians of the public sector (MAGA, INAB, INSIVUMEH, and CONAP), municipal water and forest units as well as community organizations, university teachers and researchers and other local actors will be strengthened. At institutional and municipal level, training topics will include data keeping and maintenance, interpretation, modeling and forecasting

E.2.2. Potential for knowledge and learning

115. The project will contribute to the joint generation and strengthening of knowledge through a strategy which relies on and supports national public and private institutions in their own knowledge and information generation processes such as:
 - INSIVUMEH: The project will support the information generation and processing of climate and hydrological information in the target project area and will strengthen their meteorological stations network. This information will strengthen the reach and climate models of the Regional (Central American) Climate Forum.

- MARN: The project will feed information (especially maps, data bases, etc) to the environmental information system of MARN.
 - INAB: The project's lessons learned and main conclusions of technical assessments will be important inputs to enhance existing governmental programs, policies and planning tools at different levels; particular inputs will directly influence the application of EbA within the PROBOSQUE incentives scheme. As a new decision making tool that includes criteria for for adaptation and water management, this will go beyond the project's territorial scope to be up scaled to a national tool. Lessons will also be shared through the Centers for Rural Learning (CADERs).
 - IARNA: Through the participation of this institute, the project will benefit from the formulation of new undergraduate and graduate theses covering the project area and topics, which will catalyze the impacts of the project. The project's actions are also to be internalized in the Institute's and/or University's study programs so that a critical mass of young professionals can develop competencies that encourage further development of climate change adaptation and mitigation science in the academic realm, or prepare them to carry the approach into professional service in the public, private or civil society spheres.
116. Improved knowledge and solutions to address climate change impacts on the water cycle will be generated, through the development of joint research, assessments and stand-alone knowledge products and materials such as:
- **Assessments:** e.g. Regional and national climate forecast reports for target sectors (agricultural, forestry, food security); Impact of restoration practices (agroforestry, soil conservation, etc.) on water security at landscape and micro-watershed levels in the project area;
 - **Maps, spatial data and data bases:** economic and financial viability of management practices, and of public investments in water security; meteorological and hydrological information systems, toolkits for early warning systems for agricultural practices and water management;
 - **Capacity building materials:** including infographics, videos, training modules for early warning system, EbA and information on agricultural practices and water management for farmers;
 - **Books and monographs:** including theses from undergraduate and graduate; learning and knowledge materials on implementation of the grant mechanism, successful cases and impacts;
117. To share the project lessons, results and knowledge products, the project will use the dissemination and social media channels of its partners: IUCN administrates a regional [EbA projects database](#) which will serve as a channel of dissemination as well as an M&E platform for Project interventions. Additionally, IUCN shares a monthly newsletter PILARES with its regional members (including Governments, NGOs and research centers) and counts with a recognized global website for news and dissemination of knowledge products; moreover, as part of its regular activities IUCN participates regularly in presentations and conferences, at the regional and global levels.
118. The Capacity Building program, outlined in Annex 22, aims to raise awareness and increase technical skills relevant to climate change in general, and EbA in particular, as well as recognize the value of traditional knowledge in climate-resilient natural resource management. The program includes a training-of-trainers approach, with a field-based focus and the sharing of knowledge amongst peers (peer-to-peer exchanges) as means to propagate learning and know-how. The CADER model is particularly effective in capitalizing on the role of community members / leaders to be both as a trainer and a peer. The Program will directly and indirectly impact on a large group of stakeholders, from public entities to community-based organizations, and will focus particularly on groups acting as agents of change. A critical mass will be built of technical and non-technical persons with a better grasp of EbA and climate phenomena in order that they may then promote further outreach, capacity development and uptake of the issues at hand.

The Program's Objectives are:

1. Increase understanding of climate change challenges and opportunities
2. Provide tools and information for taking climate change adaptation decisions
3. Offer learning experiences that contribute to building social capital

119. INSIVUMEH distributes its information country-wide, while IARNA, beyond its social media channels, also has its own science and research dissemination magazine which reaches 12,000 people each month. Locally, the Project will also make a great effort in knowledge dissemination with digital and traditions tools such as: social media, blogs and radio messages, press releases, and audio visual materials. Furthermore, IUCN together with its implementing partners, and the Scientific and Technical Committee will guarantee that the "knowledge and learning" cycle has scientifically accurate and evidence-based inputs to provide feedback into the project implementation process.
120. Existing information systems and online climate change resources (both international and from Guatemala) will be promoted, strengthened and used, to take advantage of the existing knowledge base. Knowledge creation will also benefit from IUCN's approach for delivering "knowledge products" based on tangible results. Application of this model makes it possible to create, capture, store, share and use²⁷ the data, information and knowledge acquired. The conceptual model for knowledge management combines five main interrelated principles or phases: 1) M&E and Harmonized Approaches; 2). Communications; 3). Learning and Capacity building; 4) Regional, national and local relevance; 5) Information management.

E.2.3. Contribution to the creation of an enabling environment

121. The project was developed to address climate change by improving water recharge and productivity in the Guatemalan Highlands. It will promote restoration and protection of forest ecosystems of hydrological importance and work with climate-smart practices in agricultural and agroforestry systems that are strategic for water supply. The ecosystem-based adaptation approach is incipient in the country and there are few experiences. Likewise, efforts to develop integrated watershed management initiatives have been generally unsuccessful because both community actors and government agencies lack the necessary technical and implementation capacities. Consequently, the project will work with technicians at INAB, MAGA and MARN and with extension workers and support projects in these government agencies, to strengthen technical and operational capacities as one of the main steps in the project's execution.
122. Output 1 (Integrated climate smart watershed management) through activity A.1.1 (Improved capacities for provision of technical services to local farmers in climate actions) will strengthen the capacities of the aforementioned agencies and of municipalities through equipping and infrastructure, capacity building and strengthening of CADERs, among others, and in the case of community-based actors, through support to micro-watershed committees (capacity creation and/or strengthening).
123. Another factor facilitating the continuity of actions after the project finalizes will be the capacities created in both government agencies (central and municipal) and community actors (this is supported by experiences in IUCN's Mi Cuenca project). The capacities acquired and the structures strengthened will be relevant not only to the project's target areas or specific activities, but to the overall task of mainstreaming and implementing climate change adaptation and integrated management approaches in territorial development actions. Through the knowledge gained during the project, beneficiaries will be better poised to act as agents of change for raising resiliency to climate change, especially amongst forest and agricultural producers.

124. The project focus on promoting women's equitable representation in project activities will create an environment enabling women's greater economic empowerment and participation in decision making. Although Guatemala's current gender empowerment policies promote equality in women's participation in decision making and the formal economy, in practice traditional governance systems continue to be patriarchal and women are not significantly involved in decision making. The project's activities therefore include multiple measures ensuring that women have the opportunity to participate and benefit from those activities. These measures entail the inclusion of gender offices in municipalities and gender units in government agencies participating in the project (INAB, MAGA, MARN and CONAP), as well as project selection criteria that will ensure women's active participation (at least 30% in production and ecosystem rehabilitation projects, with special focus in female headed households). Municipalities will also be prompted to issue ordinances that oblige COCODEs to include a minimum number of women in their composition, a measure that has already proven successful in specific Municipalities.
125. Information generation through media and formats adapted to the cultural context and in the language used in the territories is crucial to raising awareness about the impacts of climate change. While it is true that to date INSIVUMEH produces informational bulletins, local actors do not use the information preventively because of the formats used. Consequently, through Output 3, the project will use existing information to generate complementary agro-climate information and make it available to users in a culturally relevant format and designed specifically for early warning with respect to agricultural and watershed management. Likewise, working with Municipal water companies on modelling water yields using InVEST models will confer an important monitoring and decision-taking tool and new management capacities for climate change adaptation. To ensure both sustainability and uptake of this component, training will be provided in data interpretation and channeling, equipment maintenance, and post-project monitoring of system sustainability.
126. Concerning contributions to innovation, market development and transformation, the project will develop an innovative financing scheme (grant facility) that will provide seed financing to communities, offering access to funds they would not otherwise be able to obtain and permitting the transformation of current practices in favor of EbA through climate-smart agricultural, agroforestry and forestry projects. Such mechanisms are new to the country since national banks consider them risky, so there are no financing windows for producers to improve the climate-responsiveness of their agricultural and forestry practices. On the other hand, the grant facility will catalyze leveraging by beneficiaries (in cash and in kind) that would not be obtained otherwise, which will increase investments in adaptation.
127. It is thought that the grant facility will also strengthen the social capital in the region, as represented in second-level organizations. For example, organizations with programs aimed at marginalized groups will benefit from this mechanism, such as CDRO, Sotzil and Utz'che', which have programs for women, youth and minority groups.
128. In summary, the project's three components were designed to create enabling conditions for the effective and sustained participation of private sector actors (small-scale producers participating in the program) and those in the public sector involved in the development agenda, and in this way build resilience that goes beyond the program.

E.2.4. Contribution to regulatory framework and policies

129. The strategy for scaling-up is also dependent on advocacy activities between public institutions of the central government (INAB, CONAP, MARN and MAGA) and municipal authorities to adopt EbA criteria and methods. For this, the project will strengthen technical and institutional capacities, targeting extension services in particular, fostering the inclusion of EbA in requests for forestry incentives, and including activities to disseminate results in forums at the regional and national levels. First, the project will implement specific cases in 4 watersheds, 5 sub-basins and 20 micro-basins of the Guatemalan Highlands that are being impacted by extreme climatic events and by increases in average annual temperatures. In these territories,

climate-smart agriculture will be promoted to reduce the vulnerability of production systems, and an EBA will be encouraged to contribute to the provision of environmental services for the purpose of water supply in populated centers. At the same time, the Project will strengthen the technical teams of institutions of the central government (MAGA, MARN, INAB and CONAP), as well as municipalities, civil society and academia.

130. The current legal framework in Guatemala for the development and implementation of climate-responsive programs and projects is the Climate Change Framework Law (LMCC) regulating the reduction of vulnerability, mandatory changes addressing the effects of climate change, and mitigation of greenhouse gases. To operationalize the LMCC, a national climate change plan (PANCC) was developed, which incorporates not only mandates of the Law, but also commitments assumed in the NDC²⁸.
131. The project will be coherent with this plan and specifically support adaptation lines related to: i) agriculture, livestock and food security; ii) forestry resources, ecosystems and protected areas; and iii) integrated water resource management.
132. In the line of Agriculture, Livestock and Food Security, the project will support and respond to the following actions prioritized in the PANCC: i) Design and implement methodology for measurement, capture and analysis of information to prepare climate change adaptation and vulnerability indices; ii) Regulate participation and strengthen early warning systems with respect to food and nutritional insecurity, harvest forecasts and vulnerable farming areas, taking traditional knowledge into account; iii) Provide technical assistance for agricultural and livestock producers to implement water and soil adaptation and conservation practices; iv) Strengthen the National Rural Extension System (SNER)²⁹; and v) Promote the establishment of agroforestry systems in zones repeatedly affected by the effects of climate change.
133. With respect to forest resources, ecosystems and protected areas, this initiative is supported and coherent with the following PANCC actions: i) Sustainable management of forest ecosystems to reduce vulnerability to climate change, taking traditional governance systems into account, in indigenous forests and territories; ii) Strengthening and implementation of incentives schemes for the conservation, protection, restoration and management of forest resources and biodiversity; iii) Implementation of guidelines on forest restoration and management based on use capacity and the forest restoration map prepared by INAB; iv) Promotion of forest plantations for production purposes, prioritizing lands with this use capacity and taking environmental and social safeguards into consideration; v) Implementation of forestry incentive projects to establish plantations for sustainable logging, involving organized groups at the community level and indigenous groups; vi) Expanded coverage of strategic forest ecosystems vulnerable to climate change; vii) Formulation of land use plans contemplating integrated watershed management, productive landscape and biological corridors, respecting customary laws.
134. In the line of integrated water resource management, support will be provided for specific actions in: i) Participatory formulation and updating of instruments for integrated water resource management with watershed and climate change approach, with gender equity and cultural relevance; ii) Watershed management plans, land use planning with watershed approach and others; iii) Development and implementation of an awareness, education and capacity building program on climate change adaptation measures aimed at integrated water resource management with gender equity and multi-culturality.
135. Another instrument the project will work with is INAB's PINPEP and/or PROBOSQUE incentives program, which promote forestry development through sustainable management of forests, reducing deforestation on land with forest vocation, promoting reforestation on forest areas currently without forest, and raising productivity. Although both programs are of national importance, they have no criteria aimed at climate-responsive actions or that prioritize incentives based on vulnerability or adaptation criteria. To systematically

²⁸ The way the PANCC incorporates the NDC is discussed in section C.1. Strategic Context.

²⁹ The SNER is operationalized through the Learning Centers for Rural Development (Centros de Aprendizaje para el Desarrollo Rural-CADER), which is where the project will have direct impact.

drive investment in adaptation, the project will work in coordination with INAB to have climate change included in the criteria for assigning incentives. It will also carry out actions for the prioritization of the project zone of influence in awarding those incentives, so that the program helps to improve planning and development of climate-responsive actions in the Guatemalan Highlands. Thereafter, adaptation investments could be expanded to other vulnerable areas, giving further opportunity for EbA implementation.

136. The current discussions of a new draft Water Law will unfold as the project is implemented, which will prove opportune given the body of evidence and recently-collected information, the mobilization of stakeholders and the political visibility and coordination around watershed services that will be facilitated by the project. Full advantage can be taken of having a legislative agenda item focused on water resources and governance, and having this project target key water catchment areas in the Guatemalan Highlands. Working closely with MARN, as the main agency sponsoring the draft water bill, this new legal framework may gain acceptance faster following a coordinated socialization strategy and multi-stakeholder dialogue, facilitated by the project. Notwithstanding, legislative processes usually entail a strong degree of uncertainty regarding the final content of the law and timing of approval.
137. Norms and regulations for PROBOSQUE and PINPEP are required in order to provide technical specifications for the preparation of Management Plans. These instruments are regularly revised and adopted by INAB's Directive Board. Given the need to mainstream EbA criteria into the approval of forest management plans and allocation of incentives, this project aims to revise PROBOSQUE's and/or PINPEP's current normative to introduce water catchment area prioritization criteria, and improve specifications for agroforestry /silvopastoral systems (selection of tree species, required tree densities, etc.) among other indications. A key platform to achieve these changes is the project's Technical-Scientific Committee, in charge of knowledge management and generating policy recommendations that emerge from the Project. Technical experts from INAB, MARN, academia and IUCN are members of the Committee.
138. Municipal ordinances are legally-binding instruments that can be issued with relative ease for specific purposes, such as the inclusion of women in COCODEs or the designation of upland forests for protection under hydrological criteria. These local instruments, which can be readily promoted through the project, are a convenient means to institutionalize solutions for climate-resilient watershed management, and thus strengthen the regulatory framework for climate change resiliency.
139. Another important aspect related to how the project strengthens national frameworks to promote climate-responsive development is through its investment in field projects. While it is true that the regulatory frameworks consider adaptation vital, thus far public expenditure by the Guatemalan government for this purpose has been quite low. A study made by MARN with support from ECLAC indicates that from 2011 to 2014, investment in climate change was barely 0.93 % of the national budget, fairly low considering that losses from drought and flooding amounted to more than US\$1.3 million in the last decade. Initiatives such as this project are therefore crucial to meeting climate change needs which would not otherwise be covered due to lack of public funding.
140. To conclude this section, because the country is currently formulating the Country Work Programme for the GCF, this project would constitute MARN's first effort in commitment to the work of the GCF. Thus, a project that prioritizes an ecosystem-based adaptation approach in support of water resource management will become a strategic reference to guide, encourage and provide lessons for the strengthening of climate policies and programs in Guatemala.

E.3. Sustainable Development Potential

Wider benefits and priorities

E.3.1. Environmental, social and economic co-benefits, including gender-sensitive development impact

141. The IUCN Programme 2017-2020 was approved by 1300+ Member organizations at IUCN's World Conservation Congress in September 2016 in Hawaii, USA. The Programme is aligned with the 2030 Development Agenda as part of the comprehensive approach of IUCN work in the field. In this sense, this project is aligned directly with SDGs 5, 13 and 15. Important contributions to SDGs 1, 3, 6 and 10, will also be made. Furthermore, the strategic alignment with Guatemala's priorities outlined in the National Development Agenda K'atun 2032 will bring wider benefits for the people in the Highlands.
142. Over one million people live in the influence area of the project, of which 83% has been identified as indigenous population. Given the existing inequalities still prevailing towards Guatemala's indigenous population, this project represents an opportunity to bring social, economic and environmental co-benefits to vulnerable groups, including women and youth.³⁰
143. Gender will be mainstreamed through the selection criteria for restoration options, capacity building activities, investment and grants provision; and specific attention will be paid to gender analysis in the project monitoring system. Affirmative actions are planned to contribute to women's empowerment in the Guatemala Highland context. A previous analysis has been carried out for implementing the National Restoration Strategy with a gender approach and balancing the opportunities of accessing benefits between men and women, based on IUCN's gender-responsive restoration guidelines³¹. The project recognizes that participation of women will have a large bearing on the success of its outcomes. Mechanisms to ensure their participation have been developed in the three project results and indicators. In particular, in the Output related to the grant mechanism for increasing climate smart investments, attention will be paid to strengthening specific women groups' involvement in the management of productive systems according to their priorities and needs.
144. Several socio-economic benefits will be derived with the introduction of sustainable watershed management practices with positive effects on local livelihoods, including:
- Generation of 1,755,000 daily wages, equivalent to 6,750 jobs improving the income of 82,000 people. [2]
 - Delivering capacity building to 132,000 people, with at least 30% representation of women, in a wide range of topics aimed at increasing ecosystem and social resilience.
 - Awareness will be raised about climate change effects and adaption in 237,000 people living in the target watersheds and neighboring areas.

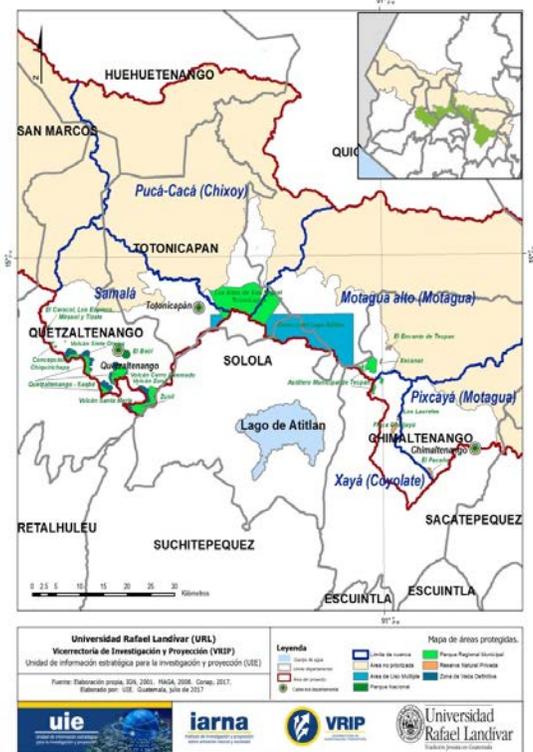


Figure 7. Protected Areas in Project Area

³⁰ A recent study reveals that for every quetzal that the state devotes in non-indigenous population, it spends only 0,4 quetzal in indigenous populations.

http://icefi.org/sites/default/files/cuanto_invierte_el_estado_en_los_pueblos_indigenas.pdf

³¹ <https://portals.iucn.org/library/node/46693>

² According to INAB data, 78 daily wages per hectare are created with Forest incentives. It is assumed that 260 wages make up one job. <http://portal.export.com.gt/Portal/Documents/ImgLinks/2010-11/7582/Indicadores%20Empleo%20Rural.pdf>

- At least 82,000 people will benefit from direct access to climate finance. Working with community based organizations and cooperatives with existing infrastructure, networks and linkages to local and domestic markets will bring opportunities to engage with value chains and add value to existing products.
 - Forest management practices including sustainable use of firewood and timber products will benefit 50,000 people relying on firewood as a main energy source, a common characteristic of the Highlands' livelihoods.
145. Moreover, several environmental benefits will be derived from the project, including:
- Protected biodiversity in at least 6600 has, as part of protection of forest, and connectivity improved for over 26 k hectares of officially declared protected areas in the target watersheds (see Figure 5)
 - Improvement of soil fertility in 22,500 has and reduction of soil erosion in 3.47 million tons
 - Reduced agrochemical use in agricultural and agroforestry systems supported through promotion of best practices and organic production methods under the Grant Facility and by means of the CADERS.
 - Carbon sequestration estimated at 2.24 million tons, via improvement of agroforestry with annual and permanent crops, forest protection and restoration and rehabilitation of protected area.
 - Additional ecosystem services which will be derived from the project include improved pollination, and improved water provision for neighboring cities and towns.³²

E.4. Needs of the Recipient

Vulnerability and financing needs of the beneficiary country and population

E.4.1. Vulnerability of country and beneficiary groups (Adaptation only)

146. Guatemala is one of the top 10 countries most affected by climate change and one of the most vulnerable to natural disasters, according to the Global Climate Risk Index. As mentioned in section C2, studies by IARNA (2011) found that the country's most vulnerable areas in the medium term (2050) are the Guatemalan Highlands (mainly the valleys of the Motagua-Cuilco and Selegua basins), the east-west zone in the center of Petén (Arco de la Libertad), the northern transverse fringe (Franja transversal del norte), as well as other mountain systems.
147. Guatemala's western highland is one of the most densely populated areas of the country (200 inhabitants/km²); 92% of the population is indigenous, 70.5% is rural and the main source of income is agriculture (67.5%). This zone is one of the most threatened by climate change in the country due to both environmental conditions and social vulnerability. It has the highest rates of poverty (83.5%), extreme poverty (33.2%), illiteracy (25.7%) and food insecurity (food and nutritional security index of 0.79). In four of the five departments making up the western highland, delayed growth is prevalent in children under five years of age, higher than the national average. Three of those departments have the highest level of growth delay in the country, and in two of those departments, 40 to 62% of children under five are anemic (MSPAS, INE, CDC, 2015).
148. Land is primarily used for farming and grazing (73%), and while these zones are steep-sloped with shallow and rocky soils, barely 22% of the total area is covered by forest. Due to the lack of conservation practices and poor soil management, 4,231,435 tons of soil are lost to water erosion, or 36 t/ha, higher than the national

³² Two of the watersheds targeted by the Project are major providers of water for the two main Guatemala's cities: Samala basin provides 80% of water to the city of Quetzaltenango, ((Macario, 2017). Fuente: Macario, R. (2 de Junio de 2017). (Miguel Martínez Tuna, Entrevistador)whereas the Xaya-Pixcayá Basin provides 15% of water to Guatemala City (IARNA-URL y TNC (Instituto de Agricultura, Recursos Naturales y Ambiente de la Universidad Rafael Landívar y The Nature Conservancy). (2013). Bases técnicas para la gestión del agua con visión de largo plazo en la zona metropolitana de Guatemala. Guatemala. IARNA)

average (20 t/ha). Despite the uneven topography exposing these areas to severe loss of top soil, along with a high percent of over-utilized land (35%), water availability is currently high at 7,926,000 m³/year. This situation is not going to last long, however, since climate change forecasts indicate that the Guatemalan Highland will be among those suffering greatest hydric stress in the medium and long term (see section C2). This can be observed in the “Index of Hydric Stress in 2050,” based on potential demand (human consumption) and hydric supply (surface water only). Prepared by BiotaSA and TNC (2014), this map shows areas with greatest hydric scarcity in orange and yellow, coinciding with the project’s areas of influence. Management practices and current forest coverage in the zone reduce the landscape’s capacity to regulate the hydrological cycle; so if these patterns continue, the zone will be even more greatly affected by climate change.

149. Given the region’s socioeconomic conditions, scarce government and private investments, high vulnerability and the gaps to will be filled by the project, this initiative is clearly vital to making sure that beneficiaries adapt to the impacts of climate change.

E.4.2. Financial, economic, social and institutional needs

150. Data of the World Bank shows that while Guatemala is a medium-income country and has the largest economy in Central America; it also has one of Latin America’s highest rates of inequality and one of the worst rates of poverty, malnutrition and mother-child mortality in the region, especially in rural and indigenous areas. Public investment is essential to overcome these problems, but constrained by lack of resources given that the country has one of the world’s lowest government revenue bases in relation to the size of its economy (World Bank, 201733). Given this situation and that climate-responsive investment is not a priority (between 2011 and 2014 it accounted for barely 0.93% of the national budget), the most vulnerable populations would seem to have few hopes for effective adaptation.
151. In addition, Guatemala relies heavily on agriculture, both for food production and for employment. According to USAID, the main climate concerns in Guatemala revolve around agriculture and threats to natural resources. Climate change poses a significant threat to food security and water security in Guatemala, particularly due to the agricultural sector’s reliance on rain-fed irrigation systems. This sector includes both subsistence farming, small-holder forestry producers, and key agricultural exports such as coffee, sugar, bananas, and vegetables, all of which are climate-sensitive crops.
152. As explained in section E2.4, the current very low investment in response to climate change must be boosted and international financing sources sought. The GCF will provide resources for restoring critical habitats in the Guatemalan Highlands. Watershed restoration activities (reforestation, better agricultural and agroforestry practices, and sustainable land use) will improve ecosystem health and increase the amount of water in watersheds. GCF funds will help to identify and support alternative livelihoods for communities adjacent to forests, which is not feasible with the national budget alone if both productivity and adaptation capacity are to be significantly improved. In addition, the project will address capacity and institutional deficiencies related to sustainable planning and regulation of natural resources, and reduce the climate change policy implementation gap that exists (see section C2).
153. The PANCC prioritizes the need to strengthen the implementation capacity of institutions, especially MAGA, MARN and INAB, to integrate climate hazards and impacts into operational planning, budgeting and execution. With this initiative, these institutions will be strengthened through the provision of capacities in technical areas and in implementing and supervising actions for adaptation to climate change, along with climate monitoring and early warning, which will be expanded to involve municipalities, academia and civil society.
154. Moreover, this project will improve the income opportunities of the most vulnerable groups in the Guatemalan

³³ World Bank. (7 April 2017). The World Bank in Guatemala. World Bank. Obtained from the World Bank In Guatemala. Overview: <http://www.worldbank.org/en/country/guatemala/overview>

highland (men and women engaged in subsistence agriculture), as well as raise the skill set of vulnerable communities so they can access participation in income-generating activities. Gender balance between men and women will benefit the entire segment of communities by helping beneficiaries diversify their crops, improve their skills and access financial resources. The resources of the GCF will also help to reduce environmental vulnerability, and boost the overall economic and social development of the beneficiaries. It should be noted that without this intervention, subsistence farmers will not be able to diversify their crops and income in order to adapt to the hazards and impacts of climate change.

E.5. Country Ownership

Beneficiary country (ies) ownership of, and capacity to implement, a funded project or programme

E.5.1. Existence of a national climate strategy and coherence with existing plans and policies, including NAMAs, NAPAs and NAPs

155. As explained in section C.1, in Guatemala the long-term national development policy articulating plans, programs, policies and investments is the K'atun Nuestra Guatemala National Development Plan 2032, which brings together the PANCC, NDCs and Forest Policies, which are the main policy instruments supporting this initiative (more details in section C.1).
156. The project is aligned with PANCC (National Climate Change Action Plan) and will support several prioritized adaptation actions, particularly: i) Strengthen early warning systems on food and nutritional security, harvest forecasting and for vulnerable farmlands; ii) Provide technical assistance to agriculture and livestock producers to implement adaptation and water and soil conservation practices; iii) Strengthen the National Rural Extension Service (SNER); iv) Promote the establishment of agroforestry systems in areas repeatedly affected by the effects of climate change; v) Sustainable management of forest ecosystems to reduce vulnerability to climate change; and vi) Strengthen and implement incentives schemes aimed at the conservation, protection, restoration and management of forest resources and biodiversity (more details in section E.2.4).
157. With respect to the NDCs, the project contributes to: i) the Strategy for Reducing Emissions from Deforestation and Forest Degradation (REDD+); ii) implementation of government institutions' climate change agendas in relation to compliance with Art. 20 of the UN Framework Convention on Climate Change, mainly with the implementation of the Biodiversity and Climate Change Strategy; iii) strengthening of the National Forest Fire Prevention and Control System (SIPECIF); iv) strengthening of the National Rural Extension System (SNER); and v) the development of institutional annual operating plans linked with the agricultural sector and programmed around micro-watersheds.
158. In relation to financing, the NDCs propose establishing several funds that have not yet materialized, but ultimately acknowledge that the State budget does not have enough resources to cover the extensive and profound gap for addressing the effects of climate change and achieving NDC commitments, capacity building, adaptation, reduction of vulnerability and mitigation.
159. In relation to the Forest Policy, the project is articulated with the following areas: i) contribution to the strengthening of the Guatemalan Protected Areas System (SIGAP) and protection and conservation of strategic forest ecosystems; ii) fostering productive management of natural forests; iii) promotion of plantation silviculture; and iv) promotion of agroforestry and silvopastoral systems in land with forest vocation. For this, the project will work with INAB's PINPEP and PROBOSQUE incentives programs promoting the country's forestry development through sustainable management of forests. Project content in relation to PINPEP and PROBOSQUE incentives is also in line with the NDCs.
160. The table below summarizes the way in which project components correspond to each of the aforementioned policy instruments /frameworks:

Table 4: Project components and policy instruments

Project Result Areas	Key National Policies and Strategies			
	PANCC	NDC	Katun N.D. Plan	Forest Policy
Output 1. Climate smart integrated watershed management				
Output 2. Community – led watershed management systems promoted through grant facilities.				
Output 3. Climate related information provided to farmers and target stakeholders				

E.5.2. Capacity of accredited entities and executing entities to deliver

161. Created in 1948, the International Union for the Conservation of Nature (IUCN) is a Union of Members composed of sovereign states, government agencies and civil society organizations. Headquartered in Switzerland, IUCN makes available to public, private and non-governmental entities the knowledge and tools that make human progress, economic development and the conservation of nature possible.
162. **IUCN** contributes to the identification and implementation of pragmatic solutions to the challenges of conservation and development facing the planet. IUCN work focuses on the following topics: biodiversity, climate change, energy, livelihoods and promoting the green economy through scientific research and on-site implementation of projects and initiatives. IUCN has the expertise, resources and reach of its more than 1,300 member organizations and the contributions of more than 16,000 experts. IUCN is the world authority on the state of nature and natural resources, as well as the measures necessary to protect them. IUCN is a multicultural, multilingual organization with more than 1,000 staff members established in more than 50 countries.
163. IUCN has worked in Mesoamerica and Guatemala in particular for over 20 years, currently deploying nature based actions through more than 25 on-site projects and initiatives in partnership with local and national governments, CSO, and CBOs in the Region.³⁴ In Guatemala, with the opening of its office in 1996 and its recognition as an International Organization, IUCN has strengthened its presence and installed capacity with local, sub-national and national projects and the insertion of Guatemala's initiatives in the Central American Region in the following themes: landscape restoration, value chains to improve livelihoods and conservation of natural resources, watershed management, ecosystem-based adaptation and REDD.
164. IUCN has a long standing experience managing grant mechanisms, among the most important are the Fund for Advocacy and Research in Environmental Policy (FIE in Spanish) as part of the Regional Environment Program for Central America (PREMACA in Spanish), supported by the Danish cooperation. It was established as a competitive fund to finance small projects (up to US\$ 50,000) and operated between 2006 and 2012. It served to strengthen and promote advocacy capacities in civil society organizations, related to the implementation of local, national and regional policies, legal frameworks and environmental regulations linked to sustainable development. FIE funded 185 projects in six countries, totaling US\$ 4,8 million that were disbursed through six different calls of proposals.

³⁴ <https://www.iucn.org/en/Regions-central-and-the-caribbean/our-work>

165. Mangroves for the Future (MFF) have worked since 2007 with countries in the Indian Ocean Region. It is co chaired by IUCN and UNDP with financial assistance from NORAD, SIDA and DANIDA. Between 2009 and 2013, over 200 coastal projects were completed for an estimated value of US\$ 5 million, due to their success, the grants facility has secured funding until at least 2018. IUCN has been playing an active role giving technical assistance to governments and nongovernmental organizations and monitoring, and evaluating the impact of the investments.
166. IUCN HQ Financial Unit worldwide managed during 2016, close to CHF 129.9m including public and private sources – governments, multilateral agencies, foundations and trusts, businesses, individuals and non-governmental organizations. Governments and multilateral institutions continue to be IUCN's largest donors providing both core and programme support. IUCN regional office committed project portfolio is US\$75M. As a global organization, IUCN is committed to excellence, transparency and accountability in its work processes and provision of services, responding to our constituent. We recognize that these principles are part of good governance and are reinforced through policies and regulations which rule day-today life in IUCN.³⁵
167. **FCG** was created in 2000, as a financial mechanism for the conservation of biodiversity, sustainable development and adaptation and mitigation to climate change. Since 2008, FCG has administrated projects for US\$4 million. Moreover, FCG is the manager of the Tropical Forest Conservation Fund, FCA that has approved to date grants for approximately US\$ 14,8 million as part of the debt-for-nature swap with the USA, during 4 project cycles.
168. FCG has a suitable scheme for the implementation of large, medium and small scale grant programs, including developing project calls, evaluation and selection of proposals, technical and financial monitoring, evaluation of results, reporting, and closing projects. The transparency of its operations is supported by annual external audits and, institutional capacities (Board of Directors; strategic frame; integrity management; communication and public image; human resources; fund raising, funds allocation and financial controls; operations; results and continuous improvement) have been certified in 2014 and 2016 by the SGS Certificate of Good Practices (NGO Benchmarking). FCG has been evaluated and positively qualified for the management of German Financial Cooperation Layout Funds. It was also evaluated for the management of the FCA by the Secretariat of the Tropical Forest Conservation Act (TFCA) of the United States of America. Both evaluations have supported the capacity of FCG for the implementation and administration of funds and projects. FCG has its legal records and tax obligations duly complied with an active and solvent status which reinforces the FCG capacity and suitability for the development, implementation and administration of funds for large, medium and small grants.
169. **URL-IARNA** is the leading knowledge center in Guatemala for the generation of climate change related information providing analysis for the dynamics, processes, and trends of the natural environment, seeking rational and equitable access to environmental goods and services for all human beings and the development of alternatives to achieve a just, inclusive and sustainable society .
170. URL-IARNA work has largely focused on the analysis of the causalities that characterize the relations between the environment and the economy, the sociocultural dynamics and the role of the institutions, which will generate elements to explain the role of the natural environment in vulnerability and will feed back different Risk management mechanisms. IARNA contributions to climate change related knowledge in Guatemala is reflected in the following work: climate change scenarios³⁶, climate change and biodiversity³⁷, and climate change impacts on different sectors.³⁸

³⁵ <https://www.iucn.org/es/secretaria/responsabilidad-y-valores>

³⁶ <http://www.url.edu.gt/publicacionesurl/ppublicacion.aspx?pb=371>; and

<http://www.url.edu.gt/publicacionesurl/ppublicacion.aspx?pb=42>

³⁷ <http://www.url.edu.gt/publicacionesurl/ppublicacion.aspx?pb=399>

171. Relevant to the implementation of the project, URL IARNA has developed standalone knowledge products regarding options and measures of adaptability of rural communities in Guatemala. Using participatory methods research has based on measuring the impacts of climate change on indigenous livelihoods with in field projects with the purpose of identifying maize and bean varieties that are resistant both to Drought (in the presence of the El Niño Phenomenon), as well as times when there is excess water (in the presence of the La Niña Phenomenon) ³⁹
172. URL-IARNA installed infrastructure through the University campuses and qualified technical staff in the project area is quantified to be worth over US\$1 million for the lifespan of the project. Project portfolio under implementation accounts for US\$ 4 million.

E.5.3. Engagement with NDAs, civil society organizations and other relevant stakeholders

173. The Ministry of Environment and Natural Resources (MARN) is the NDA for the GCF for Guatemala, and has been the leader in the development of this project. In May 2016, MARN requested IUCN to provide technical guidance and jointly design a project focused on adaptation and watershed management to be presented to the GCF. As a result of this formal request, a technical committee for the development of a concept note was established including INAB, MAGA, MARN and IUCN technical staff. The URL/IARNA was identified as a potential partner for the project and joined the committee shortly after. During several technical meetings it was evident that the region of the Highlands was a priority area to be targeted in the light of climate change effects in Guatemala.
174. Korea International Cooperation Agency - KOICA - expressed its interest in joining the project committing important co-financing resources. Based on KOICA intention, meetings were held with the technical committee to learn more about the objectives of the project and define the Agency's contribution by Output.
175. After receiving feedback from the GCF on the submitted concept note, stakeholder consultations were held across the Highlands: three workshops were held with local producers in the Departments of Huehuetenango, Quiché, Chimaltenango, and Quetzaltenango. Appropriate methodologies were developed to ensure effective and active participation of women and men (see table 5). In addition, two workshops were held for technical staff from government institutions, local municipalities and CBOs to validate the project approach, activities and receive feedback. A detailed report of the consultation process can be found in Annex 13. The main results and feedback received during consultation workshops were integrated into the project document and a give-back session was conducted with the technical committee for final validation.

Table 5: Stakeholder participation ratio by gender and indigenous criterium

Consultation site	Men	Women	Indígenas
Huehuetenango	57%	43%	68%
Quiché	54%	46%	83%

³⁸ <http://www.infoiarna.org.gt/rediarna/2012/Red%20Informa%2010/adjuntos/suplemento-cc.pdf> y <http://www.infoiarna.org.gt/rediarna/2016/Red%20Informa%207/Adjuntos/Gota%20a%20gota-baja-resolucion.pdf>

³⁹ [http://www.infoiarna.org.gt/rediarna/2014/Red%20Informa%2013/Adjuntos/ Study-impact-variability-climate-agriculture.pdf](http://www.infoiarna.org.gt/rediarna/2014/Red%20Informa%2013/Adjuntos/Study-impact-variability-climate-agriculture.pdf)

Chimaltenango	50%	50%	56%
Total	54%	46%	71%

E.6. Efficiency and Effectiveness

Economic and, if appropriate, financial soundness of the project/programme

E.6.1. Cost-effectiveness and efficiency

176. The project will support the use of methodologies and technologies tested by IUCN in other regions of the country and endorsed by the Government of Guatemala. For this, the present initiative involves a donation of US\$31,5 million in cash (\$22M GCF, \$4.5M KOICA and \$5M INAB). An additional US\$6 million have been leveraged from GoG as in-kind support. This funding is adequate for the scope of the project; the estimation of required finance is calculated on the basis of previous projects budgets, including Mi Cuenca developed by IUCN in the Guatemalan Highlands.
177. The present initiative will contribute to the reduction of economic losses related to the effects of ecosystem degradation and climate change (such as longer heat waves and reduced access to water in the dry season). These losses can have significant economic and social impacts on Highland regions, and can accrue costs several fold higher than those of the proposed interventions.
178. The project will also facilitate the establishment of monetary flows for extension services, which are an essential part of ensuring technical viability of field projects, helping to raise their financial viability too. In addition to financial resources in the form of grants, it will also mobilize other stakeholders (second level organizations) and partnerships to create viable business models for the efficient and effective delivery of climate information and services. By attending to these strategic needs, the project is therefore achieving greater cost-effectiveness in its investments.
179. The mainstreaming of EbA into existing forest incentive schemes will prove a highly cost effective means for implementing concrete adaptation actions on-the-ground, without the creation of additional bureaucracy or the need for a new financial architecture.
180. Further cost effectiveness and efficiency will be achieved through the grant facility, which has been conceived to attend both to national priorities and local needs, and will be administered by FCG, an entity with extensive experience in grant approval, management and oversight.
181. Efficiency is also attained by investing mostly in strengthening, and working through, existing structures such as sub-basin /basin committees and second order organizations and associations, by building on existing programs such as Centro Clima (a clearing house mechanism for the exchange of climate information) initiated by USAID's Regional Climate Change Program (RCCP) as well as government support programs such as the SNER, and by using (in as far as possible) capacity building and dissemination materials that have already been developed and deployed in similar settings. This approach, which aims to capitalize on prior progress, lessons and resources, not only means that results and agreements could be attained sooner, and/or at lower costs, but also raises the sustainability of the capacities being built.
182. Projects are considered to be economically efficient when the value of the economic benefits of the initiative is at least as great as the value of what society has to abandon for its execution (i.e. the economic costs of the project). In other words, the project is economically efficient when the benefit / cost ratio is greater than one. In the case of the present project, it is 1.37.
183. To estimate the value of the project in the Guatemalan Highlands, two main classes of benefits should be considered for the 22,500ha targeted (12,500ha under Output 1 and 10,000 hectares targeted through the grant mechanism, Output 2).

184. The first class of benefits consists of the financial benefits that the population will receive from the assets that will be generated through the initiative. In this case in particular the activities to be implemented and the goods generated will be:
- Agroforestry systems with permanent crops and permanent crops (fruit trees). These will include systems producing peaches and apples, as well as coffee.
 - Agroforestry systems with annual crops. The following crops were analyzed: French bean and pine in association, maize, bean and pine, and maize and alder
 - Silvopastoral systems. In this study the costs and benefits of systems using sheep with dispersed alder trees were estimated.
185. The second group of benefits corresponds to environmental services generated by ecosystems. The following services were evaluated: water supply, avoided erosion, and carbon fixation. Additional benefits from fuelwood and timber have not been considered.
186. Taking into account environmental products and services, the NPV of the project over a 20-year period is US\$ 125.97 million, with an IRR of 58.75%. Sensitivity analyzes were performed with different scenarios: i) increase in production costs; (ii) lower gross income; And (iii) and (iii) simultaneous increase in costs and decrease in gross income. In any of the scenarios, the NPV is positive, with an IRR above the reference discount rate. Consequently, the project profitability is considered to be viable. In addition, other sensitivity scenarios were designed to assess the effect of climate change (see Annex 3)..

E.6.2. Co-financing, leveraging and mobilized long-term investments (mitigation only) N/A

N/A

E.6.3. Financial viability

187. The granting of resources to develop the present project by the GCF will help eliminate existing barriers to support investments, which because of their primarily public nature do not involve income generation or cost recovery over the duration of the project. Therefore, a detailed financial analysis of this project is not considered relevant.
188. Financial and technical barriers to the creation of an enabling environment for the restoration of degraded ecosystems and strengthening access to reliable climate information and early warning systems in the country can only be eliminated through public investments financed through donor resources from international agencies.
189. The private sector in the Guatemalan Highlands that is directly affected by ecosystem degradation and / or has a direct incentive for its restoration and the collection of early warning information is mainly comprised of individual farmers from poor and vulnerable communities or micro- and medium-sized peasant enterprises. This is why it is difficult to predict if there will be an income generation or recovery of the investment costs of the projects or the co-financing of these groups for this project.
190. However, the project involves engaging with farming communities in the areas of restoration, imparting better agricultural, agroforestry and forestry practices, climate-smart technologies, developing business skills (Output 1) and giving access to financial mechanisms (Output 2). These project activities, while strengthening the resilience of communities and ecosystems, will also improve livelihoods and income-generating capacities of these vulnerable communities, thus increasing their willingness to pay for these ecosystem services in the near future.
191. The project also aims to involve the private sector in the dissemination of climate information and early warning systems (Output 3). This could in the future stimulate the demand for value-added products and services based on climate information from agricultural communities and small and medium-sized enterprises

in the project area, which in turn could generate income and co-finance them in the mid- to long term and thus support the financial sustainability of the project beyond the proposed duration. However, this income from the private sector is highly speculative at the moment and therefore a financial analysis of this project is not included.

192. Financial risks to GCF investments are low, given the high level of country ownership, the support rallied in the form of co-financing and partnerships, and the cost efficiencies inherent in the project's design and delivery approach. The project's financial viability is further heightened by the strong and trustworthy reputation held by each of its executing partners.

E.6.4. Application of best practices

The project will benefit from the application of validated approaches, methodologies and tools implemented in Central America, and in particular in Guatemala:

193. **EbA and restoration approaches, tools and practices.** Ecosystem-based-adaptation (EBA) approach <http://pubs.iied.org/17606IIED/> and validated tools within the framework of IWRM and lessons learned on watershed management from experiences throughout Central America, and in particular in Guatemala will be mainstreamed into the proposed project. EbA https://cmsdata.iucn.org/downloads/iucn_eba_brochure.pdf can entail a wide range of ecosystem management activities (from sustainable management and conservation, to protection and restoration of ecosystems) aimed at increasing resilience and reducing the vulnerability of people and the environment to climate change, based on natural solutions. Some of the best practices validated and that will be used are: i) watershed governance participatory tools at community level; ii) the CRISTAL methodology www.cristaltool.org to identify in a participatory way community vulnerabilities, risks and adaptation capacity to climate change; iii) InVEST designed for environmental services valuation for decision making. This tool has been used and adapted by IUCN to estimate the impact of restoration options at landscape level in Central America and in a total of 58 countries worldwide; iv) the Restoration opportunity Assessment Methodology (ROAM) (IUCN/WRI) <https://www.iucn.org/es/news/restauracion-funcional-del-paisaje-rural-un-manual-de-tecnicas> and associated tools for species identification and management, and guidelines of practices for restoration have been validated and are available for their scaling up.
194. In order to implement integrated climate smart watershed management, the above mentioned tools will be applied. IWRM plans will be developed in a participatory manner in order to achieve consensus agreements among various actors. Restoration options will be defined and implemented with sound information back up and ensuring the implementation of the right based approach. An innovation that will be emphasized is the link between restoration impact and climate smart water management. Then water security will be an essential criterion for decision making.
195. **Right based and gender sensitive approaches.** Several validated methodologies and approaches will be used to ensure social, cultural and organizational sustainability of proposed options for the management of soil and water. IUCN has been active in the design, promotion and application of those tools. <https://portals.iucn.org/library/sites/library/files/documents/2017-009.pdf> <https://www.iucn.org/theme/social-policy/our-work/rights-based-approaches> <https://portals.iucn.org/congress/fr/session/9769>
196. **Grant mechanism.** IUCN has managed grants that nurtured on-the ground-actions across several countries: the Mangroves for the Future (MFF) Initiative in Asia and the Fund for Advocacy and Research in Environmental Policy (FIE) in Mesoamerica <https://cmsdata.iucn.org/downloads/paths.pdf>. An effective grant – making mechanism must have a good architecture and the right tools, and be technically-sound. The joint experience of IUCN, FCG and other second level partners will allow designing and implementing an effective and efficient grant mechanism. This later will follow a bottom-up approach to ensure the definition of sound criteria (social, economic, organizational, financial and transparent). In addition, based on past and current experience of the forest incentive programmes (currently PROBOSQUE) in Guatemala and several

evaluations and assessments carried out, lessons learned from these experiences (success and failure) will be incorporated.

197. **Information for decision making.** IARNA has a long standing experience in generating and disseminating information for decision making at national and local levels, directly and/or through the regional centers of the University/URL in the Highlands. IARNA has strong installed capacities, information, methodologies and tools related to climate change analysis. The environmental profile of Guatemala is a reference source of information for policy decision makers, technicians and researchers. <http://biblio3.url.edu.gt/IARNA/MARN/GEO2009.pdf> <http://www.url.edu.gt/publicacionesurl/pPublicacion.aspx?pb=371>. Specific and relevant information has been provided also to strategically identify local vulnerability and risk <http://www.url.edu.gt/publicacionesurl/ppublicacion.aspx?pb=42>. With regard to IUCN, relevant experience generated through climatic platforms (Centro Clima/CATIE- IUCN- DAI –) for producers (coffee cloud <http://centroclima.org/coffee-cloud/#Home>) will be replicated for technicians and grass roots organizations to support technical assistance activities.

E.6.5. Key efficiency and effectiveness indicators

N/A

F.1. Economic and Financial Analysis

198. This project will restore the strategic ecosystems of the Guatemalan Highlands and the environmental services they provide, through sustainable land management and reforestation, as well as agricultural, forestry and agroforestry practices. Additionally it will help establish more resilient livelihoods that will reduce pressures on ecosystems and it will strengthen climate information and early warning systems for communities. Under a set of reasonable assumptions, the economic analysis demonstrates the social suitability of the proposed project.
199. The total benefits from field investments, as described in the project proposal, can be classified as follows:
- Direct financial benefits from restoration actions. This is the income that the population will generate through the implementation of agroforestry systems with permanent crops, agroforestry with annual crops, silvopastoral systems, and fruit trees.
 - Provision and recovery of ecosystem services from the restoration of targeted areas.
200. The actions described above as well as the protection and restoration of forests will generate a series of ecosystem services including regulation of water flows and erosion reduction, which will have a direct influence on water quality, carbon sequestration, ecosystem connectivity, pollination, disaster risk reduction, soil formation and aesthetic and spiritual values, amongst others. In the present analysis the valued benefits are generated by:
- Agroforestry systems with coffee, and fruit systems producing peaches and apples
 - Agroforestry systems with annual crops, such as: green beans and pine; corn, bean, and pine; and corn and alder.
 - Silvopastoral systems of sheep with scattered alder trees.
201. The following environmental services were assessed in the economic analysis: regulation of water flows, erosion reduction, and carbon sequestration. These services are provided by the above-described systems as well as by forest areas not suitable for agriculture, forest conservation areas and Category I protected areas.
- The assessment of water regulation was based on comparative data on water supply (INAB-Martínez Tuna, 2000) for maize and forest areas. It is assumed that forest inputs are similar to those provided by category I protected areas present in the project's area of influence. In the case of lands with restoration potential for protection and currently fallow lands, it is assumed that the water benefits will begin progressively from the fourth year (25% of the reference value in the fourth year, 50% in the sixth year, 75% in the eighth, and 100% in the tenth year). The same assumption was applied to estimate the benefit of water regulation in agroforestry systems, with a maximum of 75% of the value recorded in the case of forests.
 - Erosion control was estimated only for agroforestry systems, as current cropping practices cause agricultural systems to lose ground, thereby reducing water infiltration capacity and retention; thus, farmers tend to replenish lost nutrients with the use of fertilizers. Estimates of the erosion volumes that were used were those developed by García and Godoy (2017) for the Guatemalan Highlands. These authors compare the losses of traditional corn crops with the losses of the agroforestry systems of maize and alder. Because the practices to be implemented in the green beans and pine systems as well as the maize and pine systems are the same, it was assumed that the erosion values would be the same as those of the maize and alder system. The allocation of monetary values for the ecosystem service (erosion control) was made based on data generated for the area by Martínez Tuna (2002), who in a similar study developed for INAB, determined the costs per hectare of eroded soil based on the loss of elements (phosphorus, potassium, calcium, magnesium, copper, zinc, iron and manganese) that have to be reincorporated through fertilizers. It is important to emphasize that the estimates of the values of environmental services are quite conservative when compared with data generated for other regions, such as those in De Groot (2012) that exceed several times the values used here; hence an overestimation of expected economic benefits is highly unlikely.

202. In addition, the assessment of the water recharge service considering the potential of improvement of water yields in the prioritized area shows the following results: the net flow improvement with the project is expected to be 653,389 m³/year. This amounts to a conservative valuation of US\$26,742 (based on a cost of water of US\$0,041/m³); this estimation however does not consider the value of water and associated ecosystem services. Additional data and explanation is included in Annex 18.
203. The economic analysis of the project was carried out using a cost-benefit analysis methodology, in which flows were calculated for a period of 20 years. The economic efficiency of the investment was determined by calculating the net present value (NPV) with a discount rate of 6%⁴⁰ and the internal rate of return (IRR).
204. Economic values (costs and benefits) were measured in real terms for 2017. The economic costs of the project are net of taxes, tariffs and price contingencies. These values correspond to the contributions made by GCF, KOICA and INAB, the costs of establishing and producing agroforestry systems with permanent crops, agroforestry systems with annual crops, silvopastoral systems, forest areas not suitable for agriculture, forest conservation areas and Category I protected areas and the benefits that the population that produces maize will not receive from earmarking their land for project activities.
205. The benefits correspond to the income generated by agroforestry systems with permanent crops, agroforestry systems with annual crops, and silvopastoral systems; as well as ecosystem services (avoided erosion, water supply, carbon sequestration), and protected forests (water supply and carbon sequestration).
206. The NPV of the project over a 20-year period is estimated at US\$125.97 million, with an IRR of 58.75%.
207. The results of the sensitivity analysis suggest the conclusion that this project is socially desirable and that it is robust⁴¹. For example, if the value of ecosystem services is excluded and:
- A 10% increase in costs under the base case is assumed, the project's NPV is US\$92.3 million and its IRR is 37.06%.
 - Assuming a 10% decrease in benefits over the base case, the NPV of the project is US\$ 79.9 million, with an IRR of 35.68%.
 - Assuming a simultaneous 10% increase in costs and a 10% decrease in benefits, the project's NPV is US\$46.45 million and its IRR is 21.11%.
- In addition climate change impacts have been analyzed. See Annex 3 in which four climate change scenarios are included.
208. Some of the benefits of this project were not included in this analysis due to their more intangible nature and lack of data. These include, but are not limited to, forest ecosystem services such as pollination, biodiversity and connectivity, disaster risk reduction, recreational values, and the cultural and religious importance of forests in the region; monetary (timber) and non-monetary (firewood) incomes from the timber-yielding component of agroforestry or silvopastoral systems. Neither was the economic value of having accurate and

⁴⁰ This is the active interest rate in foreign currency, estimated by the Bank of Guatemala for the month of June, 2017. For more information see: <https://www.banguat.gob.gt/inc/ver.asp?id=/imm/imm80>

⁴¹ This statement is based on the comparison of price variations and the benefits from the variations in the consumer price indexes for corn, beans and apples for the period of 2011-2016 which corresponded to 5.79, 5.39 y 8.47% , respectively.

reliable climate information estimated, which will have a transformational impact on the lives of people in the selected areas.

209. The results and impacts of the proposed project are expected to spread throughout the Highlands, the project is expected to improve the lives of some of the region's most vulnerable people who depend on agriculture for their livelihoods.

F.2. Technical Evaluation

210. As an overarching approach for the project, integrated water resources management (IWRM) will be employed and be developed in a participatory manner, based on the experiences developed by IUCN in the area (WANI-Tacaná and Mi Cuenca projects). The Highland river basins that have been prioritized are Motagua-Cuilco and Selegua, based on projections concerning significant climate change impacts (see section C2), specifically the Samalá, Pucá, Cacá, Motagua and Xajá Pixcayá upper watersheds.
211. Specifically for Output 1, the first step will be to carry out a sub-basin /basin-level diagnosis, followed by participation and consultation processes and training of key stakeholders (on IWRM issues with an emphasis on climate change). This will include the implementation of the Free Prior and Informed Consent (FPIC) when applicable. Existing micro-watershed councils or similar bodies will be strengthened, or created if necessary. With this base, IWRM plans (which will have short, medium and long term goals) will be developed also in a participatory manner, in order to achieve consensus agreements between the various actors.
212. IWRM plans will be formulated through an iterative approach which will also ensure the empowerment and commitment of all participants. The plans are the tool that will define the actions to be implemented, the resources required, time horizons, and decision-making and implementation processes for each of the selected basins /sub-basins. Actions to be developed as part of the plans will include, but are not limited to, agroforestry systems with annual crops (including associations of green beans-pine, corn-beans-pine, and corn-alder); agroforestry systems with permanent crops, in which coffee and peach-apple systems have been prioritized; and silvopastoral systems including sheep and alder. The experience of IUCN and implementing partners have aided in prioritizing the aforementioned actions as they are adapted to the region, culturally relevant and financially viable; though adjustments can be made as necessary.
213. The forest areas not suitable for agriculture and forest conservation areas that have been targeted refer to protected forest lands, extremely sloped areas and riparian forests. These will be restored based on the representative species of ecosystems (pine, oak, alder, etc.). Forests that are in Category I protected areas, which are threatened by the advance of subsistence crops will be supported through a protection scheme that is based on soil vocation, current coverage and hydrological importance. These areas provide the greatest amount of environmental service benefits.
214. For the implementation of the scheme and its sustainability, the participation of local authorities, including municipal water offices, COCODES local development committees, and MAGA, INAB and MARN technical representatives is essential. The first step in the process will be their training and strengthening. Under this scheme the project will closely monitor the implementation of actions, facilitate joint work with each government entity, and allow climate change to be included within their operations. This is an innovative aspect given that, while it is true that this is a national priority, to date it has been not been put into practice in the field.
215. The financial resources for the implementation of actions will come from the GCF and KOICA, but also from the resources of the PROBOSQUE /PINPEP incentive programs. For local producers to access these resources they will need to meet a series of technical requirements. At this point, extension services will be provided

through municipalities and the pertinent government entities. Together with project staff, extension technicians will also closely monitor the development of the necessary documents and procedures to access the incentive program. From this, it is easy to conclude that institutional strengthening activities are fundamental, not only for the sustainability of the project, but also for its implementation in the field.

216. Output 2 is a grant mechanism that will channel the funds required to implement the actions prioritized in IWRM plans for selected priority areas. This component is fundamental for the development of the project since it fulfills several functions. The first is to offer a mechanism for awarding resources for the implementation of actions that promote sustainable land use practices. The second is to incorporate a strong technical support component and a strong monitoring and evaluation system to ensure sustainability and efficient accounting of results. The third is to become an innovative mechanism that will allow local groups to access funds that would otherwise not be available to finance the development of community-driven agricultural projects, agroforestry and climate-smart forestry, and conservation actions. The fourth and final one is to trigger leveraging on the part of the beneficiaries (cash and in-kind) that would not be otherwise obtained.
217. The grant mechanism will operate windows for both small- and medium-sized grants, aimed at institutions with varying capacities and scopes of action. This combination will assure an ample variety of actions-on-the-ground, wider geographical coverage, and a good level of inclusion by targeting grassroots and local organizations, together with second order associations that represent multiple producer groups. The actions to be financed will focus first-and-foremost on EbA as outlined in Annex 21, and will uphold principles of equity and inclusion.
218. Output 3 will provide timely and culturally-adapted climate information to farmers and other stakeholders for watershed management. For its design, a systemic approach will be used, based on the types of services required by farmers (to be determined through consultations and local assessments). Particular attention will be paid to the content, presentation and ability to interpret key messages and information, including language use, cultural relevance and simple visualizations (not in a technical or scientific format that could limit understanding).
219. Not only will the type of information be designed but also the way in which the early warning system for agriculture will work. While it is true that the system will work in coordination with existing INSIVUMEH platforms, Centro Clima, and with local non-governmental hydro-meteorological networks, it is necessary to complete some information through the installation of equipment in areas where basic weather data is scarce. The benefits of installing additional equipment (e.g. automatic agro-meteorological stations, hydrological sensors, etc.) in these areas will be evaluated and if necessary will be supplied (taking into account coverage, equipment safety, accessibility and capacity of partners to provide maintenance, among others).
220. Early warning systems will provide information on short-, medium- and long-term climate threats. Medium- and long-term information will be included in the development and implementation of the IWRM plans, and therefore will guide the planning of agricultural activities, while the short-term information will serve to act upon contingencies that cannot be accounted for in planning processes. Before the final installation of the system, a pilot project will refine its applicability. The objective is to ensure that the system will adequately provide access to relevant data, as well as be integrated with other systems and tools to support decision-making.

F.3. Environmental, Social Assessment, including Gender Considerations

221. The environmental and social assessment of the project is derived in first instance from the Environmental and Social Safeguard (ESS) standard of the Green Climate Fund. However, as part of the accreditation process for

IUCN, its own Environmental and Social Management System is deemed to be compliant with the ESS for management of projects under the Environmental and Social (E&S) risk categories B and C.

222. Based on the assessment from the IUCN ESMS Unit, the project was classified under risk category B through its ESMS Questionnaire and Screening Report for field projects, which is equivalent to IUCN's categorization of medium risk. The Questionnaire, Screening Report and corresponding Clearance are attached to the document as Annex 7a. The medium risk categorization was triggered by the ESMS Standard on Indigenous Peoples, due to the fact that the project is located in an area where 83% of the population belongs to indigenous groups and the fact that the project operates a grant facility with the implication that investments funded by the facility are not known at project design stage. While the project explicitly seeks to improve the livelihoods of the population in the project area through ecosystem based adaptation actions that help reduce climatic impacts on the hydrological cycle and thus only positive impacts are foreseen in the intervention, it is necessary to address the consideration of traditional knowledge, sites of cultural significance and customary practices.
223. Further to the ESMS Screening, the medium risk categorization prescribes the formulation of an Environmental and Social Management Framework (ESMF, Annex 7b) as well as an Environmental and Social Management Plan (ESMP, Annex 7C). The ESMF provides a description of the project, institutional arrangements, and a rationale and procedure for the assessment of potential environmental and social risks of new activities, in particular of investments funded by the grant facility, with a main emphasis on the Indigenous Peoples standard. The ESMF also provides information on a Grievance Procedure which allows for response and corrective actions in the case of potential violations of the ESMS Standards and Principles. Further to the ESMF, the ESMP is developed as the tool for monitoring the implementation of the triggered standard – in this case with complete focus on the Indigenous Peoples standard. The relevant environmental and social impacts are detailed, with the corresponding mitigation actions, resources, responsibilities and tentative scheduling. Additionally, it provides the framework for monitoring the effectiveness of impact mitigation.
224. The potential impacts for the project were identified from the three project outputs: 1) Integrated climate smart watershed management; 2) Grant facility for Community-led climate actions channeling funding to priority areas; and 3) Climate related information provided to farmers and other target stakeholders for watershed management. Within these outputs, four “main activity areas” where risks could arise were identified as: capacity building, local governance support and management planning, restoration activities, and climate information. The main potential risks were mostly related to potential inadequate participation of indigenous groups and women, lack of consideration and integration of local/traditional knowledge into capacity building programs and restoration activities to be implemented, inequitable distribution of benefits from grants and incentives, inadequate use and channeling of climate information to local stakeholders, particularly indigenous communities. The risks are addressed through a series of mitigation measures that are supported technically and financially within the project's activities and budget.
225. Participation of women is paramount to achieve the results of the project. Mechanisms to ensure their participation have been developed in different components and indicators. Specially, the second subcomponent aims to increase climate action locally by taking advantage of the strong community based organizations present in the area. For this, a grant facility will be developed to contribute to sustainable watershed management practices developed under the first subcomponent. Gender considerations will be mainstreamed in the selection criteria, capacity building program and monitoring system as to ensure that affirmative actions are taken to contribute to women empowerment in the rural context. Selection criteria will assign a weight to women's participation in the evaluation, analyzing imbalances in variables including access to credit and technical assistance, level of participation in local organized structures, land ownership, and level of recognition of contribution to household livelihoods strategies and income.

226. A Gender Assessment and Action Plan to address some specific issues related to gender has been developed and detailed in Annex 16. Specifically, under the first component of the project, it is proposed to strengthen the capacities of women in the project area, so that they have a better understanding of climate change impact in their livelihoods and ways to empower their roles as agents of change. Affirmative actions to ensure participation of women are presented with specific indicators. An added value to be provided in the project with respect to gender is the backstopping support for its design and implementation of the IUCN Global Gender Program, which will provide a wealth of expertise including tools and methodologies, and hands-on experience in Guatemala.
227. In addition to the above, project actions will be developed aligned to the National Policy for the Promotion and Integral Development of Guatemalan Women - Equity Opportunities Plan - PEO 2008 – 2023, and also Gender Environment Policy, the Institutional Strategy on Gender Equity with Ethnic and Cultural considerations, of INAB; The Institutional Policy for Gender Equality and the Strategic Implementation Framework 2014-2023 of MAGA.

F.4. Financial Management and Procurement

228. Project financial management and procurement will be undertaken in compliance with the IUCN Procurement Policy for goods and services, and IUCN financial management policy. Periodic financial reviews of project expenditures will be conducted to ensure funds are used for the purpose intended in the approved proposal. IUCN will apply appropriate accounting policies based on Swiss law.
229. UCN has a worldwide online platform called NAVISION, this accounting system is multi-currency and multidimensional, which allows to record transactions by project, type of expenditure, in accordance with set budget lines and their objectives. IUCN is audited world-wide by PricewaterhouseCoopers SA. Furthermore, this project will be audited annually.
230. The procurement policy ensures that IUCN obtains value for money in all its procurement activities and that procurement is conducted in an efficient and cost effective manner that respects sustainability, the environment and ethical principles. This Policy applies to all transactions for the purchase of goods, works and services. Goods and works include materials, supplies and the construction of physical infrastructure. Services include those provided by consulting firms or individual consultants, educational and research institutions, service companies, and government and non-government organizations.
231. The method and approval of procurement is dependent on the value (set in Swiss Francs: CHF) of the required Goods or Services. Table 4 below shows the procurement process to be followed for different levels of expenditure. Prior to final approval, all contracts of CHF 100,000 or above in value require the review and recommendation by a Procurement Panel to be constituted by the Director General/Deputy Director General. The role of the Procurement Panel is to verify and confirm that due process has been followed and that the “winning” bid was correctly arrived at taking into consideration the process and criteria described in the Procurement Policy.
232. Authority to Carry Out Procurement: Persons authorized to conduct procurement including contracting for services, are defined in the Procurement policy and in the Delegation of Authority (DoA) policy. Procurement in this context is understood to include, in addition to entering into contracts, the commitment of IUCN to contractual obligations, the amending of contracts, the invitation of proposals (offers) or tenders and the negotiation with potential suppliers or purchasers on the basis of detailed specifications.

233. Any financial commitment made by authorized persons in their official capacity is made on behalf of IUCN, and there must be a defined line of authority for such action. All procedures executed must be documented, following the guidelines indicated in the Policy and using the formats approved for the different processes (Purchases, Contracts, etc). The corresponding Unit is responsible for gathering all the documents together and submits them to the Procurement Office first for review and approval and, once the process is finished, for safe keeping.

G.1. Risk Assessment Summary

234. As presented in section G2, there is a range of risks identified related to political, social, operational, and environmental factors. Likelihood of occurrence is set from low to medium for all risks, and mitigation measures are described to reduce the probability of occurrence. A crosscutting approach to social and operational risks is focused on risk prevention, one of the multiple benefits of participatory approaches underpinning the project, as well as alignment with national priorities, and information sharing in a timely manner with different stakeholders. Mitigation strategies for political and financial risks focus on early detection and diversified partnerships with grassroots organizations, CBOs, and local governments, which are already integrated in project activities.

G.2. Risk Factors and Mitigation Measures

Please describe financial, technical and operational, social and environmental and other risks that might prevent the project/programme objectives from being achieved. Also describe the proposed risk mitigation measures.

Selected Risk Factor 1 (Political)

Description	Risk category	Level of impact	Probability of risk occurring
Changes in overarching policy priorities and authorities that cause delays in decisions-making processes that depend on the government agencies collaborating in the project.	Other	Medium (5.1-20% of project value)	Medium

Mitigation Measure(s)

The project is envisaged to last 7 years, i.e. will span 3 government administrations. Even though this represents a risk for project implementation, the alignment of project activities with overarching development policies, mainly K'atun 2030, as well as Forest Law defines this as a medium risk. The PMU team is set to be maintained throughout the life of the project in collaboration with institutional technical teams (PEUs), to ensure that technical actions can continue.

Selected Risk Factor 2 (Environmental)

Description	Risk category	Level of impact	Probability of risk occurring
Extreme climatic events that can affect the field areas where the actions are implemented and reduce project results	Social and environmental	High (>20% of project value)	Medium

Mitigation Measure(s)

It is an adaptation project and will therefore be implemented in vulnerable areas that is why activities in the territories will be established, from the beginning, considering potential risks and establishing adaptation measures depending on the specific area conditions and type of risk/vulnerability entailed. The monitoring and use of climate information will be promoted not only amongst project beneficiaries, but also project implementation teams, in order to ensure timely corrective and security actions, in case extreme events are forecasted to affect project activities.

Selected Risk Factor 3 (Social)

Description	Risk category	Level of impact	Probability of risk occurring
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Opposition of local communities in the areas of intervention, to participate in the project that prevents progress in the proposed results	Social and environmental	Medium (5.1-20% of project value)	Low
Mitigation Measure(s)			
<ul style="list-style-type: none"> Following IUCN ESMS internal screening of the Project, it was defined that the Standard for Indigenous Peoples shall be triggered taking a precautionary approach. See Annex 7c for proposed mitigation activities. Share information about the project with communities through the communication channels used locally, in local Mayan languages Grievance mechanisms as outlined in the ESMP in accordance with risk Category B . 			
Selected Risk Factor 4 (Technical)			
Description	Risk category	Level of impact	Probability of risk occurring
Low capacity of co-executing partners for technical advice, monitoring and transfer of grant funds to beneficiaries	Technical and operational	High (>20% of project value)	Low
Mitigation Measure(s)			
<ul style="list-style-type: none"> Due diligence review of partner organizations to ensure they have enough capacities to carry out the required procedures and actions Inform and build capacity of all partners to work in line with IUCN policies and procedures for financial grants and agreements IUCN to play a strong role in monitoring the actions and goals proposed in the agreements with the partners, providing real-time feedback, periodic monitoring and field-visits, and technical-financial support where appropriate 			
Selected Risk Factor 5 (Social – Operational)			
Description	Risk category	Level of impact	Probability of risk occurring
Failures in coordination/communication among all stakeholders at the local level that generate conflicts and decrease the scope or uptake of expected outputs of the project	Social and environmental	Medium (5.1-20% of project value)	Medium
Mitigation Measure(s)			
<ul style="list-style-type: none"> The establishment of local steering committees will mitigate this risk, with legitimate representation of project stakeholders where clear communication channels and procedures for project coordination with stakeholders involved in the project All stakeholders will have access to the established grievance mechanism outlined in the ESMF Annex, 7b. 			
Selected Risk Factor 6 - Women participation			
Description	Risk category	Level of impact	Probability of risk

			occurring
Women's participation in project activities is hindered by cultural values and structural factors, not allowing the minimum of 30% participation set in project indicators to be reached.	Social and environmental	Medium (5.1-20% of project value)	Medium
Mitigation Measure(s)			
<i>A gender assessment and action plan has been developed and presented as Annex 16.</i>			
Other Potential Risks in the Horizon			
<i>Global financial and monetary instability could affect market conditions and cause strong exchange rate fluctuations. The level of impact on the project could be High. Depending on the severity of the factor, mitigation measures are limited to the readjustment of project strategies and budget allocations, based on a re-prioritization of activities.</i>			

** Please expand this sub-section when needed to address all potential material and relevant risks.*

H.1. Logic Framework.

Please specify the logic framework in accordance with the GCF's [Performance Measurement Framework](#) under the [Results Management Framework](#).

H.1.1. Paradigm Shift Objectives and Impacts at the Fund level⁴²

Paradigm shift objectives

<p><i>Increased climate-resilient sustainable development</i></p>	<p>The project will contribute to the reduction of climate change on hydrological cycle and then to water security as a mean of improving vulnerable livelihoods located in the highest areas of watersheds. Those areas flow to the Gulf of Mexico, the Guatemalan Pacific and the Caribbean and passing through the central area of the country. The project will improve technical assistance, access to sound information, governance and investment related to agroforestry, silvopastoral and forest sustainable management systems. Working at three levels (local, landscape and national levels) will allow strengthening enabling conditions at short, medium and long term. The project will impact on the capacity of related stakeholders as they will adopt water security approach to promote sound climate resilient sustainable development.</p> <p>Assumptions.</p> <ul style="list-style-type: none"> • continuity of policy and economic conditions; • focus on mid- to long-term actions when facing extreme events and increased variability. • buy-in for climate-smart approaches and promotion of best traditional practices
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Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	

Fund-level impacts

<p>A4.0 Improved resilience of ecosystems and ecosystem services</p>	<p>Area of 4.1 Agroforestry systems</p>	<p>Internal Evaluation reports and ongoing project M&E documentation.</p>	<p>716 has ⁴³ 4.1: 286ha</p>	<p>5,750 ha 4.1: 2,875ha</p>	<p>22,500 ha 4.1: 13,257 ha</p>	<p>Legal situation and rights of local communities on natural resources are maintained.</p> <p>No perverse incentives (policies, prices, nonagricultural /industrial uses affecting natural capital) are introduced in the project area.</p> <p>GOG priorities maintained for actions that develop ecosystem resilience in the mid- to long</p>
	<p>4.2 Silvopastoral systems and management of natural plantations, reforestation and rehabilitation</p>	<p>Mapping EbA areas.</p>	<p>4.2: 251ha</p>	<p>4.2: 1,725ha</p>	<p>4.2: 4385 ha</p>	
	<p>4.3 Restored ecosystems established or enhanced with Ecosystem based adaptation strategies.</p>		<p>4.3: 179ha</p>	<p>4.3: 1,150ha</p>	<p>4.3: 4858 ha</p>	

⁴² Information on the Fund's expected results and indicators can be found in its Performance Measurement Frameworks available at the following link (Please note that [some indicators are under refinement](#)): http://www.gcfund.org/fileadmin/00_customer/documents/Operations/5.3_Initial_PMF.pdf

⁴³ Proportional Number of hectares entered Forest incentives program during 2016 in the prioritized Departments.

						term are not deprioritized in cases of extreme events at the expense of response or short-term actions
A1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions	Number of males and females adopting diversified, climate resilient livelihood options	Gender sensitive household surveys and reports End of project independent evaluation reports.	2,864 people ⁴⁴	35,000 people (30% women)	132,000 people (30% women)	No perverse incentives (policies, prices, nonagricultural /industrial uses leading to farmer's migration) are introduced in the project area. Adequate uptake of improved practices and replicated traditional practices secures buy-in from communities and long-term commitment to promoted climate resilient actions National macroeconomic conditions are maintained and do not generate a significant shift in current migration patterns

⁴⁴ Derived from estimation of 4 beneficiaries/ha

H.1.2. Outcomes, Outputs, Activities and Inputs at Project/Programme level

Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
Project/programme Outcomes	Outcomes that contribute to Fund-level impacts					
A7.0 Strengthened adaptive capacity and reduced exposure to climate risks	7.1: Number of vulnerable households, local organizations and technicians at local level using totally or partially climate related tools, information and practices	Project M&E documentation and Gender sensitive household surveys and reports	2864 people	50,000 people (30% women)	At least 132,000 people (30% women)	Guatemala priorities and funding related to restoration and climate change remain
Project/programme outputs	Outputs that contribute to outcomes					
1.Integrated climate smart watershed management	<p>Integrated watershed management plans under EbA criteria</p> <p>Area under EbA</p> <p>Number of men and women with improved capacities for climate action and watershed management and benefitting from forest incentives</p>	<p>Project M&E documentation</p> <p>Forest Management plans approved for incentives</p> <p>Capacity building participants lists and aide memoires</p>	<p>2 plans⁴⁵</p> <p>716 has</p> <p>2,864 people (aprox. 30% women)</p>	<p>10 plans</p> <p>7,000 ha</p> <p>28,000 people (30% women with emphasis on women being head of household)</p>	<p>20 plans</p> <p>12,500 Ha</p> <p>50,000 people (30% women with emphasis on women being head of household)</p>	Local governance structure (including grassroots and municipal organizations) maintain their priorities and interest in watershed management

⁴⁵ Currently in the Xaya Pixcaja sub basins.

2. Community – led watershed management systems promoted through grant facilities.	<p>Amount of grants/average size</p> <p>Number of People benefitting from the grant facility</p> <p>Area under EbA</p>	Project and in particular grant M&E documentation	0 ⁴⁶	<p>8,5 grants (medium-size) equivalent to US\$3,4 M</p> <p>30 grants (small-size) 1,5M</p> <p>20,000 people (at least 6,000 women)</p> <p>3000ha</p>	<p>17 grants (medium-size) equivalent to 6,8M</p> <p>52 grants (small-size)</p> <p>At least 50,000 people (at least 15,000 women)</p> <p>10,000 ha restored</p>	No macroeconomic negative effects impacting on financial situation occur (currency fluctuation, inflation).
3. Climate related information provided to farmers and target stakeholders for watershed management	Number of people with access to improved climate information (disaggregated by gender).	Project M&E documentation	800 people ⁴⁷	50,000 (30% women)	At least 132,000 people (30% women)	Priorities of public institutions in charge of climatic information and extension services remain.
Activities	Description	Inputs			Description	
A.1.1 Improved local capacities for climate action and watershed management		1.1.1 Measure watersheds flow and quality, interception rate, infiltration and water recharge.			Staff time, Consultants and IUCN Backstopping in Environmental Economics.	
		1.1.2 Strengthen technical capacities of municipalities' women's offices and gender offices of MAGA, MARN, INAB and CONAP institutions.			Staff time, consultants, workshop, mobilization, travel and IUCN Gender Backstopping.	
		1.1.3 Implement at least 20			Nurseries Supplies for	

⁴⁶ Given the fact that there is no grant mechanism which considers EbA criteria with climate change consideration.

⁴⁷ <http://www.efeverde.com/blog/clima-marruecos-cop22-wwf-efeverde/cambio-climatico-guatemala/> , information based on the results of the project CNCG, funded by USAID.

	<p>A key activity underpinning the paradigm shift of reducing climate impacts on the hydrological cycle is the development of the necessary capacities for climate-smart action, at local and national levels as well as within the relevant institutions, support organizations and communities in the prioritized areas, promoting a balanced participation of men and women</p>	<p>municipal agroforestry nurseries</p> <p>1.1.4 Implement appropriate technology through the application of best practices of land use in priority areas.</p> <p>1.1.5 Participate in at least 4 experience sharing events at international level, promoting women and men equitable participation.</p> <p>1.1.6 Create and/or strengthen watershed committees and develop 20 management plans with emphasis on climate adaptation, promoting a balanced participation of women in decision making structures.</p> <p>1.1.7 Create and strengthen municipal water offices and local committees in the efficient use of water (at least 10 municipalities) with a balanced participation of men and women and with a gender vision</p> <p>1.1.8 Strengthen capacities of 4 governmental institutions (INAB, MAGA, MARN, CONAP) and 20 municipalities (at least) including gender sensitization and using toolkits which include gender considerations</p>	<p>municipalities.</p> <p>Purchase of irrigation systems and equipment for water management and Staff time.</p> <p>International experience sharing events.</p> <p>Consultation workshops, Consultancies, Backstopping Integrated management of water resources, Backstopping Gender, Travel and Staff time.</p> <p>Training on administration, operation and maintenance of municipal water systems. Equipment for water monitoring Staff time</p> <p>Infrastructure such as forest measurement equipment, drones, computers, vehicles, Training: workshops, Consultancies and Staff time</p>
<p>A.1.2 Government forestry and agroforestry incentives supporting water recharge and productivity</p>	<p>The activity will ensure that PROBOSQUE's modalities for climate change adaptation including agroforestry systems in agricultural lands and livestock areas and forest restoration in watersheds, riparian forests and recharge areas will be promoted, improving enabling conditions for women benefitting of incentives</p>	<p>1.2.1 Evaluate restoration opportunities in water recharge zones.</p> <p>1.2.3 Rehabilitate 12,500 hectares of degraded lands through EbA approach and natural infrastructure interventions.</p> <p>1.2.4 Support INAB in the PROBOSQUE-PINPEP incentives.</p> <p>1.2.5 INAB Payment of agroforestry incentives.</p>	<p>Staff time, Consultants, Workshops, Mobilization and IUCN Backstopping in Environmental Economics and SIG for restoration opportunities.</p> <p>Green Infrastructure, Staff time and Mobilization</p> <p>Consultancies, Staff time and Mobilization</p> <p>Under this activity, \$5M in forest incentives earmarked by INAB for the Highlands will</p>

			be channeled.
		1.2.6 Strengthen capacities of 4 governmental institutions (INAB, MAGA, MARN, CONAP) and 20 municipalities (at least) including gender sensitization and using toolkits which include gender considerations	Infrastructure such as forest measurement equipment, drones, computers, vehicles, Training: workshops, Consultancies and Staff time
		1.2.7 Construct 1 seeds banks with species adapted to climatic, cultural and commercial conditions of the area.	Staff time, Consultancies, green Infrastructure, Business plans for operations and sustainability of the seeds banks.
A.2.1 Awarding and implementation of medium grants for second level CBOs	Under this activity, there will be information sharing meetings about the Grant Facility mechanism; to be held in the prioritized watersheds with identified CBOs. A diagnostic phase will be carried out to identify specific needs in light of the requirements and impacts envisaged in the grant facility, followed by a capacity building program with the potential grantees. A minimum of 9 workshops focused on the development of eligible projects will be carried out with CBOs. A total of three calls will be announced during the lifespan of the project.	2.1.1 Preparation and coordination activities for launch of grant mechanism.	Staff time; Consultancies; Backstopping Climate Change; Local Workshops; Backstopping Gender
		2.1.2 Elaborate the Grants Regulation Manual with provisions for equitable men and women participation	Staff time; Consultancies; Backstopping Program Monitoring
		2.1.3 Community Based organization diagnostic design and carried out in 3 regions to identify CBOs support needs including needs for women participation (with emphasis on women head of household) and women organizations identification.	Consultancies; Staff time; Backstopping Gender; Backstopping Climate Change; Backstopping Program Monitoring; Travels and Workshops.
		2.1.4 Training workshops for CBOs accessing grants	Staff time; Backstopping Gender; Backstopping Program Monitoring; Travels and Workshops.
		2.1.5 Targeted support to potential grantees for proposal development and submission,	Staff time and Travels.
		2.1.6 Evaluation and Selection of financeable projects with a minimum percentage of women proposals included	Meetings; Staff time and Travels.
		2.1.7 Grants implementation phase.	Staff time; Backstopping; Travel; workshops;

			Consultancies; and Publications.
		2.1.8 Grants monitoring and evaluation phase.	Backstopping, Consultancies, Publications, Staff time and grants external evaluations.
		2.1.9 Experience Sharing events, promoting women empowerment experiences to be shared	Experience Sharing Events, staff time, communication, publications and backstopping.
		2.1.10 Build upon lessons learned and best practices and disseminates information.	Staff time; Communication; Publications and backstopping
A.2.2.Awarding and implementation of small grants for grassroots organizations	Under this activity, KOICA funds will be channeled through three calls during the duration of the project to provide climate finance to grassroots organizations under a guided, informed and trained process. With the technical and operational support from second level CBOs, information sharing meetings on grant facility for small-size grants will be carried out with sufficient time prior to the call, in the main population centers of the Highlands. Workshops will be carried out with differentiated tailor-made methodologies adjusted to local support needs for potential grantees.	2.2.1 Preparation and coordination activities for launch of grant mechanism.	Staff time; Consultancies; Backstopping Climate Change; Local Workshops; Backstopping Gender
		2.2.2 Elaborate the Grants Regulation Manual with provisions for equitable men and women participation.	Staff time; Consultancies; and Backstopping Program Monitoring
		2.2.3 Grassroots diagnostic design and carried out in 3 regions to identify support needs including needs for women participation (with emphasis on women head of household) and women organizations identification.	Consultancies; Staff time; Backstopping Gender; Backstopping Climate Change; Backstopping Program Monitoring; Travel; and Workshops
		2.2.4 Call for proposals with a balanced participation of men/women proponent organizations or specific women focused proposals	Publication of the call in national press; Information Sharing Meetings; Staff time and Backstopping
		2.2.5 Regional workshops to provide climate finance to grassroots organizations under a guided, informed and trained process	Backstopping; Staff time; Workshops and Travel
		2.2.6 Targeted support to potential grantees for proposal development and submission, including women organizations.	Staff time and Travel
		2.2.7 Evaluation and Selection of financeable projects with a minimum percentage of proposals with women included	Meetings; Staff time and Travel
		2.2.8 Grants implementation	Staff time; Backstopping;

		phase.	Travel; Workshops; Consultancies and Publications
		2.2.9 Experience Sharing Events, promoting women empowerment experiences to be shared	Experience Sharing Events; Staff time; Communication; Publications and backstopping
		2.2.10 Build upon lessons learned and best practices and disseminates information.	Staff time; Communication; Publications and Backstopping
		2.2.11 Young professional program	Staff time
		2.2.12 Grants monitoring and evaluation phase.	Backstopping; Consultancies; Publications; Staff time and External evaluations
A 3.1 Strengthened meteorological and hydrological information systems through investment in equipment for data collection, modeling, forecasting, and archiving	Under this activity, the INSIVUMEH database and information system will be strengthened and linked to agricultural, irrigation and environmental information systems through signing of cooperation agreements for the development of joint protocols for data collection, exchange, processing analysis and risk assessment.	3.1.1 Strengthening hydrometeorological regional network in project area (diagnostics and protocols)	Consultancies; Staff time and Backstopping
		3.1.2 Institutional Development and Strengthening	Consultancies; Staff time; Backstopping; Equipment and Maintenance.
		3.1.3 Reinforcement of weather monitoring and forecast.	Consultancies; Staff time; Backstopping and Travel
		3.1.4 Strengthen MARN's national climate change information system	Equipment, Staff time and Backstopping
A 3.2 Design and implement a participatory early warning systems for agricultural practices and water management	The project through this activity will increase and improve the accessibility and use of official climate information for decision-making on adaptation at the local level.	3.2.1 Design of participatory early warning system, addressing differentiated capacities to enable the involvement of female heads of household in the system	Consultancies, Staff time and Backstopping
		3.2.2 Differentiated characterization of productive practices of women and men.	Consultancies; Staff time; Backstopping
		3.2.3 Development of the Agro-climatic Observatory	Staff time; Backstopping; Consultancies; Hosting and Web maintenance
		3.2.4 Local climate forums and participation in international forums.	Workshops; Backstopping
A 3.3 Capacity building for relevant actors at community, municipal and national levels for	Under this activity, a capacity building program to ensure that protocols on O&M are followed by communities in charge of hydro	3.3.1 Develop capacity building on climate change data interpretation, modeling and forecasting,	Consultancies; Staff time; Backstopping; Consultancies; Travel
		3.3.2 Implement a training center	Capacity building Specialization courses; conferences and seminars;

O&M, data interpretation, modelling and forecasting	meteorological stations as well as technicians from municipalities and central offices with a relevant role on equipment maintenance. Data interpretation, modelling and forecasting capacity building will be developed tailored to different stakeholders		Staff time; Backstopping; Consultancies and Travel
		3.3.3 Multilingual dissemination of information outputs.	Staff time; Backstopping; Consultancies; Translation and Publications
		3.3.4 Inter institutional coordination.	Travel, Workshops, Staff time, Backstopping and Consultancies

H.2. Arrangements for Monitoring, Reporting and Evaluation

235. According to IUCN policies and regulations, the projects with a value over CHF500,000 require an end project evaluation. In addition, each IUCN project with a value over CHF2,000,000 will add a mid-term evaluation to its monitoring and evaluation plan (IUCN M&E Policy, 2015). The Mid-Term Evaluation will be undertaken at exactly the mid-point of the project lifetime; it will determine the progress being made towards the achievement of outcomes and will identify course of correction if needed. The Final Evaluation takes place three months prior the finalization of the contract; it has to look at the impact and sustainability of results including the contribution to capacity development and should provide recommendations for follow up activities. The ToRs must be prepared by the project team following IUCN policies and donor recommendations. The evaluation should use mixed methodologies:

- Review of documentation, including project planning documents, technical outputs and monitoring reports;
- Review of documentation related to the management of the project and its financial management;
- Interviews with project staff and implementing partners;
- Interviews with stakeholders (women and men, ethnic groups), beneficiaries and with affected groups (if relevant);
- Field observation and interpretation of physical and/or biological change

236. Stakeholders should at a minimum be involved in: defining evaluation questions, defining the schedule of activities for the evaluation study, data collection, disseminating results and gathering feedback, and implementing the management response. Additionally, a project monitoring, evaluation and learning IUCN specialist will be part of the Project Management Team. This person, under the coordination of the Project Manager will be responsible for:

- Logical and conceptual design of the monitoring, evaluation and learning system of the project.
- Monitoring measures and reports on the implementation progress of the project.
- Internal evaluation of the project: one internal evaluation per year.
- Monitoring the project initial risk analysis: document the corrective measures implemented to mitigate the risks (if the risk was reduced, eliminated, increased or transferred).
- ESMF monitoring include verifying the status of implementation of mitigation measures, judging the effectiveness of mitigation measures and screening on any new, upcoming ESMS risks.
- Development of a coherent communication and outreach strategy to ensure dissemination of information on a regular basis to stakeholders at various levels.
- Experience capitalization for learning: a systematic, iterative and participatory process through the experiences will be analyzed and documented. This creates knowledge, which can be shared and used to generate change. Through experience capitalization, practices can be effectively adopted, adapted and scaled up, leading to greater impact.

- Creation of the tools, procedures and mechanisms for data collection, data analysis, decision making and the multiple internal/external uses of the information produced (users, uses, rhythm-spaces and channels).
- Train IUCN staff and partner organizations to strengthen project monitoring, evaluation and learning capacities.

237. The project will be audited annually, applying the IUCN administrative and financial norms.

I. SUPPORTING DOCUMENTS FOR FUNDING PROPOSAL

- Annex 1 NDA No-objection Letter
- Annex 2 Feasibility Study
- Annex 3 Sensitivity analysis of critical elements (xls format, if applicable)
- Annex 4 Letters of Commitment for co-financing (Government of Guatemala; KOICA)
- Annex 5 Support letter from the Meteorological Authority INSIVUMEH
- Annex 6 Project Confirmation/Term Sheet
- ANNEX 7a. ESMS Questionnaire, Screening Report and ESMS Clearance ; Annex 7b ESMF; Annex 7c ESMP
- Annex 8 Appraisal Report or Due Diligence Report with recommendations (If applicable)
- Annex 9 Evaluation Report of the baseline project (If applicable)
- Annex 10 Map indicating the location of the project
- Annex 11 Timetable of project implementation

Additional Annexes

- Annex 12 Acronyms
- Annex 13 Stakeholder consultation report
- Annex 14 Governance Structure for the Grant Mechanism
- Annex 15 Budget of the Project
- Annex 16a and Annex 16b Gender Assessment and Action Plan
- Annex 17 IUCN Internal Project Approval Sheet
- Annex 18 Approximate assessment of groundwater recharge in project area
- Annex 19 Procurement Plan
- Annex 20 Budget Notes
- Annex 21 Ecosystem-based Adaptation implementation mechanisms
- Annex 22 Capacity Building Program outline

** Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.*



**MINISTERIO DE AMBIENTE Y RECURSOS NATURALES
GUATEMALA, C.A.**

Ministro

Para: El Fondo Verde del Clima ("FVC")

Guatemala, 26 de Junio de 2017
Oficio-No.MI-879-2017-SASM-pm

Re: Propuesta de financiamiento para el FVC por la Unión Internacional para la Conservación de la Naturaleza en relación con el Proyecto "Fortalecimiento de la Resiliencia al Cambio Climático en el Altiplano guatemalteco"

Estimado Sr, Sra,

Nos referimos al proyecto "Fortalecimiento de la Resiliencia al Cambio Climático en el Altiplano de Guatemala" en Guatemala como parte de la propuesta de financiamiento presentada por la Unión Internacional para la Conservación de la Naturaleza el 15 de junio de 2017.

El abajo firmante es el representante debidamente autorizado del Ministerio de Ambiente y Recursos Naturales, la Autoridad Nacional Designada / punto focal de Guatemala.

De conformidad con la decisión B.08/10 del FVC, cuyo contenido manifestamos haber revisado, comunicamos nuestra no objeción al proyecto, tal como se incluye en la propuesta de financiación.

Al comunicar nuestra no objeción, manifestamos que:

- (a) El gobierno de Guatemala no tiene objeciones al proyecto como se incluye en la propuesta de financiamiento;
- (b) El proyecto incluido en la propuesta de financiamiento está en conformidad con las prioridades, estrategias y planes nacionales de Guatemala;
- (c) De conformidad con las salvaguardias ambientales y sociales del FVC, el proyecto incluido en la propuesta de financiación se ajusta a las leyes y reglamentos nacionales pertinentes.

También confirmamos que nuestro proceso nacional para determinar la no objeción al proyecto, tal como se incluye en la propuesta de financiamiento, ha sido debidamente seguido.

Reconocemos que esta carta estará disponible públicamente en el sitio web del FVC.

Saludos cordiales,

Dr. Sydney Alexander Samuels Milson
Ministro
Ministerio de Ambiente y Recursos Naturales
20 Calle 28-58 Zona 10 Edificio MARN
Tel: +502 2423-0500
<http://www.marn.gob.gt>

To: The Green Climate Fund ("GCF")

Guatemala, June 26th, 2017
Oficio-No.MI-879-2017-SASM-pm

Re: Funding proposal for the GCF by the International Union for Conservation of Nature regarding the Project "Building resilience to Climate Change in the Guatemalan Highlands"

Dear Madam, Sir,

We refer to the project "Building resilience to Climate Change in the Guatemalan Highlands" in Guatemala as included in the funding proposal submitted by the International Union for Conservation of Nature to us on June 15, 2017.

The undersigned is the duly authorized representative of the Ministry of Environmental and Natural Resources, the National Designated Authority/focal point of Guatemala.

Pursuant to GCF decision B.08/10, the content of which we acknowledge to have reviewed, we hereby communicate our no-objection to the project as included in the funding proposal.

By communicating our no-objection, it is implied that:

- (a) The government of Guatemala has no-objection to the project as included in the funding proposal;
- (b) The project as included in the funding proposal is in conformity with Guatemala's national priorities, strategies and plans;
- (c) In accordance with the GCF's environmental and social safeguards, the project has included in the funding proposal is in conformity with relevant national laws and regulations.

We also confirm that our national process for ascertaining no-objection to the project as included in the funding proposal has been duly followed.

We acknowledge that this letter will be made publicly available on the GCF website.

Kind regards,



Environmental and social report(s) disclosure

Basic project/programme information	
Project/programme title	Building livelihood resilience to climate change in the upper basins of Guatemala's highlands
Accredited entity	International Union for Conservation of Nature (IUCN)
Environmental and social safeguards (ESS) category	Category B

Environmental and Social Impact Assessment (ESIA) (if applicable)	
Date of disclosure on accredited entity's website	2018-05-28
Language(s) of disclosure	English and Spanish
Link to disclosure	English https://www.iucn.org/sites/dev/files/esmf_p02625_guatemala_highlands_english.pdf Spanish https://www.iucn.org/sites/dev/files/esmf_p02625_guatemala_altiplano_espanol.pdf The Environmental and Social Management Framework (ESMF) contains an ESIA consistent with the requirements for a category B project.
Other link(s)	https://www.iucn.org/gcf-iucn-partnership/projects
Environmental and Social Management Plan (ESMP) (if applicable)	
Date of disclosure on accredited entity's website	2018-05-28
Language(s) of disclosure	English and Spanish
Link to disclosure	English https://www.iucn.org/sites/dev/files/esmf_p02625_guatemala_highlands_english.pdf Spanish https://www.iucn.org/sites/dev/files/esmf_p02625_guatemala_altiplano_espanol.pdf The Environmental and Social Management Framework (ESMF) contains an ESMP consistent with the requirements for a category B project.
Other link(s)	https://www.iucn.org/gcf-iucn-partnership/projects
Resettlement Action Plan (RAP) (if applicable)	
Date of disclosure on accredited entity's website	Not applicable
Any other relevant ESS reports and/or disclosures (if applicable)	



Description of report/disclosure	https://www.iucn.org/resources/project-management-tools/environmental-and-social-management-system
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