



**ADAPTATION FUND**

AFB/PPRC.38/Inf.35  
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Adaptation Fund Board  
Project and Programme Review Committee  
Thirty-eighth Meeting  
Bonn, Germany, 19-23 October 2026

## **PROPOSAL FOR GUATEMALA**



ADAPTATION FUND

**ADAPTATION FUND BOARD SECRETARIAT**  
**TECHNICAL REVIEW OF PROJECT PROPOSAL FOR**  
**"VOLCANES II: RESTORATION AND INTEGRATED ADAPTATION OF WATERSHEDS AND**  
**STRATEGIC ECOSYSTEMS IN THE CENTRAL VOLCANIC CHAIN OF GUATEMALA "**

**Project Title** Volcanes II: Restoration and Integrated Adaptation of Watersheds and strategic Ecosystems in the Central Volcanic Chain of Guatemala

**Project ID** AF00000552

**Category** Regular size project (over \$1 million)

**Type** Single country project

**Stage** Concept

**Country** Guatemala

**Implementing Entity** UNDP

**Financing Requested** USD 18,043,370.00

**Reviewer** Eveline Vasquez

## Co-reviewer(s)

### IE Contact Person

Joana Troyano, Mahlet Ambachew, Missale Woldegiorgis, Radhika Dave, Siriboon Ketphichai

## Secretariat's Overall Comment

The project Volcanoes II: Restoration and Integrated Adaptation of Watersheds and strategic Ecosystems in the Central Volcanic Chain of Guatemala aims to strengthen the climate resilience of prioritized communities and landscapes of the Central Volcanic Chain through ecosystem-based adaptation, improving ecosystem functionality, rural livelihoods, and territorial governance capacities to address the impacts of climate change.

The proposal includes a request for a project formulation grant of USD 150,000.

The initial technical review raised several issues, such as the adaptation activities, quantification of economic benefits, sustainability, gender analysis and alignment with the AF Results Framework, inter alia, as discussed in the number of Clarification Requests (CRs) and Corrective Action Requests (CARs) raised in the review.

The second technical review finds that the proposal has addressed some of the comments raised during the initial review. Other issues remain regarding the sustainability of the proposed intervention, potential duplication with existing or previously funded projects, addressing budgeting discrepancies, completing IE certification etc. as identified in the remaining CRs and CARs.

## Country Eligibility

### Is the country party to the Kyoto Protocol, or the Paris Agreement?

**Response:** Pending

**Secretariat:** Yes.

Guatemala has ratified the Kyoto Protocol (5 October 1999) and the Paris Agreement (25 January 2017).

**Response:** Yes

**Secretariat:** N/A

### Is the country a developing country particularly vulnerable to the adverse effects of climate change?

**Response:** Pending

**Secretariat:** Yes.

The results show that, in the Southwest of Guatemala, climate change impacts are expressed as a progressive and cumulative—although differentiated—deterioration of water, soil, and vegetation/ecosystems. Taken together, this trajectory configures a growing territorial risk that places pressure on watershed hydrological regulation, agroecosystem productivity, and the resilience of biological corridors, especially under high-emissions scenarios.

**Response:** Pending

**Secretariat:** N/A

**Response:** Yes

**Secretariat:** N/A

## Project Eligibility

### Has the designated government authority for the Adaptation Fund endorsed the project/programme?

**Response:** Pending

**Secretariat:** Yes.

As per the Endorsement letter dated 20 April 2026.

**Response:** Yes

**Secretariat:** N/A

### Does the length of the proposal amount to no more than Fifty pages for the project/programme concept, including its annexes?

**Response:** Pending

**Secretariat:** Yes.

The CN is 50 pages including annexes.

CR1: Please include paragraph and page numbers for easier reference in the review process. In addition, please proofread the document and make the necessary corrections. For example, in Part II.E, the first paragraph refers to Table 10, whereas it should refer to Table 9. Furthermore, on page 43, a word appears to be missing from the sentence: “Without such financing, public investments and livelihoods in the will remain locked.”

CR2: Please include an annex containing the definitions of all acronyms used throughout the document.

**Response:** Cleared

**IE:**

The CN has been revised accordingly. Page numbers have been added to facilitate review, an acronym annex has been included, and the document has been proofread.

**Response:** Not Cleared

**Secretariat:** CR1: Not cleared.

paragraph numbers have not been added.

CR2: Cleared.

List of Acronyms and Abbreviations added at page 2.

**Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience?**

**Response:** Pending

**Secretariat:** Yes.

However, some amendments and more details are needed.

The CN identifies specific climate risks to which some of the adaptation actions respond directly. The CN describes three components, three outcomes, and 11 outputs. It also includes a broad Initial Gender Assessment. However, the components description needs a revision, the Gender Analysis needs more specific information, as well as other details.

CR3: Please, address the following:

1. Note that the output "Community-based integrated water management systems strengthened" (Output 1.3, Table 3, page 16) is actually phrased as an outcome. Therefore, please rephrase it in terms of tangible deliverables so that it can be appropriately classified as an output.
2. In the description of Output 1.3 (page 21), the item listed below, "Small-scale resilient water infrastructure," is in fact an output rather than an activity. Please do not confuse outputs with activities. Remember that activities are the actions undertaken to deliver outputs (tangible products). Therefore, please review the descriptions of all outputs and activities in Part II.A to ensure they are consistent with these definitions.

CR4: Please include a brief statement showing the AF Strategic Objectives or outcome area which the projects support at Part II.A as the end of the general overview sub-section.

CR5: Please clearly specify what will be financed under each component.

CR6: Please provide specific descriptions for each activity. For example, under the activity "Small-scale resilient water infrastructure," the proposal refers to "other context-adapted solutions to improve water availability," which should be specified in greater detail. If these detailed will for part of the work to be conducted through the PFGs please indicate so.

CR7: Please include targets for each outcome and output.

CR8: On page 26, it is stated that: "Final estimation of direct and indirect beneficiaries will be developed during the full formulation phase based on the territorial baseline, the effective delimitation of intervention areas..." Please clarify whether this means that the project will include unidentified sub-projects (USPs), which are

generally not encouraged by the Adaptation Fund and require compliance with specific related requirements. If so, please clearly identify all USPs under the relevant components and briefly explain how they will be managed to ensure compliance with the Adaptation Fund's requirements. Please follow guidance available at : <https://www.adaptation-fund.org/apply-funding/project-funding/project-proposal-materials/#:~:text=Guidance%20Document%20for%20Project/Programme%20with%20Unidentified%20Sub%2DProjects>

**Response:** Not Cleared

**IE:** CR3: Output 1.3 and activities have been reframed as requested. Outputs 3.1 have also significantly improved according to recommendations. As well as other outputs and activity descriptions reviewed.

CR4: A brief statement explicitly mapping the project's components and outcomes to Adaptation Fund Strategic Outcome Areas 1, 2, 5, and 6 has been added to the end of the general overview sub-section in Part II.A.

CR5: The narrative descriptions in Section II.A have been updated to explicitly specify tangible investments financed under each component.

CR6: The text was updated to specify concrete water technologies (rainwater harvesting, storage cisterns, protected springs, and greywater recycling) and notes that site-specific solutions will be defined during PFG phase.

CR7: Specific targets have been incorporated into the narrative descriptions of all outcomes and outputs.

CR8: The link shared isn't working but the project does not include Unidentified Sub-Projects (USPs). All core adaptation measures, eligible investment categories, and target intervention zones (prioritized watersheds and municipalities in the Central Volcanic Chain) are fully identified and defined at the concept stage. To eliminate ambiguity, the text on page 26 has been revised.

**Response:** Not Cleared

**Secretariat:** CR3: Not cleared. Could the IE clarify under Output 2.1 what types of plans will be developed? There appears to be an inconsistency between the information presented in Table 3 and the description provided in Part II. Please also update the corresponding information in Figure 13 (Theory of Change) to ensure consistency across the proposal.

CR4: Cleared.

As per amendment at Part II Section A, and last paragraph on page 17.

CR5: Cleared.

As per amendment to components indicating what is financed at Part II A pages 18-25.

CR6: Cleared.

As per amendment to project activities at Part II A pages 18-25.

CR7: Cleared.

As per amendment to project activities at Part II A pages 18-25.

CR8: Cleared.

Part II Section K indicates the following "No Unidentified Sub-Projects (USPs) are included; all project interventions and locations have been fully identified and screened upfront."

**Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?**

**Response:** Pending

**Secretariat:** Yes.

However, some amendments and clarifications are needed.

The proposal highlights broad economic, social, and environmental benefits of the project. However, it offers no quantitative estimates of the economic benefits and does not explain how specific vulnerable groups (women, youth, others) will be targeted equitably.

CR9: In Part II.B, please clarify how the project will ensure that 50% of the direct beneficiaries are women. In addition, please indicate how many of the total beneficiaries are Indigenous Peoples.

CR10: Please further develop the Initial Gender Analysis and include additional quantitative data to better contextualize the role of women in the prioritized territories and the comparison with the national level. In addition, please clarify whether there is any legislation promoting gender equality.

CR11: Please, in Table 6, include quantitative estimates under the “Economic” category to further substantiate the reported benefits, particularly with respect to reductions in production losses and avoided costs resulting from environmental degradation.

CR12: Please clarify whether there are no concerns regarding negative development and confirm that the project will not increase the vulnerability of beneficiaries or non-beneficiaries, nor reduce their capacity to adapt to climate change. Note that “an accessible grievance mechanism” does not eliminate the possibility of negative impacts; it only provides a mechanism to address such issues after they have already occurred.

**Response:** Not Cleared

**IE:** CR9: The text in Part II.B has been updated to clarify 50% gender targeting and specify Indigenous beneficiary preliminary figures (30%, 21,000 beneficiaries) to be refined at site-level during PFG phase via an Indigenous Peoples Plan (IPP).

CR10: The Preliminary Gender Analysis has been updated accordingly and explicit references to national gender legislation.

CR11: Preliminary quantitative estimates of economic benefits have been included in Table 6, including for avoided costs associated with environmental degradation. Please refer to Part II.C (Cost-Effectiveness) for further details about the methodology and assumptions used.

CR12: It is explicitly confirmed that the project will not cause negative development, increase the vulnerability of beneficiaries or non-beneficiaries, or reduce climate adaptive capacity. The text was revised to clarify that the project will strengthen, scale up, and sustain an existing mechanism, framed as an integrated Stakeholder Engagement and Feedback System that combines proactive participation and continuous dialogue with

grievance response mechanism to ensure accountability.

**Response:** Cleared

**Secretariat:** CR9: Cleared.

As per updated information on beneficiaries under the project beneficiaries section on page 25 and clarification in review sheet that further work will be done under the PFG.

CR10: Cleared.

As per information provided in initial gender assessment at page 2 and clarification in review sheet that further work will be done under the PFG.

CR11: Cleared.

As per columns 3 and 4 of table 6 and Part II section C on cost effectiveness.

CR12: Cleared.

As per Part II section B on page 28 under section Prevention and mitigation of negative impacts.

### Is the project / programme cost effective?

**Response:** Pending

**Secretariat:** Yes.

However, more information is required.

The CN proposes an approach to cost-effectiveness by comparing the AF scenario with a baseline scenario, including a logic narrative to support the adaptation interventions through this proposal. However, some figures to sustain the alternatives measures, revise the beneficiaries, and clarification about the sustainability are required.

CR13: In table 7 (page 30) please, address the following:

1. Include quantitative figures that allow for a comparison between conventional alternatives and the costs of the project's components.
2. In the "Cost-effectiveness rationale" column, please include estimates of the reduction in economic losses resulting from the implementation of Component 2 of the project, in order to strengthen the comparison with the conventional alternatives.
3. In the last column, please include only the direct beneficiaries of the implementation of the respective component, specifically those who will play a role in the project. These may include the population of the targeted rural areas and the institutions involved.

CR14: On page 32, it is not clear how sustainability will be ensured, since the reduction in dependence on external assistance may only last while the project is under supervision. In addition, Part II.A refers to the introduction of "climate-resilient infrastructure," but does not explain how its maintenance will be financed and carried out in the future.

**Response:** Not Cleared

**IE:** CR13: Thank you for the comments. Table 7 has been revised to: 1) include quantitative metrics that compare the project's approach with conventional alternatives; 2) incorporate estimates of avoided economic losses under Component 2 to strengthen the cost-effectiveness analysis; and 3) refine the beneficiary column to include only direct beneficiaries and institutions actively involved in project implementation and coordination.

CAR14: Long-term operation and maintenance arrangements have been further specified in Section J. In addition, Part II.A now includes expanded descriptions under Output 2.3 and Activity 2.2.3. The project's approach to reducing dependence on external assistance has also been clarified in Section J, including measures to link adaptation investments to sustainable financing sources and income-generating opportunities beyond the project period.

**Response:** Cleared

**Secretariat:** N/A

**Response:** Cleared

**Secretariat:** CR13: Cleared.

As per columns 406 of Table 7.

CR14: Cleared.

Based on expanded descriptions under Output 2.3 and Activity 2.2.3. and updated section J.

**Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments?**

**Response:** Pending

**Secretariat:** Yes.

However, more information is required.

The proposed programme is consistent with 10 national instruments, including the PANCC, the NDC, the National Development Plan, among others. However, further information is required.

CR15: Please clarify whether there is a National Plan addressing gender gaps. If so, please include it in Table 8 (page 33).

**Response:** Not Cleared

**IE:** CR15: Yes. The Gender and Climate Change Action Plan has been included in Table 8.

**Response:** Cleared

**Secretariat:** N/A

**Response:** Cleared

**Secretariat:** CR5: Cleared.

Based on last rows of Table 8.

**Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund?**

**Response:** Pending

**Secretariat:** Yes.

However, more information is required.

The proposal identifies 15 specific frameworks. However, the information provided should be further elaborated by including institutions in charge, steps to comply with the standards, the outputs affected, among others.

CR16: In table 9 (pages 35-38), please address the following:

1. Indicate which output each of these standards contributes to.
2. In separate columns, please identify the public authorities responsible for enforcing these standards and the steps to be taken to ensure compliance, where applicable.
3. Please do not confuse compliance with standards with contributions to those standards. For example, under "Forestation and Forest Management" and "Protected Areas," the text refers to "contributing to" rather than "complying with" the applicable standards. Similarly, the "Risk Management" row should be moved to Part II.D, as it relates to technical standards and protocols. Please review the entire table and make the necessary corrections accordingly.

**Response:** Not Cleared

**IE:** CR16: Table 9 has been fully revised and restructured to address all three points. As requested, the row on Risk Management has been removed from Table 9 and corresponding Plan (National Plan for Comprehensive Disaster Risk Reduction Management) has been added to Part II.D Table 8.

**Response:** Cleared

**Secretariat:** The project complies with applicable national technical standards and with the Environmental and Social Policy of the Adaptation Fund.

**Response:** Cleared

**Secretariat:** CR16: Cleared.

Based on updated table 9.

**Is there duplication of project / programme with other funding sources?**

**Response:** Pending

**Secretariat:** Unsure.

More information is required.

A table with the identified ongoing projects is provided, including a summary and a broad justification for no duplication and potential synergies. However, the no duplication and synergies are not clear, and past projects are not included.

CR17: In table 10 (pages 38-39), please address the following:

1. Include projects that have already been completed and verify whether there are any additional Adaptation Fund (AF) projects relevant to this project.

2. The no duplication statement should be clearly justified (e.g. by indicating the distinct geographic locations and/or types of interventions) for each related project identified.
3. In the last column, please begin by clearly stating whether there are any overlaps or duplications. Any synergies should be described separately from the discussion of potential duplications.
4. Please provide a more specific description of the lessons learned and explain how these lessons have been incorporated into the project, including the outputs in which they have been integrated.

**Response:** Not Cleared

**IE:** CR17: Table 10 has been revised and updated accordingly.

**Response:** Not Cleared

**Secretariat:** CR17. Not cleared. Could the IE further clarify how the lessons learned, existing outputs, and sustainability findings from the completed project “Promoting sustainable and resilient territories in landscapes of the central volcanic chain of Guatemala,” have informed the design of the proposed intervention, particularly in areas where the two projects geographically overlap, such as Quetzaltenango and Sololá? In particular, please clarify how relevant findings and recommendations from the project evaluation, including identified risks to the long-term sustainability of interventions dependent on continued institutional engagement and local organizations, have been considered in the proposed implementation and sustainability arrangements. Please also clarify how existing outputs and capacities developed under the previous project, such as the municipal forestry policies developed in San Marcos, will be built upon or used by the proposed project to promote synergies, additionality, and avoid duplication of resources.

References:

[https://www.unevaluation.org/member\\_publications/mid-term-promoting-sustainable-and-resilient-landscapes-central-volcanic-chain](https://www.unevaluation.org/member_publications/mid-term-promoting-sustainable-and-resilient-landscapes-central-volcanic-chain)

<https://www.undp.org/es/guatemala/proyectos/promoviendo-territorios-sostenibles-y-resilientes-en-paisajes-de-la-cadena-volcanica-central-en-guatemala>

## Does the project / programme have a learning and knowledge management component to capture and feedback lessons?

**Response:** Pending

**Secretariat:** Yes.

However, more information is required.

The proposed project does not include dedicated budget or staffing associated with learning and knowledge management. In addition, the information provided is too broad, and it is not clear the arrangements to sustain them after the project concludes.

CR18: Please consider adding a dedicated component to operationalize Learning and Knowledge Management (LKM) activities.

CR19: In Part II.G, describe the feedback mechanisms in place to evaluate and refine the training materials and capacity-building activities to ensure they are effective and impactful.

CR20: In Part II.G, please specify the knowledge products that will be financed by the Adaptation Fund (AF).

CR21: In Part II.G, please specify whether arrangements have already been established with national institutions (or other relevant entities) to ensure the project's sustainability.

CR22: Please provide more specific descriptions of the activities. For example, in Part II.G, when referring to periodic reviews, specify their frequency. Likewise, when stating that “existing territorial platforms will be strengthened as spaces for learning and exchange,” please explain how these platforms will be strengthened.

**Response:** Not Cleared

**IE:** CR18: Former Output 3.4 was converted into Component 4, outcome 4.1, including 3 outputs (4.1-4.3) and related activities, under the project framework in Part II. A

CR19: Part II.G has been revised and updated accordingly.

CR20: Knowledge products have been specified in Part II.G.

CR21: Part II.G and Component 4 (in Part II. A) have been updated accordingly.

CR22: Operational details in Part II.G have been specified.

**Response:** Cleared

**Secretariat:** N/A

**Response:** Cleared

**Secretariat:** Component 4 (Knowledge management, learning and evidence-based scaling) serves as the core operational mechanism that links field-level adaptation results under Components 1, 2, and 3 directly into local planning, public financing, and national policy frameworks.

**Response:** Cleared

**Secretariat:** CR18: Cleared.

Based on new Component 4.

CR19: Cleared.

Based on updates to Section G- knowledge management section.

CR20: Cleared.

5 sets of knowledge products have been added to section G of Part II. Namely • Five (5) policy briefs and scaling roadmaps; • Climate-risk screening tools integrated into municipal planning and investment processes; • Twenty (20) technical manuals and field guides on EbA and climate-resilient production practices; • Ten (10) multilingual knowledge products; • Digital knowledge resources and dissemination materials

CR21: Cleared.

Section G specifies arrangements including "...to secure long-term sustainability beyond project closure. Operational coordination with national entities (MARN, INAB, CONAP, MAGA) and municipal authorities will enable project tools and methodologies to be integrated directly into institutional practices and planning cycles...".

CR22: Cleared.

Based on amended section G of Part II.

**Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations in compliance with the Environmental and Social Policy and Gender Policy of the Fund?**

**Response:** Pending

**Secretariat:** Yes.

However, further information is required.

The proposal indicates that a participatory consultation process was carried out with key institutional stakeholders, such as the Municipalities and Technical Advisory Committee, as well as with decentralized technical services of the State, NGOs, including representatives of women.

However, it is unclear how gender considerations and the concerns of vulnerable groups have been addressed.

CAR1: Kindly include the following detailed information in the table 11 (page 25): (i) Background information to verify whether marginalized and vulnerable groups have been consulted. (ii) A summary of the subjects/issues discussed and any agreements reached, for each session. (iii) Indicate how the participants' interests have been incorporated in the proposed project, including how gender and other vulnerable group considerations were addressed.

CAR2: Please include an Initial Gender Analysis that highlights gender dynamics and differentiated impacts between men and women from a national or sector-wide perspective, covering areas such as education, employment, health, income, and political participation (see CAR10). The information provided should inform and guide the identification of women's specific needs.

**Response:** Not Cleared

**IE:** CAR1: Table 11 has been updated accordingly.

CAR2: Addressed. The Initial Gender Analysis section has been strengthened to highlight gender dynamics and differentiated impacts across key national sectors. Please refer to p.26-27.

**Response:** Cleared

**Secretariat:** CAR1: As per Table 11, in Section H, the requested information on subjects discussed and how incorporated in the proposal is included.

CAR2:Cleared. As per initial gender assessment on page 26.

The consultative process combined eight TAC technical sessions, expert interviews, a national multisectoral workshop, and targeted field missions (November 25–28, 2025) across prioritized landscapes in Quetzaltenango, San Marcos, and Sacatepéquez, followed by institutional validations in March 2026. In total, the process engaged 225 participants across 18 specialized sessions with 129 women (57.3% female participation). The field mission directly consulted 85 local stakeholders (35% female participation) across 7 meetings and workshops and site visits (urban and rural production areas, protected areas).

**Is the requested financing justified on the basis of full cost of adaptation reasoning?**

**Response:** Pending

**Secretariat:** Yes.

As per Part II.I. The concept note outlines two scenarios: one without the project and another with the proposed interventions. Both scenarios are clearly explain per component. However, the CN should clarify about the use of other resources not from the AF.

CAR3: In Part II.I, please confirm whether the AF will be the sole source of funding. If not, please clearly indicate how the project, using only AF resources, will be able to effectively meet its objectives.

**Response:** Not Cleared

**IE:** CAR3: The Adaptation Fund will be the sole source of financing, and the project has been designed to fully achieve its objectives within the available AF grant.

**Response:** Cleared

**Secretariat:** N/A

**Response:** Cleared

**Secretariat:** CAR3: Cleared.

As per updated Part II Section I and paragraphs 2 and 3 of sub-section.

### Is the project / program aligned with AF's results framework?

**Response:** Pending

**Secretariat:** Yes, however revisions are required.

The alignment of the project with the Adaptation Fund Results Framework is presented, considering outcomes and outputs for each component. However, some revisions to the content and format are required.

CAR4: Please ensure the following information is included in the Table 14 at Part III.A:

1. All project's outputs and outcomes indicators are SMART.
2. Please ensure consistency between the AF outcome, outcome indicators, output and output indicators according to the Adaptation Fund Strategic Results Framework outlined in the updated AF Results Framework (dec 2025). For example, in the Table 14 on page 48, Fund Outcome 1 is stated as: "Reduced exposure to climate-related risks and threats", whereas it should read "Reduced exposure to climate-related hazards and threats", according to the AF Results Framework.
3. Update the table using the format provided in the updated AF Results Framework, and complete it following the instructions in the same document. The bottom part of the Table should include the information on the project's outcomes; therefore, the grant amounts should correspond to each component.

**Response:** Pending

**Secretariat:** I agree with the comments of the Co-reviewer.

However, instead of Unsure, I would put No

CAR4: 4 Please ensure that the AF Outputs in the lower part of the table are aligned with the AF Outcomes in the upper part of the table. For example, AF Output 7.1 is stated for Outcome 3.1 in the lower part of the table but in the upper part of the table Outcome 7 is not mentioned,

**Response:** Not Cleared

**Secretariat:** CAR4: 5. Please ensure that the grant amount in the results framework alignment table is separated per AF indicator whether at the outcome or output level.

**Response:** Not Cleared

**IE:** CR4:

1. All indicators have been revised. Further improvements will be done during revisions that will be carried out during PFG.
2. Adaptation Fund Strategic Results Framework was referred to ensure consistency with the project. The example given; Outcome 1 has been adjusted.
- 3-4. The table was replaced and completed using the updated AF Results Framework format and guidelines. To enhance methodological clarity, the table has been refined to map strictly one (1) primary AF indicator per project indicator, prioritizing the most relevant alignment. Previous mismatches have been eliminated.

CAR4: 5. Table 14 has been updated to clarify and disaggregate the grant budget allocation as requested.

Objective Level (Upper Section): As the project defines a single overarching Project Objective supported by three objective-level indicators (O.1.1, O.1.2, O.1.3), the total grant amount (USD15,050,000) is reflected at the objective level. O.1.1 corresponds to the C1 budget, O.1.2 to the C2 budget, and O.1.3 to the combined budgets of C3 and C4.

Outcome Level (Lower Section): The budget has been fully disaggregated by AF indicator level per component (C1: USD 6,300,000; C2 USD 6,250,000; C3: USD 1,800,000; C4: USD 700,000), accounting for 100% of the total project grant (USD 15,050,000).

**Response:** Cleared

**Secretariat:** N/A

**Response:** Not Cleared

**Secretariat:** CAR4:

1. Please utilize the following link to access the updated 2026 SFR templates with outcomes reflected as upper section and outputs on bottom, currently it reflects objectives on top. If link is broken go to the AF proposal material page. <https://www.adaptation-fund.org/document/alignment-with-adaptation-fund-results-framework-template-and-guidance-dec-2025/>
2. Relatedly, please correctly label the table as it is the "Risk framework alignment table" and not the risk framework.

**Has the sustainability of the project/programme outcomes been taken into account when designing the project?**

**Response:** Pending

**Secretariat:** Unsure.

More information is required.

The proposed project provides general information on its sustainability from three perspectives: environmental, technical, and socioeconomic. However, there is need to provide explicit details on how this can be replicated or scaled up, among others.

CR23: Please further elaborate and provide additional justification to demonstrate sustainability under the social dimension. Community participation and the recognition of ancestral knowledge alone do not ensure the long-term continuity of the project's interventions.

CR24: Please clarify which financial institutions and cooperatives will establish partnerships with local entities. Likewise, please explain how sustainability will be ensured if these partnerships are not established.

CR25: Kindly explain clearly how the replication and scaling up of the proposed project activities and benefits will be achieved. This should include, in detail, all the necessary arrangements—financial, social, regulatory, institutional, economic, and environmental—required to ensure the project's sustainability and its long-term operation and maintenance.

**Response:** Not Cleared

**IE:** CR23: Section II.J has been updated to detail structural drivers of social sustainability incorporated into project design.

CR24: Financial Partners are identified, and risk mitigation and sustainable financial measures described.

CR25: Section II.J now incorporates a dedicated scaling bullet within each of the 5 core dimensions of sustainability.

**Response:** Not Cleared

**Secretariat:** Yes, CR 23, 24, 25 are cleared. However, additional comments have been provided:

CR 26 NEW: While the proposal presents clear arrangements for environmental sustainability and post-project O&M, could the IE further clarify how lessons learned and sustainability findings from the previously completed project have informed these arrangements, particularly in areas of geographic overlap such as Quetzaltenango and Sololá? In particular, please clarify how the proposed approach addresses previously identified risks related to the continued engagement of public institutions and local organizations. Please also clarify how existing outputs and capacities developed under the previous project, such as the municipal forestry policies in San Marcos, will be built upon to strengthen synergies and additionality and avoid duplication of resources.

CR27 NEW: Could the IE further clarify how the effectiveness of the proposed EbA and ecosystem restoration measures in delivering the intended adaptation benefits will be assessed over time? While the proposal includes targets for areas restored or under improved adaptation management, as well as GIS, hydrological, and environmental monitoring, please clarify how changes in the relevant ecosystem functions and services (e.g., hydrological regulation, infiltration, soil protection, and watershed resilience) will be measured and how their longer-term effectiveness will be monitored beyond project completion.

**Does the project / programme provide an overview of environmental and social impacts / risks identified, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?**

**Response:** Pending

**Secretariat:** Yes.

However, some amendments are required.

The proposed project provides information about environmental and social risks. It also states the project

classification as Category B in the screening process. However, some details are needed.

CAR5: Please revise Table 13 (pages 45-47) to:

1. Replace "Legislation" with "Law" in the name of the first principle.
2. Describe all potential impacts (direct, indirect, transboundary and cumulative) and risks that could result from the project.
3. Revise the magnitude of the risks and impacts (low, moderate, high). Risks should describe as: "There is a risk ...." and should be accompanied by mitigation plans as: "Mitigation measures are ...." or "To mitigate this risk, the project ...."
4. Please remember that principles 1, 4 and 6 always apply. therefore please uncheck 1 and 6 in the second column.
5. If no risk is identified for a given principle, a sound justification must be provided.
6. Please strengthen the USPs justification under Part II.K as well as on how will be ensure the compliance according to the guidance, where applicable.

**Response:** Not Cleared

**IE:** CAR5: Table 13 has been revised accordingly. Clarified under Part II.K that no Unidentified Sub-Projects (USPs) are included as all activities and sites are fully defined and screened upfront to guarantee full ESP compliance.

**Response:** Cleared

**Secretariat:** N/A

**Response:** Cleared

**Secretariat:** CAR5; Cleared.

## Resource Availability

### Is the requested project / programme funding within the cap of the country?

**Response:** Pending

**Secretariat:** Yes.

The project is USD 17,880,529.

**Response:** Cleared

**Secretariat:** N/A

**Response:** Cleared

**IE:** Updated project request funding is USD 18,043,370

**Response:** Cleared

**Secretariat:** Yes, New project request funding is USD 18,043,370

**Response:** Not Cleared

**Secretariat:** CR1(NEW): The cover page of the proposal lists the total requested financing as 18,043,371; the components financing table has the total requested financing as \$18, 043, 3710 while the amount should be \$18,043,370, please correct the figures where needed.

**Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project/programme budget before the fee?**

**Response:** Pending

**Secretariat:** Yes.

However, some amendments are required.

All figures are rounded to whole numbers, and the Implementing Entity Management Fee is 8.5% (USD 1,400,779). The PFG request is correct in size (USD 150,000) and includes a PFG fee of 8.5% (USD 12,750).

However, there are some inconsistencies across the tables alongside the CN.

CAR6: Please ensure consistency across all tables in the proposal. The grant amounts for the outcomes and outputs in Table 14 are not consistent with the figures presented in Table 3. According to Table 3, each specific objective is related to one outcome. However, an example of inconsistency is: while Table 3 budgeted outcome 1 at USD 6,700,000, Table 14 budgeted at USD 7,550,000. Please revise all figures.

**Response:** Not Cleared

**Secretariat:** N/A

**Response:** Not Cleared

**Secretariat:** CAR7:

1. Please confirm if Ministry of Environment and Natural Resources will execute the PFG, however if UNEP will execute the PFG please delete 'Ministry of Environment and Natural Resources' in the PFG request form and insert UNEP.

2. Please ensure that both PFG request form and CN IE certification section are signed when the re-submission is presented.

**Response:** Not Cleared

**IE:** As component 4 has been added, execution costs has been increased to 9.5% (USD 1,579,834). And Implementing Entity Management Fee is now USD 1,413,536 (8.5% of USD 16,629, 834).

CAR6: Table 3 has been updated. Objective indicator O.1.3 responds to components 3 and 4.

CAR7: UNDP will execute PFG. The PFG request document and matrix have been adjusted.

All documents have been duly signed.

**Response:** Cleared

**Secretariat:** Project Cycle Management Fee charged by the Implementing Entity: USD 1,413,536

**Response:** Cleared

**Secretariat:** CAR6: Cleared.

Please not CR1(NEW) above and address appropriately.

CAR7: Not Cleared.

The PFG request form now includes UNDP as EE for the PFG.

However, IE certification in the PFG remains unsigned. please address for re-submission.

### Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme budget (including the fee)?

**Response:** Pending

**Secretariat:** Yes.

As per information provided in Table of "Project components and financing".

All figures are rounded to whole numbers, and the Execution Costs are 8.7% (USD 1,429,750). The figures add up across the tables alongside the CN.

**Response:** Cleared

**IE:** As component 4 has been added, Execution costs have been increased at 9.5% (USD 1,579,834).

**Response:** Cleared

**Secretariat:** Project Execution cost : USD 1,579,834

### Eligibility of IE

### Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?

**Response:** Pending

**Secretariat:** Yes.

UN Development Programme (UNDP) is an accredited Multilateral Implementing Entity (MIE).

Accreditation Expiration Date: 10 October 2029

**Response:** Cleared

**Secretariat:** N/A

**Response:** Not Cleared

**Secretariat:** CAR1(NEW): Please ensure that the IE certification in the proposal is signed.





## CONCEPT NOTE PROPOSAL FOR SINGLE COUNTRY

### PART I: PROJECT/PROGRAMME INFORMATION

**Title of Project:** “Volcanes II”: Restoration and Integrated Adaptation of Watersheds and strategic Ecosystems in the Central Volcanic Chain of Guatemala

**Country:** Guatemala

**Thematic Focal Area:** Ecosystem based Adaptation

**Type of Implementing Entity:** Multilateral Implementing Entity

**Implementing Entity:** United Nations Development Programme (UNDP)

**Executing Entities:** Ministry of Environment and Natural Resources (MARN)

**Amount of Financing Requested:** 18,043,370 (in U.S Dollars Equivalent)

**Project Formulation Grant Request (available to NIEs only):** Yes ☒ No ☐

**Amount of Requested financing for PFG:** 150,000 (in U.S Dollars Equivalent)

**Letter of Endorsement (LOE) signed:** Yes ☒ No ☐

*NOTE: LOEs should be signed by the Designated Authority (DA). The signatory DA must be on file with the Adaptation Fund. To find the DA currently on file check this page: <https://www.adaptation-fund.org/apply-funding/designated-authorities>*

**Stage of Submission:**

☒ This concept has been submitted before

☐ This is the first submission ever of the concept proposal

In case of a resubmission, please indicate the last submission date: 10 August 2026

**Please note that concept note documents should not exceed 50 pages, including annexes.**

## Acronyms and Abbreviations

|                 |                                                                                                                          |
|-----------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>AF</b>       | Adaptation Fund                                                                                                          |
| <b>BTR</b>      | Biennial Transparency Report                                                                                             |
| <b>CADER</b>    | Rural Development Learning Center (Centro de Aprendizaje para el Desarrollo Rural)                                       |
| <b>COCODE</b>   | Community Development Council (Consejo Comunitario de Desarrollo)                                                        |
| <b>COLRED</b>   | Local Disaster Reduction Committee (Coordinadora Local para la Reducción de Desastres)                                   |
| <b>COMUDE</b>   | Municipal Development Council (Consejo Municipal de Desarrollo)                                                          |
| <b>CONRED</b>   | National Disaster Reduction Coordination (Coordinadora Nacional para la Reducción de Desastres)                          |
| <b>CVC</b>      | Central Volcanic Chain                                                                                                   |
| <b>DMM</b>      | Municipal Women's Directorate (Dirección Municipal de la Mujer)                                                          |
| <b>DMP</b>      | Municipal Planning Directorate (Dirección Municipal de Planificación)                                                    |
| <b>EbA</b>      | Ecosystem-based Adaptation                                                                                               |
| <b>ESMF</b>     | Environmental and Social Management Framework                                                                            |
| <b>ESMP</b>     | Environmental and Social Management Plan                                                                                 |
| <b>FOBOSQUE</b> | Forest Protection and Recovery Fund (Fondo de Protección y Recuperación de Bosques)                                      |
| <b>FONCC</b>    | National Climate Change Fund (Fondo Nacional para el Cambio Climático)                                                   |
| <b>INE</b>      | National Institute of Statistics (Instituto Nacional de Estadística)                                                     |
| <b>KM</b>       | Knowledge Management                                                                                                     |
| <b>LKM</b>      | Learning and Knowledge Management                                                                                        |
| <b>MAGA</b>     | Ministry of Agriculture, Livestock and Food (Ministerio de Agricultura, Ganadería y Alimentación)                        |
| <b>MARN</b>     | Ministry of Environment and Natural Resources (Ministerio de Ambiente y Recursos Naturales)                              |
| <b>MSMEs</b>    | Micro, Small, and Medium Enterprises                                                                                     |
| <b>MSPAS</b>    | Ministry of Public Health and Social Assistance (Ministerio de Salud Pública y Asistencia Social)                        |
| <b>MTA</b>      | Agro-climatic Technical Table (Mesa Técnica Agroclimática)                                                               |
| <b>NAP</b>      | National Adaptation Plan                                                                                                 |
| <b>NDC</b>      | Nationally Determined Contribution                                                                                       |
| <b>OMAS</b>     | Municipal Water and Sanitation Office (Oficina Municipal de Agua y Saneamiento)                                          |
| <b>PDM-OT</b>   | Municipal Development and Land-Use Plan (Plan Municipal de Desarrollo y Ordenamiento Territorial)                        |
| <b>PMU</b>      | Project Management Unit                                                                                                  |
| <b>SEGEPLAN</b> | Secretariat of Planning and Programming of the Presidency (Secretaría de Planificación y Programación de la Presidencia) |
| <b>SESP</b>     | Social and Environmental Screening Procedure                                                                             |
| <b>SIA</b>      | Environmental Information System (Sistema de Información Ambiental)                                                      |
| <b>SISCODE</b>  | Development Council System (Sistema de Consejos de Desarrollo)                                                           |
| <b>SNICC</b>    | National Climate Change Information System (Sistema Nacional de Información sobre Cambio Climático)                      |
| <b>UGAM</b>     | Municipal Environmental Management Unit (Unidad de Gestión Ambiental Municipal)                                          |
| <b>UNDP</b>     | United Nations Development Programme                                                                                     |

## A. Project/Programme Background and Context

### A.1 Background and Project Context

#### Geography and territorial characteristics

Guatemala is characterized by highly heterogeneous geography, with strong altitudinal gradients ranging from coastal plains to mountain systems exceeding 4,000 meters above sea level, particularly in the Central Volcanic Chain (CVC). This configuration determines high territorial complexity and environmental and climatic sensitivity. The western and central highlands are structured around interconnected watershed systems draining into the Pacific slope, where upper headwaters areas regulate key hydrological flows. In this context, the Zuni–Atitlán–Balám Juyú, Xela, and Candacuchex biological corridors constitute strategic units for water regulation, ecological connectivity, and territorial resilience, highlighting critical upper-to-lower watershed interdependences<sup>12</sup>.

#### Socioeconomic context and climate-sensitive livelihoods

Guatemala has approximately 14.9 million inhabitants (46.2% rural) with an indigenous population of nearly 44%, mainly concentrated in the western and central highlands. These characteristics shape territorial contexts with high dependence on natural resources and elevated levels of socio-environmental vulnerability<sup>3</sup>. The country presents a medium level of human development (HDI: 0.627), reflecting persistent gaps in income, education, and access to basic services<sup>4</sup>. These gaps are more pronounced in rural and indigenous territories, where socioeconomic limitations reduce adaptive capacities. In 2023, national poverty reached 56% (66.4% in rural areas), while a high Gender Inequality Index (0.48) reflects severe disparities in economic participation, asset ownership, income and resource access<sup>5</sup>.

These intersecting socioeconomic and gender inequalities weaken community resilience and constrain the adaptive capacities of vulnerable households, increasing their exposure and sensitivity to climate-related shocks and agricultural losses<sup>6</sup>. Consequently, migration has emerged across the highlands as a critical survival strategy in response to rural livelihood loss, poverty, and heightened climate exposure constitutes.

#### Ecosystems, forests, and land use

Climate variability and climate change are increasing exposure and vulnerability across Guatemala's CVC, particularly for rural and Indigenous communities, smallholder farmers, water users, and municipalities dependent on climate-sensitive natural resources. Recurrent droughts, intra-seasonal precipitation deficits, rising temperatures, extreme precipitation, flooding, soil erosion, and seasonal water scarcity directly affect agriculture productivity, water supply, rural livelihoods, and ecosystem services.

The vulnerability of these territories is amplified by their dependence on mountain watersheds and headwater ecosystems that regulate water flows, recharge aquifers, stabilize soils, and sustain productive systems. Guatemala's forests and biological corridors function as critical natural infrastructure, providing hydrological regulation, erosion control, soil protection, biodiversity conservation, and climate resilience benefits. However, continued forest loss, land degradation, agricultural expansion, and unsustainable land-use practices are reducing ecosystem functionality and weakening the capacity of landscapes to buffer climate shocks. Nationally, forest cover represented 33.3% of the territory in 2020, while net loss reached 52,736 hectares during 2016–2020<sup>7</sup>. In project-relevant departments, annual forest cover declines have also been recorded, including in Chimaltenango (–1.12%), highlighting persistent pressures on landscapes that are critical for water regulation and adaptation.

<sup>1</sup> Ministry of Environment and Natural Resources (MARN). (2009). Second National Communication on Climate Change. Government of Guatemala; United Nations Development Programme (UNDP). (2025). Preliminary Climate Vulnerability Assessment for the Formulation of the Adaptation Fund Concept Note – Guatemala.

<sup>2</sup> Ministry of Environment and Natural Resources (MARN). (2009). Second National Communication on Climate Change. Government of Guatemala; United Nations Development Programme (UNDP). (2025). Preliminary Climate Vulnerability Assessment for the Formulation of the Adaptation Fund Concept Note – Guatemala.

<sup>3</sup> National Institute of Statistics (INE). (2019). XII National Population Census and VII Housing Census 2018. Guatemala.

<sup>4</sup> United Nations Development Programme (UNDP). (2023). Human Development Report 2023/24. New York.

<sup>5</sup> United Nations Development Programme (UNDP). (2023). Gender Inequality Index (GII) – Guatemala. Human Development Data Center.

<sup>6</sup> United Nations Development Programme (UNDP). (2024). Guatemala Migration Activity Index (IAMG): Contributions for the Targeting and Territorial Implementation of Public Policies. Guatemala.

<sup>7</sup> National Forest Institute (INAB); National Council of Protected Areas (CONAP). Forest Cover of the Republic of Guatemala and Forest Cover Dynamics 2016–2020. Guatemala Forest Information System (SIFGUA). Available at: <https://www.sifgua.org.gt>

The deforestation of forests, soils and watersheds is directly affecting hydrological regulation. Therefore, the restoration and protection of strategic water provision and recharge areas, together with the reduction of land degradation and the strengthening of ecosystem-based adaptation, are essential to reducing climate vulnerability in priority watersheds.

### **Water resources and watershed dynamics**

Guatemala presents high hydrological complexity, where watershed systems connect the highlands with the Pacific slope and perform key functions in flow regulation, aquifer recharge, and water provision for downstream populations and productive systems<sup>8</sup>. Across the target territory, nearly two-thirds of municipalities have more than 70% of their surface area located in headwater zones, while over half contain high water recharges areas covering 40–50% of their municipal area. This confirms their importance for national water security<sup>9</sup>.

These hydrological functions are increasingly compromised by persistent forest cover loss, soil degradation, water pollution due to untreated wastewater discharges, inadequate solid waste management, and fragmented water governance. Climate change further intensifies these pressures by increasing evapotranspiration, reducing infiltration and groundwater recharge, and amplifying hydrological extremes, such as water scarcity, prolonged droughts, and intense rainfall. As a result, water availability becomes more variable and unreliable, increasing the vulnerability of watershed and dependent populations and livelihoods<sup>10</sup>.

### **Agriculture, food security, and rural production systems**

Rural livelihoods in Guatemala depend largely on smallholder and family-based agriculture, which remains central to food security and local economies. However, productivity and diversification are constrained by limited access to land, finance, technology, and infrastructure, and extension services<sup>11</sup>.

These production systems are highly sensitive to climate variability and water availability. Rising temperatures, irregular rainfall, prolonged dry spells, and extreme weather events contribute to declining yields, cross losses, and growing food insecurity, particularly among rural and indigenous households. These impacts are intensified by soil and ecosystem degradation, further reducing the resilience of agricultural systems and rural livelihoods<sup>12</sup>.

### **Institutional and governance context**

Guatemala has established a policy and institutional framework for climate adaptation, environmental management and territorial planning, led by the Ministry of Environment and Natural Resources (MARN) in coordination with sectoral and subnational entities. This framework promotes the integration of climate change adaptation into national and local development planning and supported ongoing decentralization processes<sup>13</sup>.

Nonetheless, implementation remains constrained by institutional fragmentation, limited technical and financial capacities at the local level, and weak coordination across sectors and governance scales<sup>14</sup>. These challenges hinder integrated watershed management, climate-informed territorial planning, and the effective participation of Indigenous Peoples, women, and other vulnerable groups, affecting the sustainability of adaptation interventions.

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<sup>8</sup> Secretariat of Planning and Programming of the Presidency (SEGEPLAN). National Development Plan K'atun: Our Guatemala 2032. Government of Guatemala.

<sup>9</sup> Ministry of Environment and Natural Resources (MARN). Geospatial database of watersheds, water recharge zones, and municipal territorial characterization. Guatemala.

<sup>10</sup> Secretariat of Planning and Programming of the Presidency (SEGEPLAN). National Development Plan K'atun: Our Guatemala 2032. Government of Guatemala.

<sup>11</sup> Secretariat of Planning and Programming of the Presidency (SEGEPLAN). National Development Plan K'atun: Our Guatemala 2032. Government of Guatemala.

<sup>12</sup> Ministry of Environment and Natural Resources (MARN). National Climate Change Action Plan (PANCC) 2018. Government of Guatemala.

<sup>13</sup> Secretariat of Planning and Programming of the Presidency (SEGEPLAN). National Development Plan K'atun: Our Guatemala 2032. Government of Guatemala.

<sup>14</sup> Ministry of Environment and Natural Resources (MARN). National Climate Change Action Plan (PANCC) – Second Edition. Government of Guatemala, 2018.

A.2 Climate Context and Impacts

(i) Current Climate

Climatic context and location

Guatemala presents high climatic heterogeneity, with altitudinal gradients ranging from 700 to 4,200 meters above sea level, generating strong spatial variability in temperature, precipitation, and water balance. The climate regime is influenced by the Intertropical Convergence Zone (ITCZ) and the El Niño–Southern Oscillation (ENSO), with two well-defined seasons (dry: November–April; rainy: May–October) and the presence of the mid-summer drought (canícula) in July, which introduces significant intra-seasonal water deficits.

As part of a preliminary territorial prioritization process, MARN applied a weighted multi-criteria analysis that integrates climate, hydrological, ecological and socioeconomic vulnerability indicators. The analysis prioritizes critical **upper (20%) and middle (20%) watershed areas** that function as essential water recharge areas, representing 25% of areas classified as having high or very high recharge potential. These priorities were combined with **biological corridors (15%)** and **forest cover (5%)** to identify territories where ecosystem degradation directly threatens hydrological regulation, biodiversity, and local livelihoods (see **Figure 1**). The prioritization also incorporated **communal lands (10%)** and the **Human Development Index (5%)** ensuring that interventions focus on territories where climate risks intersect with high socioeconomic vulnerability while leveraging existing community governance systems to support long-term adaptation sustainability.

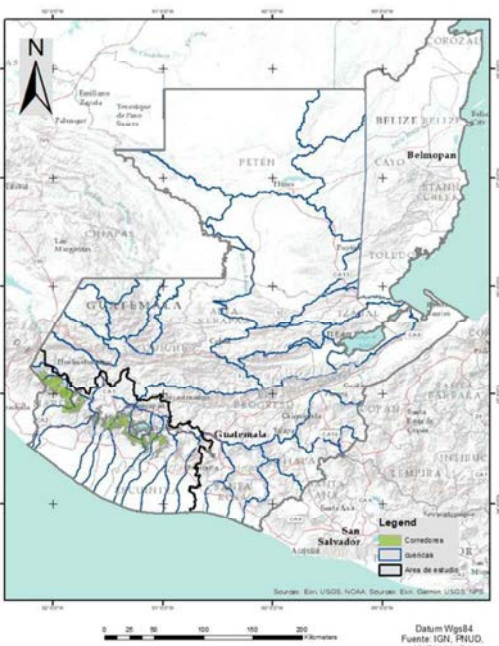


Figure 1: Geographic location of biological corridors and area of influence. Source: own elaboration (UNDP).

Based on this prioritization, the intervention area is located in the southwestern and central regions of the country, within watersheds of the Pacific slope and strategic biological corridors such as Zunil–Atitlán–Balám Juyú, Xela, and Candacuchex. These areas are relevant for upstream and downstream communities, municipalities, agricultural systems, and water users because they sustain key watershed functions, including water availability, flow regulation, aquifer recharge, soil stability, and ecological connectivity.

The Central Volcanic Chain (CVC) is framed as a **functional adaptation territory**, where upstream ecosystem-based interventions in headwater and recharge zones can generate preventive and systemic adaptation benefits by strengthening hydrological regulation before climate impacts materialize. The area also combines strong cultural identity and community rootedness with persistent challenges of poverty, exclusion, livelihood degradation, and migration, reinforcing the need for integrated interventions that simultaneously address ecosystem resilience, water regulation, livelihoods resilience, and territorial governance.

The prioritized municipalities are presented in **Figure 2** and **Table 1**.

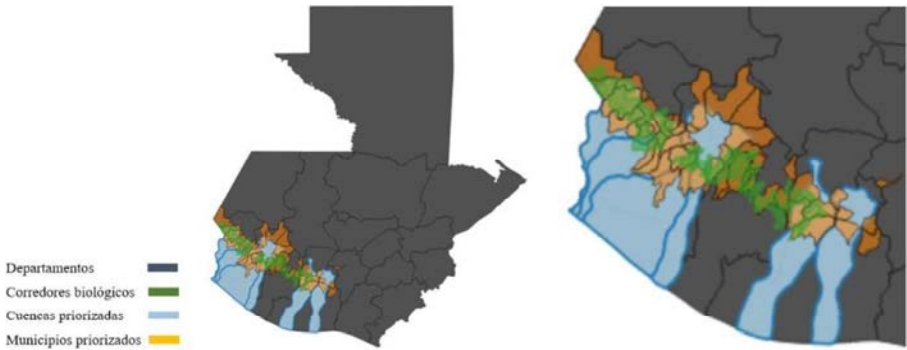


Table 1. Prioritized departments and municipalities (Quantile 1). Source: own elaboration (UNDP).

Figure 2: Priority areas for project intervention. Source: own elaboration (UNDP).

| Departments    | Municipalities                                                                                                                                                                          |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chimaltenango  | Acatenango; Patzún; Pochuta; San Andrés Itzapa; Yepocapa                                                                                                                                |
| Quetzaltenango | Cajolá ; Cantel; Colombia; Concepción Chiquirichapa; El Palmar; Palestina de Los Altos; Quetzaltenango; San Carlos Sija; San Juan Ostuncalco; San Martín Sacatepéquez; San Mateo; Zunil |
| Sacatepéquez   | Alotenango; San Miguel Dueñas; Santa María de Jesús                                                                                                                                     |

|               |                                                                                                                                                                                                                                              |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| San Marcos    | El Quetzal; El Tumbador; Esquipulas Nuevo Progreso; Palo Gordo; Ixchiguán; La Reforma; San Antonio Sacatepéquez; San Cristóbal Cucho; San Marcos; San Pablo; San Pedro Sacatepéquez; San Rafael Pie de La Cuesta; Sibinal; Tacaná; Tajumulco |
| Sololá        | Nahualá; San Andrés Semetabaj; San Juan La Laguna; San Lucas Tolimán; San Pedro La Laguna; Santa Catarina Ixtahuacán; Santa Clara La Laguna; Santa Lucía Utatlán; Santa María Visitación; Santiago Atitlán                                   |
| Suchitepéquez | Pueblo Nuevo; San Francisco Zapotitlán                                                                                                                                                                                                       |
| Totonicapán   | Momostenango; Santa María Chiquimula; Totonicapán                                                                                                                                                                                            |

Temperature

Temperature conditions vary significantly across the intervention area due to altitude. In the Western Highlands, mean annual temperatures range between 16°C and 24°C, with minimum temperatures approaching 0°C at higher elevations. In contrast, average annual temperatures exceed 30°C in lower-altitude areas and along the Pacific Coast. These thermal gradients strongly influence evapotranspiration (PET), soil moisture dynamics, vegetation distribution and the stability of montane forests that sustain hydrological regulation functions (see **Figure 3**).

Precipitation

Precipitation also exhibits high spatial variability. Annual rainfall ranges from approximately 2,000 and 4,000 mm per year in northern Guatemala, 1,500 and 2,500 mm along the Pacific Coast, 1,000 and 1,800 mm in the Central Highlands; and 600 and 1,200 mm in the eastern region.

In the biological corridors of the Southwest (Zunil Atitlán Balám Juyú, Candacuchex, and Xela), precipitation is strongly influenced by the orographic uplift of moist air masses originating from the Pacific Ocean. This process generates intense rainfall and, in montane ecosystems, cloud and fog interception that contribute significantly to aquifer recharge and the maintenance of baseflows.

The annual rainfall cycle is characterized by a rapid increase between May and June, with monthly accumulations of approximately 333–394 mm, followed by a reduction during the canicula in July and a second rainfall peak in September that reaches 361–445 mm/month (see **Figure 4**). This pattern—characterized by concentrated rainfall peaks and a mid-summer rainfall dip— creates a dual climate risk: intra-seasonal water deficits that affect agriculture and water supply, and periods of intense rainfall that increase runoff, erosion, and flood risks.

Water balance

For this analysis, water balance is defined as precipitation minus potential evapotranspiration ( $WB = PP - PET$ ). While positive values indicate climatic moisture surplus, these values should not be interpreted as direct groundwater recharge, which also depends on soil, land cover, slope, infiltration, and watershed conditions.

In the biological corridors of the Southwest, the average annual water balance is positive, with surpluses of approximately 640–900 mm/year. However, monthly patterns show recurrent dry-season deficits between November and April, with negative values ranging from –12 to –91 mm/month, followed by surplus peaks in June and September, with a reduction in July associated with the mid-summer rainfall dip (see **Figure 5**). This confirms that, despite annual moisture surplus, watersheds face recurrent intra-annual water stress, affecting baseflow stability, recharge potential, and dry-season ecosystem services.

Spatial differences are also pronounced. Moisture surpluses are concentrated in mountainous headwater areas, whereas lower watershed sections experience deficits of approximately –300 to –500 mm. Pacific slope watersheds such as Naranjo and Suchiate exceed 1,100–1,250 mm/year in annual surplus, whereas Coatán, Salinas, and Cuilco show lower surpluses.

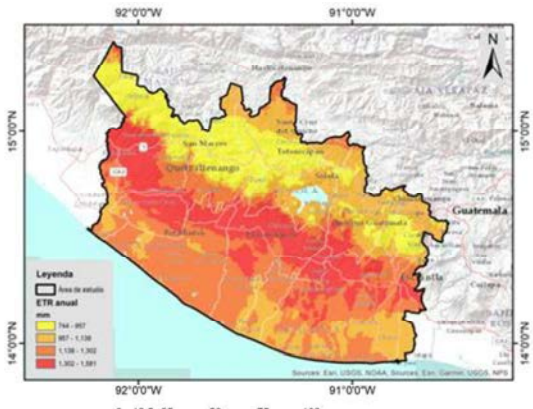


**Figure 3:** Spatial distribution of mean monthly actual evapotranspiration in the study area. Source: own elaboration (UNDP).

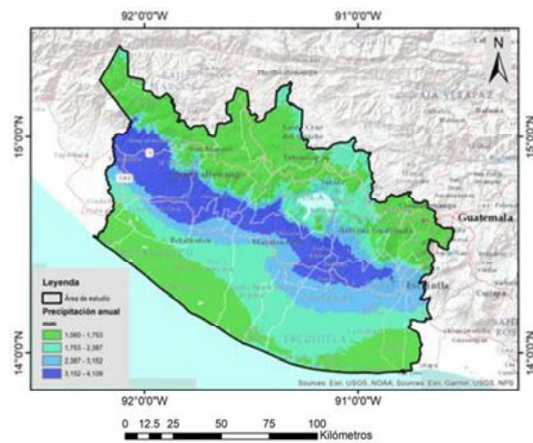


**Figure 4:** Spatial distribution of mean annual precipitation in the study area. Source: own elaboration (UNDP).

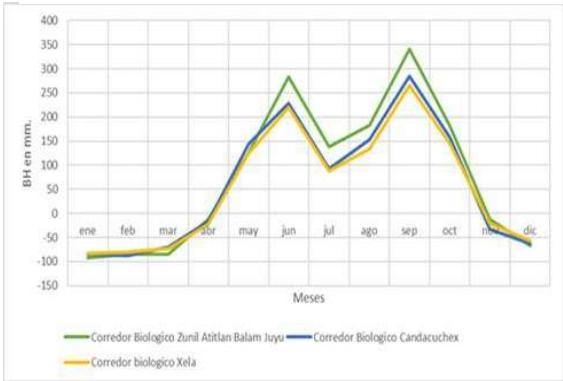


**Figure 5.** Monthly water balance in the biological corridors of the study area. Source: own elaboration

A similar pattern is observed across priority municipalities (see **Figure 6**). Quantile 1 municipalities show the highest dry-season deficits, ranging from approximately  $-35$  to  $-120$  mm/month between November and April, while Quantiles 2 and 3 show less severe deficits. Nevertheless, all groups maintain positive annual surpluses of around 540 mm, 835 mm, and 764 mm, respectively, much of which is lost through surface and subsurface runoff.

**This finding is central to the project's adaptation rationale:** the principal challenge is not the absolute availability of water, but its seasonal and spatial imbalance. Consequently, adaptation efforts must focus on improving infiltration, recharge, water retention, and watershed regulation, particularly in headwaters and strategically important recharge areas.

## (ii) Observed Changes in Climate

### Temperature and extreme heat

Observed climate records indicate a sustained warming trend across Guatemala between 1980 and 2023, with a strong positive trend ( $R^2 = 0.6364$ ) that exceeds expected natural variability. Since 2000—and with greater intensity since 2010—national temperature anomalies have remained consistently above the historical baseline, with recent values exceeding **1.04** relative to the reference index (see **Figure 7**).

This warming signal is particularly pronounced in the Western Highlands. Between the baseline period (1971–2000) 2001–2014, the Labor Ovalle station (Quetzaltenango) records an increase of **1.4 °C** (from 13.6 °C to 15.0 °C), while Huehuetenango records **1.6 °C** (from 17.1 °C to 18.7 °C), with approximate rates of **0.06–0.063 °C/year**. By 2024, Labor Ovalle also reports a mean annual temperature close to 15.62 °C confirming the persistence of the warming trend.

Similar changes are observed along the Pacific-facing gradient.

At Camantulul station (Boca Costa), mean annual temperature increased from **24.9 °C** during the baseline period to **26.4 °C** in 2001–2014, reaching approximately **26.8 °C** by 2024, evidencing that warming is occurring across the priority area regardless of elevation. Climate Change Indices (ETCCDMI) further indicate an increase in the frequency and persistence of extreme heat, including higher numbers of summer days (SU25), hot days (TX90p), and warm spell duration (WSDI). These trends increase atmospheric water demand and intensify hydrological stress.

### Evapotranspiration, soil moisture, and water balance

Increasing temperatures are already affecting water availability through higher potential evapotranspiration (PET), reducing soil moisture and narrowing resilience margins during periods of reduced rainfall, such as the *canícula*. Current observations show consistent dry-season moisture deficits of **–12 to –91 mm/month** particularly between December and April.

The effects of warming are compounded by the *canícula*, which interrupts the rainy-season recharge period and concentrates water surpluses into only a few months of the year. Consequently, watersheds increasingly operate under a regime of seasonal water stress, affecting aquifer recharge, baseflows, ecosystem services, and agricultural productivity.

### Irregularity of precipitation and frequency of droughts

Climate modelling conducted by UNDP Guatemala for this concept note<sup>15</sup> indicates increasing rainfall variability in the Central Highlands, including delays of **2–3 weeks in the onset of the rainy season** and longer intra-seasonal dry periods associated with the *canícula*. These changes increase uncertainty for agriculture and water resources management.

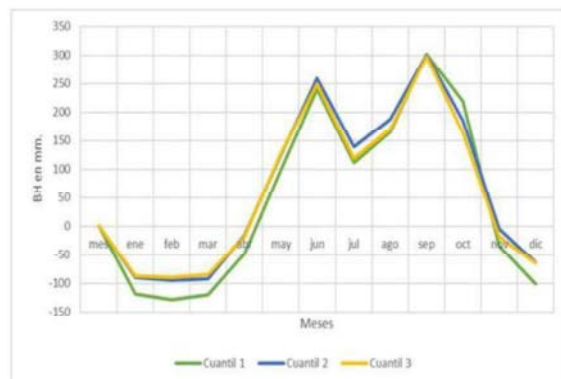


**Figure 6.** Monthly soil water balance for the municipalities prioritized by MARN. Source: own elaboration (UNDP).

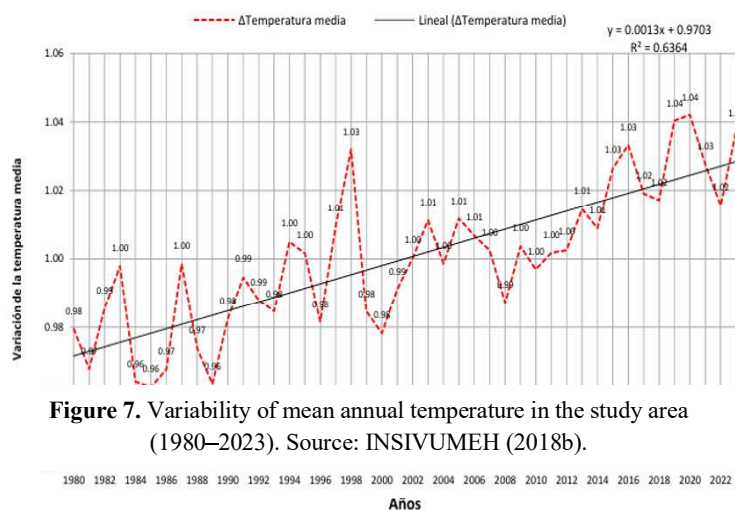


**Figure 7.** Variability of mean annual temperature in the study area (1980–2023). Source: INSIVUMEH (2018b).

<sup>15</sup> UNDP Guatemala. Analysis of GCM climate change models (CMIP6) for selected biological corridors under SSP1-2.6 and SSP5-8.5 scenarios across the periods 1990–2024, 2021–2040, 2041–2060, 2061–2080, and 2081–2100, using local datasets and WorldClim v2.1, aimed

Observed climate trends suggest that changes in precipitation are occurring not only through variations in annual totals, but also through changes in rainfall distribution and intensity. Annual precipitation ranges from approximately **890 mm at Labor Ovalle** to **3,350 mm in Camantulul**, reflecting the strong orographic influences along the highland–Boca Costa gradient.

Although annual precipitation has increased at both stations between the periods 1971–2000 and 2001–2014 (see **Figure 8**), this trend does not necessarily reduce climate risk. Instead, rainfall is concentrated over shorter periods, increasing surface runoff, erosion, sedimentation, and flood risks, while reducing opportunities for infiltration and groundwater recharge.

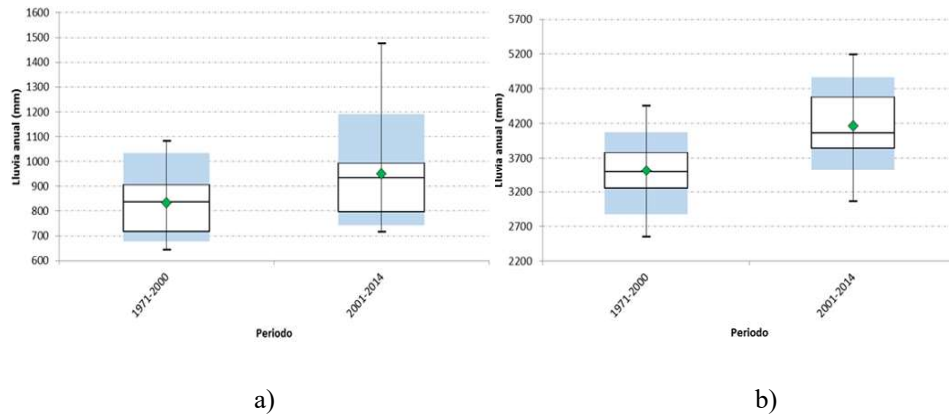


**Figure 8.** (a) Behavior of annual precipitation at the Labor Ovalle station for the periods 1971–2000 and 2001–2014. (b) Behavior of annual precipitation at the Camantulul station for the same periods. Source: INSIVUMEH (2018b).

### Floods and extreme rainfall events

Climate change is also reflected in the increasing intensity of extreme rainfall events, with records of up to 200–259 mm/day (Rx1day) and values of 100–120 mm/day in northern areas. Likewise, hourly intensities can reach 70–120 mm/h, increasing runoff, erosion, and flood risk.

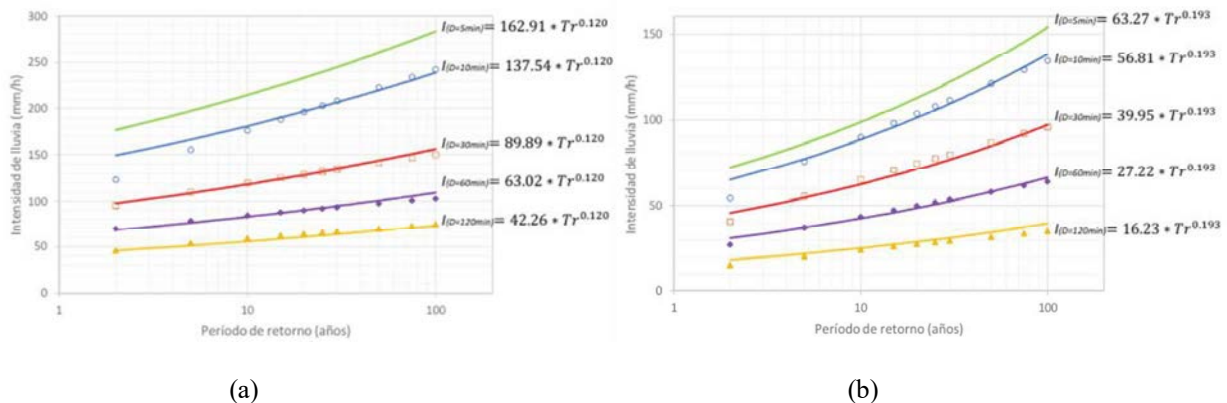


**Figure 9.** (a) Intensity-duration-frequency (IDF) curve for the Retalhuleu station. (b) Intensity-duration-frequency (IDF) curve for the Labor Ovalle station. Source: INSIVUMEH (2018a).

### Observed impacts consistent with climate change signals

Observed trends are already translating into quantifiable impacts measurable socioeconomic and environmental impacts. Tropical depressions Eta and Iota (2020) affected more than 3.7 million people in Guatemala, evidencing the high exposure of populations settled on slopes and watersheds of the Southwest<sup>16</sup>. Economic losses associated with disasters are estimated at 1% of GDP annually, reducing recovery and investment capacity<sup>17</sup>.

at informing adaptive systems for climate-resilient development in vulnerable landscapes of the Guatemalan Highlands and Southern Coast (mangrove corridor). November 2025

<sup>16</sup> Institute for Climate Change Research (ICC). (2012). Study on precipitation intensity in priority watersheds of the ICC. Guatemala.

<sup>17</sup> Campos Hidalgo, A., & Barbero-Barrera, M. del M. (2020). Assessment of digitalization in the face of natural disasters: the cases of Guatemala, Costa Rica, and Nicaragua. Estudios, ISSN 2695-6462.

At the same time, rising temperatures, increasing evapotranspiration, recurrent dry-season moisture deficits (–12 to –91 mm) and more intense rainfall events (Rx1day up to 259 mm/day and hourly intensities up to 120 mm/h) are affecting water availability, accelerate soil erosion, degrading water sources and increasing pressure on infrastructure and productive systems<sup>181920</sup>. This evidence supports that observed changes in temperature and precipitation are already exceeding historical parameters of operation and design, highlighting the urgency for adaptation measures in the intervention area.

### (iii) Projected changes in climate

#### Projected temperature increase

Climate projections indicate sustained and cumulative increase in mean monthly temperature across the three biological corridors of the Southwest —Zunil Atitlán Balám Juyú, Candacuchex, and Xela—, under both emissions scenarios. Under SSP126, **mean monthly temperature** is projected to increase by approximately **0.86 °C to 1.54 °C** across the analyzed periods: 2021–2040, 2041–2060, 2061–2080, and 2081–2100. Under SSP585, warming is substantially higher, reaching approximately **1.54 °C to 5.1 °C** across the same periods, with the highest increase projected for 2081–2100.

Recent climate modelling<sup>21</sup> identifies projected warming as a key driver of future water stress in the target landscape. **Potential evapotranspiration** is projected to increase by approximately **3–5% under SSP126** and by **7–13% under SSP585**. Under the high-emission scenario, this increase coincides with projected **reductions in rainy-season precipitation of 8–25%** and reaching up to **44%** by 2081–2100, with **negative July water-balance** values by 2081–2100 across the three biological corridors. These projected changes indicate increasing pressure on soil moisture availability, recharge-related functions, baseflows, and the stability of montane ecosystems that regulate Pacific-slope watersheds.

#### Projected changes in precipitation

In the biological corridors of the Southwest (Zunil Atitlán Balám Juyú, Candacuchex, and Xela), Climate projections suggest that future risk will be driven less by changes in annual rainfall totals than by changes in **rainfall distribution and seasonality**. Both scenarios project a stronger and more prolonged canícula, with July precipitation reductions reaching up to **–44%** under **SSP585** by the end of the century.

At the monthly scale, GCMs also show that rainfall is projected to become more irregular, with greater concentration in intense events separated by longer dry periods. This pattern is expected to increase both drought risk and flood risk, while reducing hydrological reliability for ecosystems, agriculture, and water supply systems.

#### Projected hydrological balance

The interaction between projected temperature increases and the reduction/seasonal redistribution of precipitation reconfigures the water balance and are expected to reduce effective water availability across the Southwest corridors<sup>22 2324 25</sup>. Although seasonal recovery remains evident under SSP126, water surpluses become progressively weaker. **Under SSP585, the system crosses critical water stress thresholds:** the combination of accelerated warming, higher PET, and a more intense reduction of rainfall during the mid-summer dry period deteriorates soil moisture reserves and makes intra-seasonal recovery more fragile. This implies lower effective infiltration, reduced percolation, and greater pressure on subsurface, and groundwater flows that sustain hydrological regulation in headwaters and transition zones.

<sup>18</sup> National Institute of Seismology, Volcanology, Meteorology and Hydrology (INSIVUMEH). (2018a). Intensity, duration, and frequency (IDF) curves for the Republic of Guatemala. Ministry of Communications, Infrastructure and Housing.

<sup>19</sup> National Institute of Seismology, Volcanology, Meteorology and Hydrology (INSIVUMEH). (2021a). Climate indices in Guatemala: 1981–2010 and 1991–2020. Climate Change Section.

<sup>20</sup> Private Institute for Climate Change Research (ICC). (2012). Study of precipitation intensity in ICC priority watersheds. Guatemala.

<sup>21</sup> UNDP Guatemala. Analysis of GCM climate change models (CMIP6) for selected biological corridors under SSP1-2.6 and SSP5-8.5 scenarios across the periods 1990–2024, 2021–2040, 2041–2060, 2061–2080, and 2081–2100, using local datasets and WorldClim v2.1, aimed at informing adaptive systems for climate-resilient development in vulnerable landscapes of the Guatemalan Highlands and Southern Coast (mangrove corridor). November 2025

<sup>22</sup> Pons, D., Castellanos, E., Conde, D., Brincker, J., Incer, D., & López, A. (2018). Aridity scenarios for Guatemala for the years 2030, 2050, and 2070 using climate change models. *Revista Yu'am*, 2(4), 4–16.

<sup>23</sup> Rivera, P. F., Bardales Espinoza, W. A., & Ochoa, W. (2019). Future climate change scenarios for Guatemala. In E. J. Castellanos et al. (Eds.), *First assessment report on climate change knowledge in Guatemala* (pp. 40–61). Editorial Universitaria UVG.

<sup>24</sup> Institute of Agriculture, Natural Resources and Environment – Rafael Landívar University (IARNA-URL). (2011). *Climate change and biodiversity: Elements to analyze their interactions in Guatemala under an ecosystem-based approach*. Guatemala.

<sup>25</sup> Pineda, P. (2022). *Biodiversity*. Rafael Landívar University, Editorial Cara Parens.

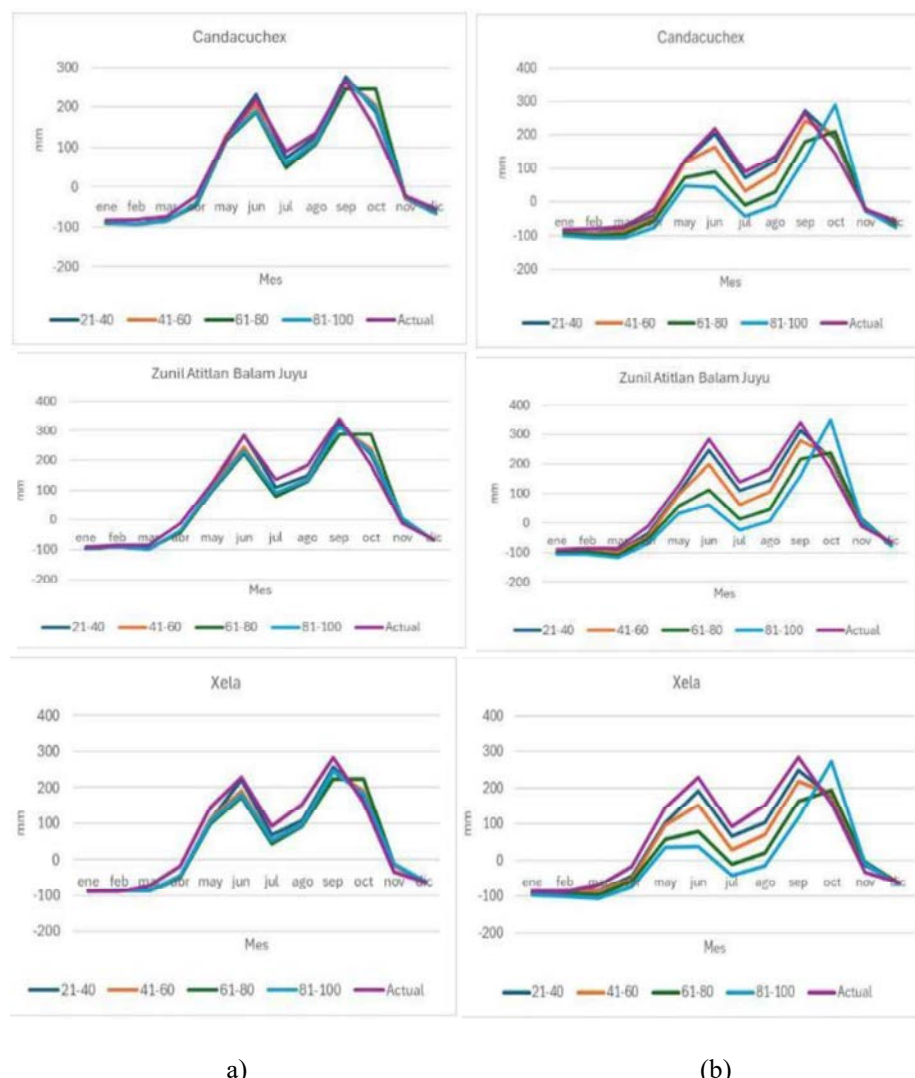
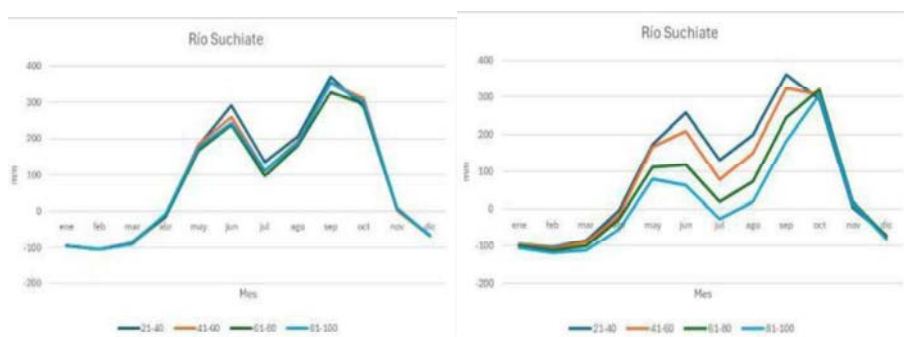


**Figure 10.** Projected changes in the monthly water balance in the biological corridors of the study area for scenarios (a) SSP126 and (b) SSP585. The Candacuchex, Zunil Atitlán Balam Juyú, and Xela corridors are shown for the periods 2021–2040, 2041–2060, 2061–2080, and 2081–2100, in comparison with the reference period. Source: own elaboration (UNDP).

**At the watershed scale,** projected water balances indicate a shift toward greater hydrological variability, characterized by deeper dry-season deficits and a stronger concentration of moisture surpluses during peak rainfall months, especially under SSP585. As water availability becomes increasingly uneven throughout the year, pressures on infiltration, aquifer recharge, baseflows, and watershed regulation functions of Pacific slope watersheds are expected to intensify.



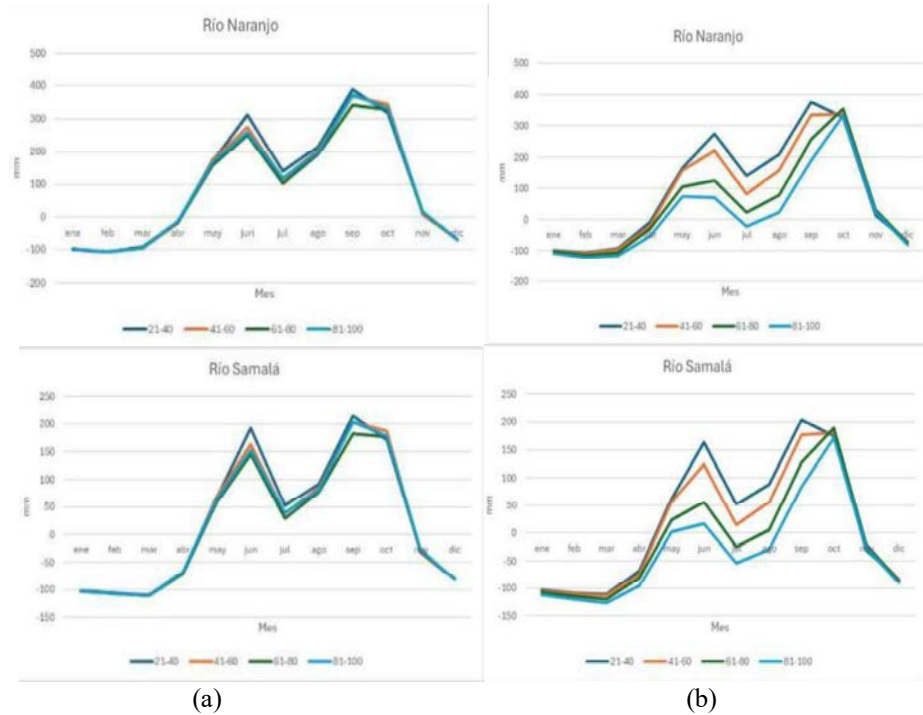


**Figure 11.** Projected changes in the monthly water balance in three selected watersheds of the study area for scenarios (a) SSP126 and (b) SSP585. The Naranjo, Samalá, and Suchiate river basins are shown for the periods 2021–2040, 2041–2060, 2061–2080, and 2081–2100, in comparison with the reference period. Source: own elaboration (UNDP).

**Municipal-level projections** indicate a gradual deterioration of moisture conditions throughout the century. **Under SSP585, negative water-balance conditions intensify during the *canícula*** and, in the most critical periods, extend into August, reaching values of approximately  $-24$  mm. This shift reflects a reduction in effective moisture availability during key hydrological recovery months, resulting in lower infiltration, reduced aquifer recharge, declining baseflows, and weaker landscape connectivity across the biological corridors. This pattern is consistent with the hypothesis of “hydrological collapse” described for the end of the century, where the country transitions toward increasingly dry conditions with greater intra-seasonal severity<sup>26 27</sup>.

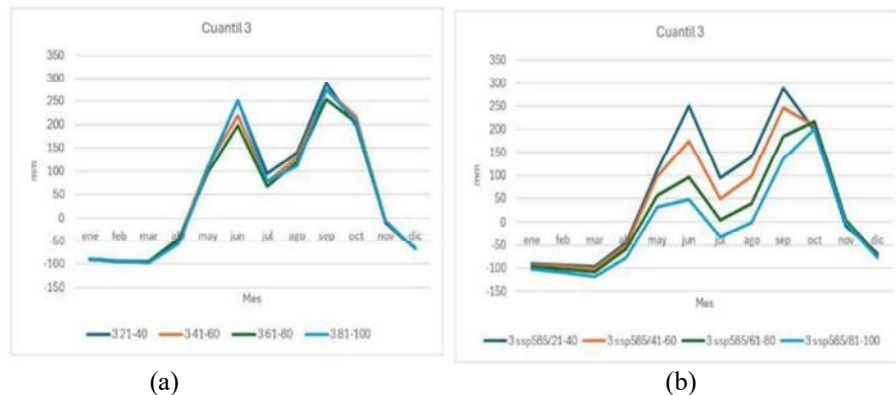


**Figure 12.** Comparison of the monthly water balance for the prioritized municipalities across different analysis periods under scenarios (a) SSP126 and (b) SSP585. Source: own elaboration (UNDP).

These projections indicate that climate risk is driven not only by changes in annual averages, but by a progressive reduction in effective water availability for ecosystems and productive systems during critical periods, particularly the mid-summer drought (*canícula*) and seasonal transition months. As moisture deficits intensify and hydrological seasonality becomes more pronounced, pressures on recharge processes, baseflows, ecosystem functioning, and agricultural production are expected to increase. In the absence of adaptation

<sup>26</sup> Rivera, P. F., Bardales Espinoza, W. A., & Ochoa, W. (2019). Future climate change scenarios for Guatemala. In E. J. Castellanos et al. (Eds.), First assessment report on climate change knowledge in Guatemala (pp. 40–61). Editorial Universitaria UVG.

<sup>27</sup> Institute of Agriculture, Natural Resources and Environment – Rafael Landívar University (IARNA-URL). (2011). Climate change and biodiversity: Elements to analyze their interactions in Guatemala under an ecosystem-based approach. Guatemala.

measures, this trend toward **aridification** is consistent with projections of **broader bioclimatic transformation** across Guatemala, including the **contraction of humid life zones** by 2050 and the expansion of **drier conditions** toward the end of the century<sup>28 29</sup>. Such changes would have significant implications for hydrological regulation, ecosystem integrity, biodiversity conservation, and the long-term resilience of territories and livelihoods.

#### (iv) Climate vulnerability assessment

Climate vulnerability in the CVC results from the interaction between increasing climate hazards, the sensitivity of socioecological systems, and persistent limitations in adaptive capacity. Vulnerability is therefore determined not only by exposure to observed and projected climate change, but also by the hydrological, ecological, socioeconomic, institutional, and intersectional factors that restrict the capacity of ecosystems, communities, and institutions to anticipate, absorb, and respond effectively to climate stress.

According to the climate modelling analysis prepared by UNDP Guatemala, climate projections were developed using CMIP6 General Circulation Models under SSP126 and SSP585 scenarios, with the current reference period based on observed records for **1990–2024** and future periods defined as **2021–2040, 2041–2060, 2061–2080, and 2081–2100**. Mean monthly temperature projections were derived from the **ACCESS-CM2 model** and precipitation projections from **IPSL-CM6A-LR**, using WorldClim 2.1 datasets downscaled to **1 km<sup>2</sup> resolution** and bias-corrected against observed climate records. Monthly water balances were estimated using projected precipitation, potential evapotranspiration calculated through the **Hargreaves method**, and a soil-water balance approach based on **Thornthwaite and Mather**.

The results show a **progressive and cumulative—although spatially differentiated—deterioration of water, soil, and vegetation/ecosystems conditions across southwestern Guatemala**. Taken together, this trajectory configures a growing territorial risk that places pressure on watershed hydrological regulation, agroecosystem productivity, and the resilience of biological corridors, especially under high-emissions scenarios.

**Table 2.** Adverse impacts for the different periods and SSP scenarios used in the climate and water-balance modelling. Source: UNDP Guatemala.

| Period    | Scenario | Impacts                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                    |
|-----------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |          | Water                                                                                                                                                                                                                                                                                                                                                                             | Soil                                                                                                                                                                                                            | Vegetation                                                                                                                                                                                                                                                                         |
| 2021–2040 | SSP126   | -Moderate reduction of flows in permanent streams and reduction of the temporality of intermittent streams with impact on the middle and lower parts of the watersheds.<br>-More frequent seasonal droughts, mainly in the southern part of the study area.<br>-Greater pressure on water sources in rural areas, mainly in the western highlands, upper parts of the watersheds. | -Moderate soil erosion on slopes, mainly of the Ostuncalco series.<br>-Decrease in soil fertility due to irregular or more intense rainfall during rainy months, mainly in soils with loamy and loose textures. | -Loss of forest cover due to agricultural expansion, mainly in very humid forests such as <i>Pinus spp.</i> , <i>Cupressus lusitanica</i> , <i>Alnus jorullensis</i> , and <i>Quercus spp.</i><br>-Water stress in ecosystems such as very humid forests and agricultural systems. |
|           | SSP585   | -Recurrent severe droughts.<br>-Contamination and depletion of wells due to overuse, mainly perched aquifers of the western highlands, upper parts of the watersheds.<br>-Local conflicts due to increased demand on water sources.                                                                                                                                               | -Accelerated soil erosion.<br>-Incipient desertification in semi-arid and arid areas, lower parts of the watersheds.<br>-Loss of soil fertility reducing agricultural productivity.                             | -Accelerated deforestation in natural forests.<br>-More frequent forest fires.<br>-Loss of biodiversity in ecosystems, mainly in bioclimatic zones bmh-MB, bmh-S (C), and bh-S(c).                                                                                                 |
| 2041–2060 | SSP126   | -Alteration of hydrological cycles, mainly precipitation and potential evapotranspiration.<br>-Reduction of aquifer recharge and decrease of permanent and intermittent streams.                                                                                                                                                                                                  | -Compaction of agricultural soils and onset of salinization processes.<br>-Greater vulnerability to pests.                                                                                                      | -Habitat fragmentation.<br>-Decrease of climate-sensitive species, mainly in very humid forests.                                                                                                                                                                                   |
|           | SSP585   | -Severe water scarcity.<br>-Disuse of irrigation systems due to lack of water necessary for crops.<br>-Migration of people due to lack of water.                                                                                                                                                                                                                                  | -Advancement of desertification.<br>-Loss of fertile soils.<br>-Abandonment of agricultural land due to accelerated salinization resulting from high evaporation of water in the soil.                          | -Local extinction of vulnerable species.<br>-Degraded ecosystems.<br>-Advancement of invasive species, mainly insect pests.                                                                                                                                                        |
| 2061–2080 | SSP126   | -Prolonged droughts.                                                                                                                                                                                                                                                                                                                                                              | -Progressive soil degradation.                                                                                                                                                                                  | -Reduction of forest cover.<br>-Loss of ecosystem services.                                                                                                                                                                                                                        |

<sup>28</sup> Institute of Agriculture, Natural Resources and Environment – Rafael Landívar University (IARNA-URL). (2011). Climate change and biodiversity: Elements to analyze their interactions in Guatemala under an ecosystem-based approach. Guatemala.

<sup>29</sup> Pineda, P. (2022). Biodiversity. Rafael Landívar University, Editorial Cara Parens.

|                  |               |                                                                                                                                                  |                                                                                          |                                                                                                             |
|------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
|                  |               | -Reduction of water availability in critical watersheds.                                                                                         | -Lower capacity for recovery of soil fertility.                                          |                                                                                                             |
|                  | <b>SSP585</b> | -Loss of hydrological regulation capacity in watersheds.<br>-Extreme scarcity of potable water.<br>-Local and regional conflicts over water use. | -Soils with low or null productivity.<br>-Need for intensive recovery of soil fertility. | -Loss (fragility, sterility, and death) of forest ecosystems.<br>-Massive loss of biodiversity.             |
| <b>2081–2100</b> | <b>SSP126</b> | -Generalized water stress.<br>-Greater competition for water in urban areas.                                                                     | -Soils with low productivity.<br>-Need for intensive restoration of soil fertility.      | -Fragmented ecosystems.<br>-Reduction of ecological resilience.                                             |
|                  | <b>SSP585</b> | -Loss of local water sources.<br>-Dependence on water import with inter-basin transfers.                                                         | -Desertification in critical areas.<br>-Agricultural soils urbanized or artificialized.  | -Replacement of natural ecosystems.<br>-Isolated bioclimatic refuges.<br>-Extinction of emblematic species. |

The impacts summarized in **Table 2** indicate that climate change will intensify existing territorial degradation, including forest cover loss, soil degradation, erosion, pressure on water sources, habitat fragmentation, and productive land degradation. These pressures interact across watersheds and biological corridors, weakening hydrological regulation and increasing exposure to water scarcity, ecological degradation, and productive instability. **Climate vulnerability** in target area operates through **three interconnected dynamics**:

- **First, climate change weakens ecosystem and hydrological resilience.** Reduced recharge Reduced recharge, declining stream flows, forest loss, soil degradation, increased fire incidence, and reduced ecological connectivity diminish the capacity of priority watersheds, recharge zones, and biological corridors to capture, infiltrate, store, and regulate water. Under higher-emission scenarios, the cumulative deterioration of these functions could push the territory toward a condition of functional hydrological collapse, in which water becomes increasingly unavailable when and where it is most needed by ecosystems, communities, and productive systems.
- **Second, these biophysical impacts translate into growing socioeconomic vulnerability.** Declining soil productivity, agricultural land abandonment, and growing pressure on water for irrigation and human consumption increase food and economic insecurity among rural households, smallholder farmers, organizations, and communities dependent on climate-sensitive livelihoods. At the same time, productive losses, reduced incomes, water stress-induced migration, limited livelihood diversification, restricted asset bases, and barriers to markets and adapted finance constrain autonomous adaptation.
- **Third, institutional fragmentation, technical and information gaps, limited climate integration into territorial planning, and weak governance mechanisms constrain adaptive capacity.** Unequal access to education, employment, productive assets, climate information, participation, and adaptation opportunities further limit resilience. Women—especially Indigenous women—face additional barriers related to economic autonomy, unpaid care work, decision-making, and access to productive and climate-related resources<sup>30</sup>. Indigenous Peoples and rural youth face persistent exclusion from services and capacity-building<sup>31</sup>, while violence against women continues to undermine their participation in adaptation processes<sup>323334</sup>.

Overall, climate vulnerability in the CVC is systemic and territorially differentiated, requiring an integrated territorial adaptation approach that restores ecosystem and hydrological functionality, reduces livelihood sensitivity, and strengthens institutional, technical, and social capacities.

#### (v) Adaptation pathways

The project adopts **four complementary adaptation pathways** to address the identified climate risks and vulnerability drivers. The **watershed-landscape-biological corridor system** within prioritized municipalities constitutes the functional unit of intervention.

**The first pathway focuses on ecosystem and hydrological restoration through Ecosystem-based Adaptation (EbA).** It strengthens ecosystem and hydrological resilience by restoring ecological functions that regulate water availability, infiltration, and landscape connectivity, thereby reducing exposure to droughts, floods, runoff, and water stress. Participatory landscape planning, restoration of degraded areas, protection of recharge zones, integrated watershed management, conservation of biological corridors, and community-based water harvesting and storage are prioritized to directly reduce biophysical exposure to hydrometeorological risks for upstream

<sup>30</sup> National Institute of Statistics (INE). (2018). XII National Population Census and VII Housing Census 2018. Guatemala.

<sup>31</sup> National Institute of Statistics (INE). (2023). National Living Conditions Survey (ENCOVI 2023). Guatemala.

<sup>32</sup> National Institute of Statistics (INE). (2023). Statistics on homicides of women based on records from the National Civil Police.

<sup>33</sup> National Institute of Statistics (INE). (2023). Statistics on violence against women based on records from the Public Prosecutor's Office.

<sup>34</sup> National Institute of Statistics (INE). (2023). National Living Conditions Survey (ENCOVI 2023). Guatemala.

and downstream communities (in particular rural and Indigenous communities, local water users, small landholders). Biological corridors are relevant for biodiversity conservation and maintaining ecological connectivity as they connect key forests, hydrological recharge zones, and productive landscapes, supporting water regulation, ecological integrity, and ecosystem service provision.

**The second pathway improves the resilience of rural livelihoods, production systems and value chains.** It reduces the sensitivity of rural households, smallholder farmers, women, youth, Indigenous producers, and Micro, Small, and Medium Enterprise (MSMEs) to rainfall irregularity, water deficits, soil degradation, pests, and extreme events. Climate-resilient production practices, soil and water conservation, agroforestry, post-harvest management, value addition, market access, technical assistance, and adaptation finance are prioritized because they help reduce production losses, diversify income sources, and improve the capacity of producers to invest in resilience. The use of climate information supports risk-informed decisions on planting, irrigation, crop management, and commercialization.

**The third pathway enhances institutional capacities and inclusive territorial governance for adaptation.** It addresses the adaptive capacity gaps of municipalities, public institutions, community organizations and territorial platforms to anticipate, coordinate, finance, and sustain adaptation actions. Integrating climate risk into territorial planning, public investment, watershed governance, early warning systems (EWS), ensures coordinated and risk-informed decision making to implement and sustain adaptation measures.

**The fourth pathway drives knowledge management, peer-to-peer learning, and evidence-based scaling.** It addresses systemic institutional gaps and policy transfer by undertaking territorial experience and lessons learnt exchange mechanisms. It will also contribute to standardize EbA technical toolkits and producing targeted policy briefs. Systematized project evidence informs municipal planning, national reporting, and sectoral scale-up.

Collectively, these pathways provide an integrated adaptation sequence: ecosystem and hydrological restoration reduce biophysical exposure; resilient livelihoods reduce socioeconomic sensitivity; and institutional and territorial governance strengthens the adaptive capacity needed to sustain and scale adaptation over time.

## B. Project Objectives:

### General Objective

To strengthen the climate resilience of prioritized communities and landscapes of the Central Volcanic Chain through ecosystem-based adaptation, improving ecosystem functionality, rural livelihoods, and territorial governance capacities to address the impacts of climate change.

### Specific Objectives

- To improve the ecological functionality of the territory and the provision of key ecosystem services through landscape restoration, ecological connectivity, and integrated watershed and micro-watershed management, contributing to reducing climate risks and strengthening hydrological regulation.
- To diversify and strengthen rural livelihoods through the adoption of climate-resilient, inclusive, and culturally appropriate production systems and business models, as well as strengthening value chains, access to markets, and financing, to reduce the economic vulnerability of communities.
- To increase local and institutional capacities through territorial coordination, leadership of local actors, and the use of climate information to design and implement adaptation strategies that enable anticipation, prevention, and response to climate change impacts at the community and territorial levels.
- To establish knowledge exchange mechanisms and strategic learning processes that support evidence-based EbA scaling and institutional uptake.

## C. Project Components and Financing

**Table 3.** Project Programmatic and Financial Matrix.

| Project Components                                                      | Expected Outcome                                                             | Expected Concrete Outputs                                                                                                                       | Amount (US\$) |
|-------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Component 1.</b> Landscape restoration and integrated management for | <b>Outcome 1.</b> Forest and productive landscapes under restoration through | <b>Output 1.1.</b> Participatory landscape planning instruments that integrate ecosystem-based adaptation approaches developed and implemented. | 1,500,000     |

|                                                                                                                   |                                                                                                                                                                                                      |                                                                                                                                                                                              |             |
|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ecosystem-based adaptation in vulnerable socio-ecological watersheds.                                             | ecosystem-based adaptation that strengthen ecosystem services and reduce climate risks.                                                                                                              | <b>Output 1.2.</b> Restoration and sustainable land management interventions for ecosystem-based adaptation implemented in priority landscapes.                                              | 3,600,000   |
|                                                                                                                   |                                                                                                                                                                                                      | <b>Output 1.3.</b> Community-based integrated water management systems plan developed.                                                                                                       | 800,000     |
| <b>Component 2.</b> Adaptation of productive systems and strengthening of resilient livelihoods.                  | <b>Outcome 2.</b> Climate-resilient rural livelihoods through inclusive and sustainable production systems and value chains.                                                                         | <b>Output 2.1.</b> Inclusive and sustainable value chain diagnostics and development plans prepared.                                                                                         | 1,700,000   |
|                                                                                                                   |                                                                                                                                                                                                      | <b>Output 2.2.</b> Climate-resilient production technologies and practices delivered.                                                                                                        | 2,500,000   |
|                                                                                                                   |                                                                                                                                                                                                      | <b>Output 2.3.</b> Business development, marketing support and market access services provided to green MSMEs and local producer organizations.                                              | 900,000     |
|                                                                                                                   |                                                                                                                                                                                                      | <b>Output 2.4.</b> Financial mechanisms that incentivize investments in climate-resilient systems for green MSMEs and local producer organizations established and operationalized.          | 1,650,000   |
| <b>Component 3.</b> Institutional strengthening and inclusive territorial governance for climate risk management. | <b>Outcome 3.</b> Territorial actors and public institutions strengthen their capacities to articulate, implement, and sustain climate adaptation actions, informed by climate information.          | <b>Output 3.1.</b> Capacity-building programmes developed for national and municipal public institutions to integrate climate change adaptation into territorial planning and financing.     | 500,000     |
|                                                                                                                   |                                                                                                                                                                                                      | <b>Output 3.2.</b> Territorial coordination platforms and mechanisms strengthened to coordinate adaptation actions among communities, productive organizations, and public institutions.     | 500,000     |
|                                                                                                                   |                                                                                                                                                                                                      | <b>Output 3.3.</b> Tools, protocols, and technical support developed and implemented to operationalize local early warning systems improved for hydrometeorological risks in priority areas. | 800,000     |
| <b>Component 4.</b> Knowledge management, learning and evidence-based scaling.                                    | <b>Outcome 4.1.</b> Local institutions and territorial governance platforms are enabled to use evidence and lessons learned to sustain, replicate, and scale climate-resilient development solutions | Output 4.1. Territorial peer-to-peer learning and exchange mechanism operationalized.                                                                                                        | 200,000     |
|                                                                                                                   |                                                                                                                                                                                                      | Output 4.2: Adaptation knowledge products, technical guidance, and scaling tools developed and institutionalized                                                                             | 280,000     |
|                                                                                                                   |                                                                                                                                                                                                      | Output 4.3. Training and knowledge transfer programmes on climate adaptation implemented for territorial stakeholders.                                                                       | 120,000     |
| 5. Total Activity Costs                                                                                           |                                                                                                                                                                                                      |                                                                                                                                                                                              | 15,050,000  |
| 6. Project Execution cost                                                                                         |                                                                                                                                                                                                      |                                                                                                                                                                                              | 1,579,834   |
| 7. Total Project Cost                                                                                             |                                                                                                                                                                                                      |                                                                                                                                                                                              | 16,629, 834 |
| 8. Project Cycle Management Fee charged by the Implementing Entity                                                |                                                                                                                                                                                                      |                                                                                                                                                                                              | 1,413,536   |
| <b>Amount of Financing Requested</b>                                                                              |                                                                                                                                                                                                      |                                                                                                                                                                                              | 18,043,370  |

## D. Projected Calendar:

**Table 4.** Project Implementation and Evaluation Schedule.

| Milestones                                | Expected dates |
|-------------------------------------------|----------------|
| Start of project/programme implementation | October 2027   |
| Mid-term review (if planned)              | October 2031   |
| Project/programme completion              | March 2034     |
| Final evaluation                          | September 2034 |

## Theory of Change:

Climate vulnerability in Guatemala's Central Volcanic Chain is driven by the interaction of **climate-driven water stress, underlying ecosystem degradation, declining productivity, and institutional and technical gaps in adaptive capacity**. Rising temperatures, increasing rainfall variability, and seasonal moisture deficits, combined with forest loss and soil degradation, are reducing water security, weakening ecosystem services, and increasing the vulnerability of rural communities and productive systems.

The project advances from fragmented, reactive measures toward a coordinated, landscape-based adaptation model. **Component 1** brings degraded ecosystems and critical watershed under restoration through ecosystem-based adaptation, strengthening ecological and

hydrological functions while reducing drought and land degradation. **Component 2** translates these ecosystem gains into inclusive, climate-resilient livelihoods through sustainable production systems, diversification, and improved access to climate services, markets, and finance. **Component 3** strengthens multi-level territorial governance, climate information systems, and early warning mechanisms to support coordinated and risk-informed adaptation. **Component 4** systematizes evidence, operationalizes policy roadmaps, and drives horizontal and vertical scaling to ensure long-term sustainability and public capital allocation. Through this integrated approach, the initiative builds systemic resilience by linking ecological restoration, livelihood strengthening, and institutional consolidation, ensuring that adaptation is sustained, inclusive, and transformative across the Central Volcanic Chain.

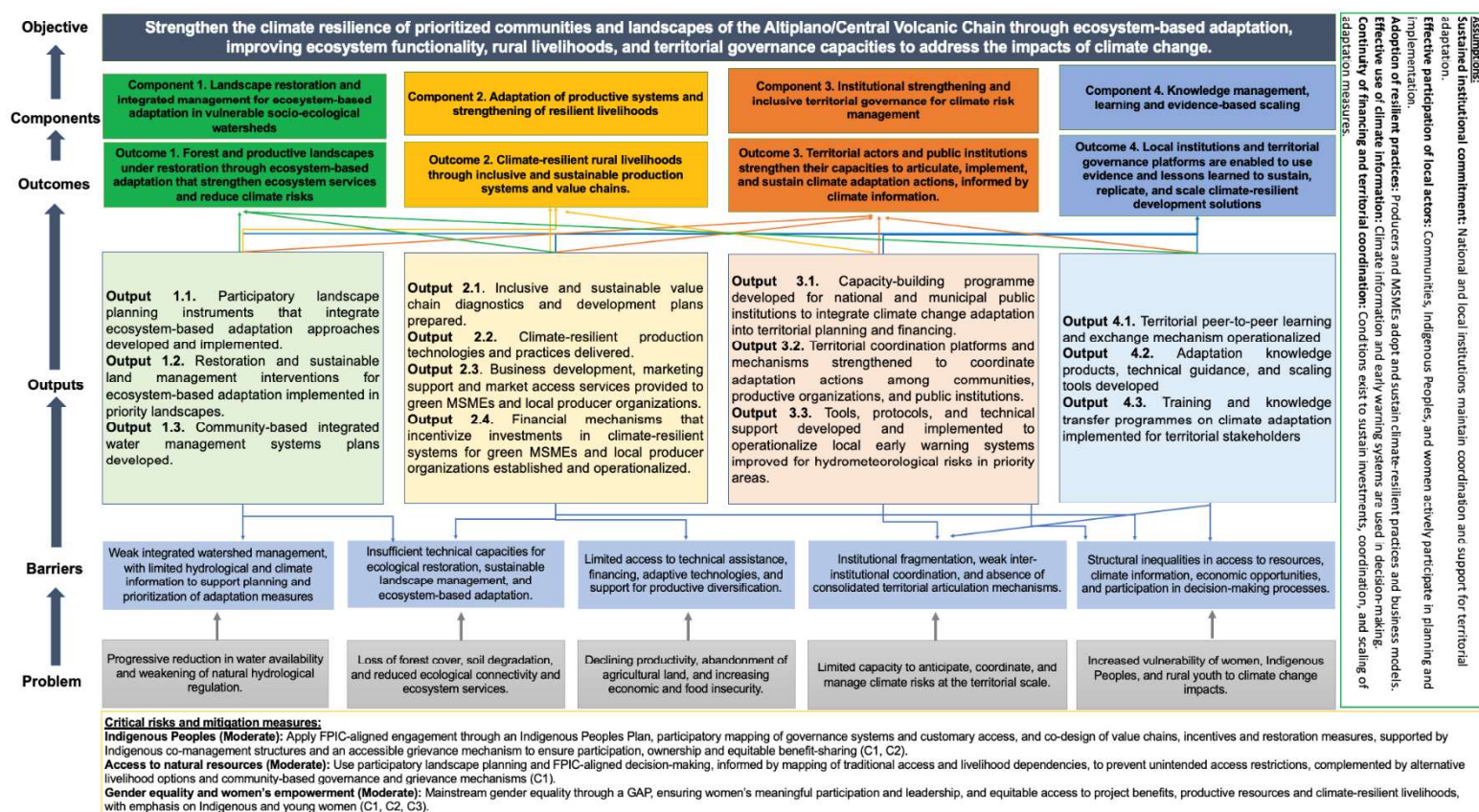
**Table 5.** Theory of Change.

| Component                                                                                                                                        | Logic Statement                                                                                                                                                                                                                                                                                                                                                                                          | Causal Link to Outcome/Objective                                                                                                                                                                                      | Key Assumptions                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Component 1.</b><br>Landscape restoration and integrated management for ecosystem-based adaptation in vulnerable socio-ecological watersheds. | <b>IF</b> participatory landscape planning instruments are developed and incorporated into territorial management, and restoration, sustainable landscape management, and integrated watershed measures are implemented in priority areas, <b>THEN</b> ecological connectivity, water infiltration, and soil stability will improve, directly reducing exposure to climate-induced droughts and erosion. | <b>LEADING TO</b> restored Forest and productive landscapes that secure critical ecosystem services, reducing environmental losses and providing the ecological foundation for long-term water security. (Outcome 1). | <b>Sustained institutional commitment and effective participation of local actors:</b> National and local institutions maintain coordination and support for territorial adaptation, while communities, Indigenous Peoples, and women actively participate in planning and implementation. |
| <b>Component 2.</b><br>Adaptation of productive systems and strengthening of resilient livelihoods                                               | <b>IF</b> vulnerable smallholders, women, Indigenous producers, and MSMEs adopt climate-resilient agricultural practices, diversified asset bases, and inclusive value chains, <b>THEN</b> rural livelihoods will become less sensitive to water deficits and temperature variability, enhancing economic adaptive capacity.                                                                             | <b>LEADING TO</b> climate-resilient livelihoods and sustainable income sources that reduce socio-economic vulnerability, avoid income loss, and secure livelihood assets against climate shocks (outcome 2)           | <b>Adoption of resilient practices:</b> Producers and MSMEs adopt and sustain climate-resilient practices and business models.                                                                                                                                                             |
| <b>Component 3.</b><br>Institutional strengthening and inclusive territorial governance for climate risk management.                             | <b>IF</b> local/national institutional capacities, multi-stakeholder coordination platforms, and hydro-meteorological early warning systems are strengthened, <b>THEN</b> public entities and territorial actors will effectively utilize climate data to steer risk-informed planning and local response mechanisms.                                                                                    | <b>LEADING TO</b> Empowered territorial governance bodies and public agencies capable of informed decision-making, multi-level coordination, and proactive climate risk management (outcome 3)                        | <b>Effective use of climate information and continuity of financing and territorial coordination:</b> Climate information and EWS are used in decision-making, and conditions exist to sustain investments, coordination, and scaling of adaptation measures.                              |
| <b>Component 4.</b><br>Knowledge management, learning and evidence-based scaling                                                                 | <b>IF</b> peer exchanges, policy roadmaps, multilingual EbA guidance, and capacity development programmes are implemented, <b>THEN</b> local and national stakeholders will possess the validated technical tools and institutional protocols required to replicate and finance adaptation solutions                                                                                                     | <b>LEADING TO</b> institutionalized frameworks and operational conditions enabling the replication, scaling, and public budget allocation (municipal POA/SISCODE) for long-term adaptation.                           | <b>Institutional continuity and social ownership:</b> Adaptation tools and approaches are applied in municipal and national systems and supported through regular budget allocation, while communities drive the sustained adoption and replication of EbA solutions.                      |

### Critical Risks and Mitigation Measures

- **Indigenous Peoples (Moderate):** Apply FPIC-aligned engagement through an Indigenous Peoples Plan, participatory mapping of governance systems and customary access, and co-design of value chains, incentives and restoration measures to ensure participation, ownership and equitable benefit-sharing, and accessible grievance mechanism (C1, C2).
- **Access to natural resources (Moderate):** Participatory landscape planning and FPIC-aligned decision-making, informed by mapping of traditional access and livelihood dependencies, to prevent unintended access restrictions, complemented by alternative livelihood options and community-based governance and grievance mechanisms (C1).
- **Gender equality and women's empowerment (Moderate):** Implement Gender Action Plan, ensuring women's meaningful participation and leadership, and equitable access to project benefits, productive resources and climate-resilient livelihoods, with emphasis on Indigenous and young women (C1, C2, C3).

**Figure 13.** Theory of change.



## PART II: PROJECT / PROGRAMME JUSTIFICATION

### PART II: PROJECT/PROGRAMME JUSTIFICATION

**A. Describe the project/programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.**

#### General overview

The project is structured into interlinked and complementary **four components**<sup>35</sup> that address the key drivers of climate vulnerability in Guatemala's Central Volcanic Chain, including rising temperatures, increasing rainfall variability, more intense precipitation events, and recurrent seasonal water deficits. The proposed interventions work in synergy to reduce vulnerability and build long-term climate resilience at landscape and community levels.

- **If** integrated landscape-based adaptation solutions are implemented to simultaneously drive ecosystem recovery across forests, productive landscapes, and critical watersheds (C1), scale up climate-resilient agricultural value chains (C2), strengthen territorial governance and Early Warning Systems (EWS) (C3) and integrate validated EbA evidence into public planning and territorial adaptation strategies (C4)
- **Then** prioritized communities will reduce their vulnerability and sustainably enhance the long-term enhance the resilience of their livelihoods, local institutions, and ecosystems against climate-related risks.

The project directly supports the AF's strategic objectives by aligning its components with core outcome areas: **AF Outcome 5** through EbA, landscape restoration, and water protection under Outcome 1; and **AF Outcome 6** by building climate-resilient value chains and market access for smallholders and green MSMEs under Outcome 2; **AF Outcome 2** by operationalizing local disaster risk reduction

<sup>35</sup> Based on the coordination meeting held with UNDP officials on March 11, the design of the components has been significantly modified, which will result in adjustments to the structure of components, outcomes, outputs, and activities. These changes will be reflected in subsequent versions of the Concept Note draft.

committees (COLREDs) and **AF outcome 3** by strengthening the capacity of subnational stakeholders to capture and disseminate knowledge and learning for adaptation.

### **Component 1. Landscape restoration and integrated management for ecosystem-based adaptation in vulnerable socio-ecological watersheds**

This component strengthens territorial climate resilience in watersheds and priority landscapes of high biological and sociocultural value through an Ecosystem-based Adaptation (EbA) approach. In the face of increasing temperatures, changes in precipitation patterns—including more intense rainfall—, intra-seasonal water deficits, soil degradation, and loss of forest cover, the component integrates participatory landscape planning, ecological restoration, connectivity between ecosystems, and integrated watershed and micro-watershed management to recover critical ecosystem services—such as hydrological regulation, water infiltration, soil stability, and habitat conservation—thereby reducing climate vulnerability.

Ecosystem-based adaptation measures are designed to directly address the vulnerability of highly exposed socio-ecological systems where Indigenous Maya communities as well as smallholder farmers depend on rainfed subsistence agriculture (staple crops such as maize and black beans), small-scale coffee production, and local rural economies. These communities face increasing risks from water scarcity, erosion, and climate variability, compounded by limited adaptive capacity. By restoring degraded upper stream forest ecosystems and stabilizing slopes, this component strengthens the green infrastructure required to enhance rainwater infiltration and regulate runoff. This, in turn, supports water availability, protects productive systems, and reduces the exposure of vulnerable communities to climate-induced shocks, safeguarding livelihoods, territorial stability, and cultural systems linked to land and water.

This component contributes to finance restoration and nursery infrastructure upgrades, small-scale water harvesting modalities, fuel-efficient stoves, GIS/hydrological studies, FPIC/ESMF compliance processes, and facilitates access to national conservation incentive mechanisms. Those incentives mechanisms related to improve livelihoods will be further implemented based on a business-led approach through the component 2.

### **Outcome 1. Forest and productive landscapes under restoration through ecosystem-based adaptation that strengthen ecosystem services and reduce climate risks.**

This outcome aims to bring forest and productive landscapes covering the upper and middle streams of the Suchiate, Naranjo, Ocosito, Samalá, Coyolate and Achiguate watersheds under restoration through ecosystem-based adaptation measures. Considering water stress, soil erosion, and deforestation and forest degradation, these interventions will enable the recovery of key ecological processes that support territorial resilience, such as hydrological regulation, ecological connectivity, soil stability, and biodiversity conservation. Through participatory landscape planning, restoration and sustainable management actions, and integrated watershed management measures, risks associated with water deficits, fires, and floods will be reduced, strengthening the biophysical base that sustains water security, rural livelihoods, and long-term adaptation.

**Target:** At least 45,000 hectares of priority landscapes (including forests, productive areas, hydrological recharge zones, and biological corridors) under improved adaptation management, restoration, and sustainable conservation by the end of the project.

#### **Output 1.1. Participatory landscape planning instruments that integrate Ecosystem-based Adaptation approaches developed and implemented.**

This output establishes the technical and participatory foundation for territorial adaptation through landscape planning instruments with an EbA approach in priority watersheds and landscapes. Amid rising temperatures, water deficits, and ecosystem degradation, these instruments will enable the integration of climate adaptation into territorial management and guide decisions on restoration, conservation, and sustainable management to reduce risks such as droughts, fires, erosion, and floods.

**Target:** At least 3 participatory landscape planning instruments designed, updated, and implemented across target regions (Quetzaltenango, Atitlán, San Marcos), integrating EbA approaches to direct restoration, conservation, and climate risk reduction in priority biological corridors (Candacuchex and Balam-Juyú).

**Activity 1.1.1: Design and update landscape planning instruments.** Formulate and update management guidelines, technical specifications, and operational workplans to direct site-level EbA implementation in biological corridors, in line with Departmental Climate Change Adaptation Plans, Watershed Protection Plans, and Protected Area Management Plans (CONAP, ARNPG, INAB).

**Activity 1.1.2: Conduct participatory landscape planning and local governance processes.** Facilitate co-creation workshops with municipalities, inter-municipal teams, COMUDEs, COCODEs, Indigenous communities, women, and youth to establish socio-ecological assessments, participatory mapping, and community biodiversity monitoring systems that merge hydro-meteorological science with ancestral knowledge.

#### **Output 1.2. Restoration and sustainable land management interventions for ecosystem-based adaptation implemented in priority landscapes.**

This output implements restoration and sustainable management interventions to recover critical ecosystem services in watersheds and landscapes. Priority intervention areas will include key hydrological recharge areas, and key water sources, where ecosystem

degradation directly affects water availability and increases climate risk, as well as landscapes of high biological and sociocultural value within the Central Volcanic Chain. Under conditions of climate variability, water deficits, and ecosystem degradation, these actions will strengthen water infiltration, runoff regulation, soil stability, thereby reducing erosion and climate vulnerability in downstream communities and productive systems while also contributing to biodiversity conservation and ecological connectivity. These actions will be implemented through landscape planning instruments defined under **Output 1.1**.

**Target:** Restoration and sustainable management interventions executed across 45,000 hectares of priority watersheds, key recharge zones, and high-value ecosystems along the Central Volcanic Chain.

**Activity 1.2.1:** Implement restoration measures across critical landscape areas. Execute assisted land-use and hydrological restoration, native species reforestation, and soil conservation across recharge zones and key corridors' ecosystems, while establishing municipal and community seed banks and nurseries to supply climate-resilient planting stock.

**Activity 1.2.2:** Develop Ecosystem-based Adaptation (EbA) in productive systems. Deliver technical assistance and inputs to smallholders and producer associations to establish agroforestry systems, implement soil-water conservation practices and sustainable landscape management measures that increase farm-level climate resilience.

**Activity 1.2.3:** Access forest incentives mechanisms. Provide administrative and technical support to rural communities, Indigenous groups, and women-led organizations to access national forest incentive programmes (PINPEP, PROBOSQUE), national climate funds (FONCC, FOBOSQUE, FONACON), and other sustainable economic schemes aligned with Guatemala's Climate Action Strategy for Tourism 2026–2032. Economic incentives modalities with business-oriented approach (e.g. agroforestry systems) will be implemented in the component 2.

**Activity 1.2.4:** Promote efficient energy technologies to reduce ecosystem pressure. Procure and install improved fuel-efficient firewood stoves in rural households, complemented by energy management training, to reduce forest degradation pressure on native forests and decrease indoor air pollution for women and children.

**Activity 1.2.5:** Implement forest and biodiversity monitoring mechanisms. Establish, equip, and train local environmental brigades and monitoring networks to track forest cover recovery, biological corridor connectivity, and key species health, feeding real-time data to municipal units and national platforms in INAB, CONAP, MARN.

### **Output 1.3. Community-based integrated water management systems' plans developed.**

Community-based integrated water management plans will be developed in watersheds to reduce water vulnerability amid climate variability, water deficits, and pressure on water sources.

**Target:** Ten local governance systems' plans developed and operationalized across target watersheds, strengthening local water governance, protecting hydrological recharge zones, and reducing vulnerability to climate-induced water deficits.

**Activity 1.3.1:** Develop local-level integrated water management plans. Formulate land- and farm-level water conservation plans, rainwater harvesting designs, and municipal water source protection protocols and regulations aligned with broader Watershed Protection Plans and regional water management frameworks. The implementation of the local-level integrated water management plans will be developed through component 2.

**Activity 1.3.2:** Establish inclusive community water management mechanisms. Facilitate multi-stakeholder dialogue platforms and formalize local water committees to establish coordination agreements for local water governance, prevent local water conflicts, and integrate community water priorities into COCODE public investment proposals.

## **Component 2. Adaptation of productive systems and strengthening of resilient livelihoods**

This component enhances the economic resilience of communities, smallholder farmers, and micro, small, and medium enterprises (MSMEs) in Guatemala's Central Volcanic Chain by progressively transforming production systems toward sustainable, inclusive, and climate-adapted practices, while expanding access to green and higher-value business opportunities.

Component 2 finances resilient agricultural inputs and field materials for Rural Development Learning Centers (CADERs) coordinated through the Ministry of Agriculture, Livestock and Food (MAGA), bio-factory and post-harvest infrastructure, specialized technical assistance for MSME business plans and product branding, commercial trade logistics, and catalytic seed grants for adaptation micro-projects.

Rural value chain strengthening will link production, processing, and marketing to improve productivity, diversify incomes, and reduce vulnerability to climate variability and resource degradation. The approach fosters the adoption of sustainable practices, climate-resilient technologies, and certifications, while supporting the active participation of women and youth across value chain stages. Consolidated producer networks and cooperatives will increase market access, bargaining power, and access to climate-adapted financial services, generating more stable and sustainable economic opportunities for rural households. Barriers to affordable financing for smallholder farmers, which limit their capacity to invest and adapt, will be addressed. Tailored financial mechanisms, combined with technical assistance, financial education and capacity building, will promote investments in climate-resilient productive activities, gradually

improving productivity, incomes, and economic stability. These interventions will strength local economic development in prioritized territories.

## **Outcome 2. Climate-resilient rural livelihoods through inclusive and sustainable production systems and value chains.**

As rural economies face rising climate shocks affecting productivity, incomes, and household well-being, this outcome undertakes an integrated approach, linking climate-resilient production, sustainable value chains, green market opportunities, and access to climate-sensitive financial mechanisms.

This outcome will enable local actors to engage in climate-resilient productive, commercial, and financial activities, with a strong focus on empowering youth, women, and Indigenous women and promoting financial inclusion through improved access to financial services, local financial institutions and/or bank loans, UNDP small grants programme, climate-smart investments, risk-sharing mechanisms, and other financial mechanisms. It will broaden access to climate-adapted economic opportunities and strengthen participation in decision-making processes. As a result, rural communities will secure sustainable livelihoods, increase their economic resilience, and reinforce their adaptive capacity to climate change.

**Target:** At least 42 local organizations (producer associations, cooperatives, green MSMEs, and community economic entities) implement climate-resilient business and production models and access sustainable value chain opportunities, contributing to increased adaptive capacity and resilience to climate risks by the end of the project.

### **Output 2.1. Inclusive and sustainable value chains diagnostics and climate resilient business plans prepared.**

To ensure that rural communities can thrive under changing climate conditions, it is essential to build inclusive and sustainable economic systems that generate stable incomes while reducing vulnerability. This output delivers value chain diagnostics, capacity-building programmes, and formalization instruments for organized smallholders, rural MSMEs, women, and youth in priority landscapes. Investments will be focused on the development of climate resilient business plans which include establishing market integration agreements, primary processing protocols, and product traceability systems to transition local livelihoods into sustainable and green market channels, amongst others.

**Target:** 42 climate-resilient business plans developed for prioritized value chains (coffee, honey, vegetables, macadamia, medicinal plants, eco-tourism, non-timber forest products), integrating climate vulnerability analyses, market structuring, formalization instruments, and product traceability protocols by the end of the project.

**Activity 2.1.1:** Conduct value chain diagnostics and climate-resilient business plans. Analyze market opportunities and climate vulnerabilities across targeted value chains to formulate 42 actionable business plans guiding commercial integration and financial inclusion for organized smallholder farmers. The implementation of the climate resilient business plan will be implemented in outputs 2.2, 2.3 and 2.4.

**Activity 2.1.2:** Deliver organizational strengthening and business formalization. Formalize and structure 42 producer groups and networks, establishing internal governance frameworks and delivering administrative and financial management training to prepare groups to access financing and seize higher-value market opportunities.

### **Output 2.2. Climate-resilient production technologies and practices delivered.**

This output provides smallholder farmers and Indigenous communities with climate-smart agricultural inputs, resilient production infrastructure, and post-harvest equipment. In coordination with CADERS and MAGA's practical extension services, investments establish farm-level soil conservation structures, bio-factories, small-scale irrigation, and post-harvest facilities to maintain productive continuity under climate stress. These practices reduce losses, protect critical resources such as soil and water, and strengthen productive continuity and household incomes.

**Target:** Climate-resilient inputs, bio-factories, small-scale water harvesting infrastructure, and post-harvest facilities delivered to smallholders and Indigenous communities, targeting a 10% increase in crop yields (kg/ha/year).

**Activity 2.2.1:** Implement GAP and GMP through extension networks. Apply Good Agricultural Practices (GAP) and Good Manufacturing Practices (GMP) via CADERS, demonstration plots, and agro-climatic forecasts to improve soil management, crop diversification, and ancestral seed practices.

**Activity 2.2.2:** Procure and install climate-resilient production infrastructure and bio-inputs. Deploy small-scale irrigation, macro-tunnels, mesh houses, and community bio-factories to produce organic fertilizers and biological pest controls, reducing chemical dependence and soil degradation.

**Activity 2.2.3:** Implement small-scale resilient water infrastructure. Install household and community rainwater harvesting systems (e.g rooftop catchments, water storage cisterns, green and/or grey infrastructure to protect natural springs) for smallholder crop irrigation, establishing formal maintenance protocols with local Water Committees. Detailed environmental-friendly engineering specifications, site selection, and other hydrological and environmental management assessments will be finalized during PFG phase. Technical capacities, maintenance protocols, and operation agreements will be established with local community water management committees

**Activity 2.2.4:** Establish post-harvest management, processing, and storage assets. Construct and equip local collection centers, drying facilities, and storage units to minimize post-harvest losses, protect grain quality, and ensure commercial product standards under extreme weather conditions.

### **Output 2.3. Business development, marketing support and market access services provided to green MSMEs and local producer organizations.**

This output provides specialized business development, commercial positioning, and market linkage services to rural green MSMEs and producer organizations. Direct technical assistance and small grants will deliver marketing plans, commercial branding, packaging design, digital market tools, and participation in trade fairs to secure stable, high-value commercial contracts. Improved marketing skills, product positioning, and compliance with quality and certification standards create conditions for resilient products to be recognized and demanded. Market linkages, value-added transformation, and access to strategic information further consolidate commercial opportunities.

**Target:** Specialized business development, commercial positioning, and market linkage services provided to rural green MSMEs and producer organizations, targeting at least a 10% increase in revenue (USD/ha/year) per value chain.

**Activity 2.3.1:** Develop marketing capacities, product positioning strategies and compliance for resilient value chains. Provide technical assistance in commercial branding, eco-labeling, packaging design, quality standards, certification compliance, traceability systems, and product differentiation strategies to facilitate access to premium and environmentally sustainable markets, prioritizing leadership roles for women, youth, and Indigenous peoples.

**Activity 2.3.2:** Organize market linkages and commercial buyer roundtables. Facilitate direct participation in commercial fairs, buyer roundtables, and institutional sourcing platforms to negotiate supply contracts with private and public buyers.

**Activity 2.3.3:** Provide value-added product transformation support to MSMEs. Equip producer groups with small-scale processing equipment and customized packaging tools for activities such as milling, fermentation, and roasting, to increase product value, processing margins, and shelf-life.

**Activity 2.3.4:** Provide strategic market information and commercial support. Deploy price-tracking bulletins, digital market platforms, and simplified record-keeping templates to enable data-driven commercial decision-making by producer leads and MSME managers.

### **Output 2.4. Financial mechanisms that incentivize investments in climate-resilient systems for green MSMEs and local producer organizations established and operationalized;**

This output delivers financial instruments, credit services, project grants, catalytic capital (e.g. seeds capital), and specialized technical assistance to integrate smallholders, rural entrepreneurs, and green MSMEs into formal financial systems. In partnership with national and/or rural financial institutions, investments deploy grant capital, preferential credit lines, and financial literacy programmes to accelerate adoption of climate-resilient production practices.

**Target:** USD 500,000 mobilized in climate-resilient agricultural investments through financial instruments, seed capital, soft credit lines, and specialized technical assistance deployed in partnership with national and/or rural financial institutions.

**Activity 2.4.1:** Implement financial mechanisms adapted to rural contexts. Design and implement with relevant financial institutions innovative financial products such as climate index insurance, community revolving funds, credit guarantee schemes for smallholder producers, financial incentives for Ecosystem-based Adaptation (EbA) practices, soft loans, and other tailored mechanisms for smallholders and MSMEs, prioritizing women, youth, Indigenous entrepreneurs, and remittance-receiving households. Innovative finance mechanisms will be properly defined during the PFG.

**Activity 2.4.2:** Provide financial education, technical training and business support. Green MSMEs and local producer organizations will be identified, categorized depending on their business-oriented approach and capacities in order to define the most appropriate financial tailored support. Therefore, practical financial literacy training, accounting management, and credit / grant application support to equip producer organizations and rural entrepreneurs to qualify for formal financial services will be delivered. UNDP small grant programme will be used for this purpose.

**Activity 2.4.3:** Formalize strategic partnerships with rural financial institutions. Negotiate and execute formal partnership agreements with at least two rural financial institutions<sup>36</sup> in coordination with MARN, MAGA, and MINECO to launch mixed finance packages, credit lines, and risk-mitigation tools.

## **Component 3. Institutional strengthening and inclusive territorial governance for climate risk management**

This component will transform the capacity of territorial actors and public institutions to plan, coordinate, and implement sustainable climate adaptation actions. Strengthened governance structures, improved natural resource management, and more resilient productive systems will enable territories to respond effectively to climate variability and extreme events. The approach will be based on human rights principles, ensuring active participation of women, youth, Indigenous peoples, and other vulnerable groups so that decisions reflect local knowledge, community priorities, and differentiated needs.

<sup>36</sup> Potential partnerships with BANRURAL and REFIKOM have been identified and will be further assessed and confirmed during the PFG phase.

Local governments and public entities — including sectoral ministries and municipal technical units — will integrate climate resilience criteria into territorial planning, public investment, and ecosystem management. Territorial platforms and community early warning mechanisms will be consolidated to foster multilevel coordination among communities, producer organizations, and public authorities. This will improve anticipation of climate risks, strengthen evidence-based decision-making, and support adaptation measures at the landscape scale (Component 1).

**Outcome 3. Territorial actors and public institutions strengthen their capacities to articulate, implement, and sustain climate adaptation actions, informed by climate information and learning.**

Territorial actors and public institutions will strengthen their capacity to effectively integrate climate adaptation and resilience into territorial planning and public investment. With stronger institutions, decisions will be guided by climate data and local knowledge, ensuring that adaptation measures respond to community priorities and differentiated needs. Territorial coordination mechanisms will connect communities, producer organizations, and authorities, enabling adaptation measures to be implemented at the landscape scale in a participatory and sustainable way. Climate information systems and community early warning mechanisms will provide timely data to anticipate risks and reinforce preparedness for extreme events. As a result, informed and coordinated decision-making will drive effective adaptation, reduce vulnerability, and strengthen the resilience of rural livelihoods and ecosystems.

**Target:** At least 15 territorial actors and public institutions adopt and apply climate change adaptation and integrated watershed management criteria in their planning and decision-making instruments.

**Output 3.1. Capacity-building programme developed for national and municipal public institutions to integrate climate change adaptation into territorial planning and financing.**

This output will develop and implement capacity-building programmes, technical tools, and support mechanisms that enable national entities and local governments to systematically integrate climate adaptation into territorial planning and public finance management. With enhanced skills and tools, institutions will be able to make decisions on climate risk information and direct investments toward resilience. Strengthened processes will ensure that adaptation is embedded across planning instruments and financial management systems, enabling public institutions to access and manage climate finance more effectively.

**Target:** Capacity-building programmes delivered to 200 municipal and departmental officials and other private and local organizations enabling the systematic integration of adaptation criteria into public planning (PDM-OT) and investment mechanisms (SISCODE).

**Activity 3.1.1:** Establish and implement inter-institutional coordination mechanisms. Formalize joint operational protocols among municipal commissions (environment, agriculture, water, tourism) and align local planning with national authorities (MARN, SEGEPLAN, INAB, CONAP, MAGA, SE-CONRED, INSIVUMEH).

**Activity 3.1.2:** Provide capacity development for municipal planning and investment. Train municipal teams (DMP, DAFIM) to update PDM-OT, POM/POA, and PEI plans mainstreaming EbA approach, and continue promoting to adoption of the municipal environmental expenditure guidelines to identify, classify, and track budget allocations for biodiversity and climate adaptation measures, and formulating municipal adaptation project profiles to be submitted to COCODEs, COMUDEs, and funding through SISCODE. UNDP Biodiversity Finance Initiative will contribute to exchange experiences to facilitate these interventions.

**Activity 3.1.3:** Apply climate risk-screening and decision-support tools. Implement risk-screening methodologies, vulnerability mapping, and result-based management tools to assist municipal planning directorates in prioritizing high-impact adaptation investments.

**Activity 3.1.4:** Establish participatory monitoring guidelines for inclusive climate governance. Equip municipal environmental commissions, DMMs, and civil society leads with tracking tools to monitor local adaptation progress, public budget execution, gender inclusion, and cultural relevance.

**Output 3.2. Territorial coordination platforms and mechanisms implemented to coordinate adaptation actions among communities, productive organizations, and public institutions.**

Technical assistance, operational protocols and structured dialogue frameworks will be deployed to operationalize existing territorial platforms as effective coordination mechanisms of landscape-scale climate action. This output will deliver standardized information-sharing mechanisms, joint planning processes and multi-stakeholder coordination protocols to align adaptation priorities, public investments, and community initiatives across sectors and governance levels.

**Target:** Technical protocols, operational agreements, and multi-stakeholder governance frameworks deployed to operationalize 15 territorial platforms (MTA, COMUDE, CODEDE, sectoral committees, Mancomunidades, Corridor Committees) for landscape-scale climate action.

**Activity 3.2.1:** Support local coordination platforms and intersectoral articulation. Strengthen existing territorial governance bodies (COMUDE, CODEDE, MTAs, MANCUERNA) through structured partnership protocols with development agencies, civil society, and the private sector to align adaptation investments.

**Activity 3.2.2:** Establish inclusive dialogue and consensus-building mechanisms. Facilitate multi-stakeholder planning spaces ensuring direct representation of women, Indigenous authorities, and youth in defining landscape-scale adaptation priorities and preventing natural resource conflicts.

**Activity 3.2.3:** Develop operational agreements and monitoring frameworks. Formalize inter-institutional agreements among community, municipal, and national actors to guarantee execution, tracking, and long-term maintenance of landscape adaptation commitments.

**Activity 3.2.4:** Establish information exchange protocols and communication mechanisms. Develop and implement standardized data-sharing channels and regular bulletins across platform members to disseminate technical climate data, monitoring outputs, and field evaluation results.

**Activity 3.2.5:** Deliver community leadership training and inclusive governance tools. Provide advocacy, leadership, and technical planning toolkits to community leaders, Indigenous authorities, women's groups, and green MSMEs to enable effective participation in local decision-making spaces.

### **Output 3.3. Tools, protocols, and technical support developed and implemented to operationalize local early warning systems for hydrometeorological risks in priority areas.**

Technical assistance, hazard monitoring tools, and technical equipment will be deployed to operationalize Local early warning systems for hydrometeorological risks prioritized municipalities. This output will integrate scientific data from INSIVUMEH, MTAs, and national platforms with local and Indigenous knowledge, providing community structures (COLRED) and municipal bodies with localized monitoring equipment and clear alert protocols. Through targeted workshops and participatory exercises, formal data-exchange pathways will be established with national systems (SNICC, SIA, MARN, SE-CONRED) to equip local authorities, women, youth, and producer groups to apply climate data directly within territorial planning and risk management.

**Target:** Technical equipment, monitoring tools, and standardized protocols deployed to operationalize two Local Early Warning Systems (EWS) in prioritized hydrometeorological risk zones.

**Activity 3.3.1:** Enhance climate information services for evidence-based adaptation planning. Consolidate INSIVUMEH and MTA technical forecasts into multilingual risk maps, radio spots, and bulletins (in Spanish and target Mayan languages) that combine scientific indicators with traditional climate observations to facilitate decision making process at local level.

**Activity 3.3.2:** Implement local early warning systems and COLRED structures. Equip Local Disaster Risk Reduction Committees (COLREDs) and municipal bodies with hydro-meteorological monitoring tools, automated sensors, and clear alert reception, interpretation, and dissemination protocols.

**Activity 3.3.3:** Deliver capacity development for climate information application. Conduct practical simulation exercises and technical workshops for municipal staff, COLREDs, women's organizations, and MSMEs on translating climate data into agricultural and emergency decisions.

**Activity 3.3.4:** Establish data-exchange protocols with national climate information platforms. Formalize operational data-submission procedures linking local EWS and municipal monitoring outputs directly into MARN's National Climate Change Information System (SNICC) and Environmental Information System (SIA), and SE-CONRED national alert frameworks.

### **Component 4. Knowledge management, learning and evidence-based scaling**

Component 4 serves as the project's institutional sustainability, social appropriation, and scaling framework. Recognizing that sustainable adaptation is driven by local ownership and continuous learning, the component will support the establishment and consolidation of multi-level knowledge and exchange mechanisms linking municipal governments, Watershed Committees, MTAs, Indigenous groups, producer organizations, community water committees, and other territorial stakeholders. Through targeted capacity development, these actors will acquire practical methodologies for documenting, evaluating, and disseminating lessons learned, good practices, and adaptation results generated under Components 1, 2 and 3.

By fully aligning with existing institutional mandates, project technical assistance directly integrates capacity-building toolkits, operational protocols, and decision-support tools into established public platforms, planning frameworks, and sectoral programs, empowering public entities and local stakeholders to systematically utilize and sustain project's outputs within their mandates, regular operational procedures and budget execution cycles beyond project closure.

### **Outcome 4.1 Local institutions and territorial governance platforms are enabled to use evidence and lessons learned to sustain, replicate, and scale climate-resilient development solutions.**

This outcome strengthens the technical and analytical capacities of municipal units (UGAM, OMAS, DMP, DMM), territorial platforms (MTAs, COMUDEs, CADERs), Indigenous communities, and water committees to access, analyze, and apply adaptation evidence generated across interventions. Local institutions use this source of evidence to integrate climate resilience criteria into municipal planning instruments (PDM-OT), improve extension services, and formulate high-quality adaptation projects that secure long-term public and climate financing (SISCODE, FONCC, FOBOSQUE).

**Target:** At least 8 local institutions and territorial governance platforms (MTA, watershed committees, biological corridor coordination bodies, and development councils) apply project-generated adaptation knowledge and tools in decision-making processes (as evidenced by approved plans, formal resolutions, investment proposals, budget allocations, or implementation of adaptation measures by project completion).

#### **Output 4.1: Territorial peer-to-peer learning and exchange mechanism operationalized**

Horizontal learning frameworks, experience-sharing tools, and structured technical dialogues will be deployed to operationalize a peer-to-peer knowledge transfer mechanism across priority landscapes. This output will deliver field-validated case studies, cross-visitation programs, and joint learning sessions to transfer proven EbA and resilient production models directly among local community structures (COCODES, water committees, producer organizations), municipal technical directorates (UGAM, OMAS, DMP, DMM), and agricultural extension networks (CADERS).

**Target:** A territorial peer-to-peer learning and exchange mechanism operationalized, facilitating horizontal transfer of validated EbA and resilient production models between COCODEs, COMUDEs, water committees, technical watershed committees, and producer organizations.

**Activity 4.1.1:** Systematize field experiences and traditional knowledge. Analyze field data (45,000 ha intervened, bio-factories, water harvesting, sustainable value chains) to produce case studies and cost-benefit reports integrating hydro-meteorological data with ancestral Indigenous knowledge.

**Activity 4.1.2:** Facilitate peer-to-peer exchanges and field visits. Organize regular cross-watershed field visits connecting COCODEs, water committees, and cooperatives to observe operational EbA, bio-input, and resilient farm practices firsthand.

**Activity 4.1.3:** Convene technical dialogue sessions. Hold biannual learning sessions with municipal technical teams (UGAM, OMAS, DMP), CADERS, and territorial platforms (MTAs, COMUDEs) to review monitoring data and resolve field bottlenecks.

#### **Output 4.2: Adaptation knowledge products, technical guidance, and scaling tools developed**

This output will generate and disseminate knowledge products, technical guidance, and planning tools that capture and scale successful adaptation practices. It will translate project results into practical resources for communities, municipalities, and national institutions, strengthening the integration of climate resilience into planning, investment, and decision-making processes. These knowledge products will be hosted on institutional information and training platforms, where appropriate.

**Target:** 5 policy briefs and scaling roadmaps, climate-risk screening tools integrated into municipal planning and investment processes (SISCODE, PDM-OT, POM/POA), 20 technical EbA manuals, 10 multilingual knowledge products (Spanish, K'iche', Mam, and Q'eqchi'), and digital knowledge resources made available through national information platforms.

**Activity 4.2.1:** Develop policy briefs and scaling roadmaps. Prepare 5 policy briefs and scaling roadmaps (including versions in indigenous languages, where applicable) documenting adaptation benefits, lessons learned, and pathways for replication by municipalities, CODEDEs, and national institutions.

**Activity 4.2.2:** Integrate climate-risk screening tools into planning and investment processes. Provide technical support to municipal governments to incorporate climate-risk and EbA criteria into SISCODE project profiles and local planning instruments.

**Activity 4.2.3:** Produce and disseminate technical guidance and knowledge products. Develop and publish 20 technical manuals and field guides on EbA and climate-resilient production practices for use by extension services, producer organizations, and training centers, and produce 10 multimedia knowledge products. Disseminate these materials through community, institutional, and digital channels.

#### **Output 4.3: Training and knowledge transfer programmes on climate adaptation implemented for territorial stakeholders.**

Capacity development modules, practical training toolkits, and iterative feedback mechanisms will be deployed to strengthen the operational capacities of municipal staff, community organizations, and local leaders. This output will deliver hands-on workshops in project formulation (SISCODE), climate data application, and EbA management, supported by pre- and post-training assessments, peer-learning exchanges, and follow-up coaching mechanisms to measure, reinforce, and sustain the practical application of capacities across target territories.

**Target:** Capacity development modules, methodologies, and practical tools provided to municipal technical teams, community organizations, and local actors to interpret, apply, and scale adaptation measures across local projects and plans.

**Activity 4.3.1:** Conduct practical training on EbA and project formulation. Deliver hands-on workshops for municipal staff (UGAM, OMAS, DMP, DMM, DAFIM), water committees, and producer leads on climate data interpretation, bio-factory management, and SISCODE project drafting.

**Activity 4.3.2:** Implement pre- and post-training diagnostics and participatory monitoring missions. Assess changes in knowledge and capacities through pre- and post-training diagnostics and periodic follow-up assessments. Document the application of acquired capacities through participatory monitoring missions, including evidence of uptake of tools, protocols, and institutional practices (e.g., SISCODE reporting, water committee management protocols, and local adaptation planning processes).

**Activity 4.3.3:** Execute annual curriculum refinement workshops. Convene annual review sessions with MTAs, COMUDEs, and CADERs to update training toolkits based on assessment results and emerging field challenges.

**B. Describe how the project/programme provides economic, social and environmental benefits, with reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project/programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.**

The project will generate significant environmental, social, and economic benefits by addressing in an integrated manner the structural factors that determine climate vulnerability in the Central Volcanic Chain of Guatemala. Through complementary interventions in landscape restoration and watershed management, adaptation of productive systems, and strengthening of territorial coordination and governance, the project will contribute to reducing the exposure and sensitivity of socioecological systems to climate threats—such as increasing temperatures, variability in precipitation, intra-seasonal water deficits, and extreme events—while strengthening the adaptive capacities of rural communities, indigenous peoples, women, and youth, contributing to the reduction of their vulnerability, understood in terms of exposure, sensitivity, and adaptive capacity, and to the strengthening of the climate resilience of the territory.

**Project beneficiaries**

It is expected that the project will reach approximately **70,000 direct beneficiaries (50% women)**<sup>37</sup> in the prioritized territories, of which an estimated 24,500 (35%) are Indigenous Peoples.

To guarantee 50% female participation, targeting mechanisms include tailored activities directly focused on women in training and governance, activity schedules adapted to domestic/agricultural workloads, targeted financial support for women-led MSMEs, and oversight via a Gender Action Plan. This approach builds directly on proven field strategies<sup>38</sup> such as hiring female bilingual technical staff, providing childcare support during training sessions, and embedding dedicated social team members in field implementation to be confirmed in PFG phase. The project's direct and indirect beneficiary targets, scope of intervention measures, and geographic focus area (prioritized watersheds and municipalities across the Central Volcanic Chain) are fully defined and established in this concept note. During the full proposal formulation phase, these estimates will be further refined using detailed territorial baseline data and household-level vulnerability mapping to optimize micro-level site selection and beneficiary disaggregation (by gender, age, and ethnicity) prior to inception. To ensure methodological consistency, such quantification will be aligned with the project's results framework and will avoid double counting among components, outputs, and subsets of beneficiaries.

**Component 1** will benefit rural communities, agricultural and forest producers, Indigenous Peoples, women, youth, municipal governments, and local actors engaged in watershed and landscape management. **Component 2** targets vulnerable rural households, smallholder farmers and producer organizations, Indigenous Peoples, women, youth, rural MSMEs, value-chain actors, extension services, and financial institutions. **Component 3** focuses on rural communities, indigenous peoples, women—including indigenous women—and youth, community and productive organizations, MSMEs, indigenous authorities, territorial governance platforms, local and departmental governments, public institutions, and actors of the knowledge and risk management ecosystem. And **Component 4** will support national and subnational institutions, knowledge partners, community and producer organizations, and territorial stakeholders through enhanced knowledge management, evidence generation, learning, and the replication and scaling of adaptation solutions.

**Benefits for rural and indigenous communities**

Most of the population in the Central Volcanic Chain identifies as **Indigenous, predominantly Mam, K'iche', Kaqchik'el, and Poqomam peoples**. This will be confirmed through characterization and self-identification processes during project formulation. Project activities will respect collective and cultural rights, Indigenous and community leadership, and consensus-based decision-making. Indigenous peoples and local communities highly vulnerable to climate change will be central actors in adaptation, participating in planning, watershed management, and territorial governance through culturally appropriate mechanisms that integrate traditional and

<sup>37</sup> Beneficiaries are estimated using proxies from the project Promoting Sustainable and Resilient Territories in Landscapes of the Central Volcanic Chain in Guatemala (GEF, MARN, UNDP), recently implemented in areas with similar social and environmental characteristics. Based on 2018 Census data for the selected territory, the population totals 1,800,773 inhabitants, of which 1,042,819 are women (58%).

<sup>38</sup> Project Promoting Sustainable and Resilient Territories in Landscapes of the Central Volcanic Chain in Guatemala (GEF/MARN/UNDP - "Volcanes"), reached 50% female beneficiaries (out of 88,973 total beneficiaries) across similar social and environmental contexts. Key operational measures proven in this project include: (i) childcare provision during training workshops to facilitate attendance; (ii) participatory schedule definition with beneficiary groups; (iii) deployment of dedicated social extension personnel; and (iv) recruitment of female bilingual technical staff fluent in local Indigenous languages

ancestral knowledge. Strengthened capacities in water, land, and natural resource management will enhance resilience, while the incorporation of local knowledge into biodiversity and landscape conservation will ensure that adaptation strategies are inclusive and sustainable.

The project will establish engagement instruments adapted to the needs of beneficiary groups, ensuring that adaptation measures reduce rather than reproduce existing inequalities. These instruments will combine training, equitable access to incentives and opportunities, stronger community organizations, inclusive financial services, and leadership spaces where women and youth influence decisions on water, territorial planning, and ecosystem restoration. Communities will also benefit from ecosystem restoration, improved water security, resilient production practices, technical assistance, integration into value chains, and access to financial instruments where relevant. This approach will strengthen ownership and relevance of adaptation measures while reducing risks of exclusion and resource conflicts. The magnitude of these benefits is detailed in **Table 6**.

**Initial gender analysis**

The project recognizes that the impacts of climate change across the prioritized territory (population of approximately 1.8 million people; 57% women, 48% rural) are not gender-neutral<sup>39</sup>. Growing climate variability, severe droughts, and environmental degradation actively exacerbate pre-existing structural gender, social, and ethnic inequalities. While women represent 53% of the population aged 15 and over (639,072 women), only 27% (175,338) are engaged in paid employment, **while 63% (405,465) carry unpaid care and domestic work (INE, 2018)**.

Climate change and environmental degradation are amplifying these inequalities. The loss of 1.9 million ha of tree cover since 2001 and increasing water scarcity have increased women’s time burden for water, fuelwood, and household provisioning. This heavy domestic load drives girls’ school dropout rates and restricts women’s access to education and training. Rural female time poverty reached 57.6% in 2023, compared to 52.8% for men (Gammage, 2026; INE 2023). Women are mainly responsible for water collection in 65% and fuelwood of households (INE, 2014), and smoke inhalation from indoor cooking, coupled with limited healthcare access, poses severe health risks. Climate-related declines in ecosystem services further reduce opportunities for education, income generation, and participation in local decision-making.

Women’s adaptive capacity is further constrained by unequal access to productive assets. Nationally, **women represent only 7.8% of landholders** (OECD/PAGyCC, 2019), limiting their access to credit, extension services, and forestry incentives (PROBOSQUE 17% female beneficiaries; PINPEP 34%; INAB, 2021). As climate variability and drought reduce agricultural productivity, female agricultural workers—53% are unpaid and 73% underpaid relative to men CODECA, 2013 —face heightened food insecurity and weaker capacity to recover from climate shocks. Furthermore, women face low representation in formal political participation and local development councils (COMUDES/COCODES), limiting their influence on territorial decision-making.

Indigenous women face compounding vulnerabilities linked to multidimensional poverty, exclusion, and dependence on climate-sensitive livelihoods. According to official Multidimensional Poverty Index data (IPM-Gt) (Segeplan, 2025), **75% of the Maya population lives in multidimensional poverty** (1.6 times the rate of non-Indigenous populations). Climate-induced crop losses, ecosystem degradation, and water scarcity further undermine livelihood security. At the same time, Indigenous women are key custodians of traditional ecological knowledge, including native seed conservation, agrobiodiversity, sustainable agriculture, and watershed management, making them essential actors in locally led adaptation.

The proposed project is aligned with Guatemala’s legal and policy framework on gender equality, including Decree 7-99 (**Law on the Dignification and Comprehensive Promotion of Women**), and supports the implementation of the **Gender and Climate Change Action Plan** (PAGyCC, 2024) under the **Framework Law on Climate Change** (Decree 7-2013).

In response to these gender-differentiated needs, the project will increase the participation of women, especially Indigenous women, in territorial adaptation planning, development councils, and local governance. It will strengthen their technical and organizational capacities in resilient agriculture, restoration, water management, and sustainable value chains, while reducing structural barriers through adapted schedules, accessible formats, and culturally relevant engagement strategies. Women’s essential roles and ancestral knowledge (including native seeds, sustainable agriculture, and water management) will be recognized to ensure meaningful participation, equitable access to benefits, and sustainability of measures, in line with Adaptation Fund gender and environmental policies. During full formulation, a substantive gender gap analysis and **Gender Action Plan (GAP)** will be developed (PFG Activity 2), with specific goals, indicators, and allocations, and preliminary targets for participation and benefits subject to validation.

**Adaptation benefits of the project**

The project will generate adaptation benefits across environmental, social, economic, and institutional dimensions through an integrated approach that combines landscape restoration, resilient production systems, and strengthening of territorial governance and climate information. These benefits respond to key vulnerability factors, reducing the exposure and sensitivity of socioecological systems and

<sup>39</sup>  
**Table 6.** Project benefits: preliminary estimates and methodology.

strengthening their adaptive capacity in the long term. **Table 6** presents the expected benefits by the end of the project, together with preliminary estimates and quantification methodologies, ensuring their traceability with the results framework.

| Category      | Benefit                                                                                                                                  | Component, output, indicators                 | Description and preliminary quantitative estimate, when available                                                                                                                                                                                                                                                                                                                | Methodology and data source                                                                                                                                                                                                                                                       |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Economic      | Reduced productive losses from climate hazards and soil degradation                                                                      | (C2 / O2.2, O2.4)                             | Preliminary estimate is USD 2.5-2.6 million/year in avoided agricultural production losses, equivalent to USD 14 million in 10 years. The estimate covers staple crops (maize, beans) and coffee production on the project's prioritized area (estimated at 22,500 ha of the 45,000 ha outcome 1.1 target - to be confirmed during PFG).                                         | SEGEPLAN's (2023) officially adopted damage-and-loss methodology, applying CEPAL's climate-yield impact functions for maize, beans and coffee to MAGA and Anacafé production and price baselines, with national avoided-loss estimates scaled to the project's intervention area. |
|               | Rural livelihoods diversified and strengthened through resilient value chains and improved market access.                                | (C2 / O2.1, O2.3, O2.4 – indicators 2.1, 2.2) | At least 4,000 direct smallholder farmers across at least 42 productive organizations improving value chains and expand market access, increasing 10% agricultural income.                                                                                                                                                                                                       | Project records, value chain characterization, technical assistance, and monitoring of market integration                                                                                                                                                                         |
|               | Avoided costs from environmental degradation, erosion, fires, sedimentation, and the rehabilitation of ecosystems and productive assets. | (C1 / O1.2, O1.3; C2 / O2.2)                  | Preliminary estimate for representative EbA restoration models shows cost/benefit ratio of 1.18-1.73 compared to 0.53-0.66 for conventional post-disaster corrective alternatives. An estimated of 2.22-2.62 times greater return per dollar invested, avoiding the excess cost associated with reactive approaches.                                                             | Methodology used by Guatemala's National Forest Landscape Restoration Roundtable (2018), benchmarked with conventional restoration/forestry alternatives (UNDP-BIOFIN Guatemala, 2024) <sup>40</sup> . Please refer to <b>section C</b> for details.                              |
|               | Expanded access to financial instruments and economic mechanisms adapted to climate risk.                                                | (C2 / O2.4)                                   | USD 500,000 mobilized in climate-resilient agricultural investments through at least preferential credit lines, grants, and specialized technical assistance deployed with rural financial institutions. Among the 42 supported producer organizations, eligible one will act as multipliers, replicating adapted practices across their networks.                               | Project records, financial agreements, eligibility mechanisms, and beneficiary monitoring                                                                                                                                                                                         |
| Social        | Community water resilience improved, reduced domestic burden and conflict prevention                                                     | (C1 / O1.2, O2.1, O3.2)                       | Restoration across 8 prioritized watersheds (Achiguate, Coyolate, Naranjo, Ocosito, Samalá, Suchiate, plus Sisí-Can and Nahualate). Fuel-efficient cookstoves and stabilized water points reduce time spent collecting firewood and water for women and girls. Participatory socio-ecological diagnostics and local water governance mechanisms prevent local resource disputes. | Watershed cartography, intervention records, areas of water influence, usage records and monitoring, ESMF and ESMPs, FPIC processes, and grievance/monitoring mechanisms.                                                                                                         |
|               | Target beneficiaries. Inclusion of women, Indigenous Peoples, and youth.                                                                 | (Transversal – indicator O.1.2.)              | 70,000 direct beneficiaries reached with climate adaptation and resilient livelihood measures (50% women, 35% Indigenous Peoples), plus broader indirect beneficiaries to be defined during PFG.                                                                                                                                                                                 | Disaggregated records, GAP and IPP monitoring, and inclusive mechanisms.                                                                                                                                                                                                          |
|               | Adaptive capacity strengthened through EWS and climate risk management                                                                   | (C3 / O3.3 – indicators O.1.3 and 3.3)        | 2 local Early Warning Systems (EWS) operationalized for hydrometeorological risks. Formal establishment/strengthening of COLREDs accredited by CONRED.                                                                                                                                                                                                                           | Minutes, agreements, institutional records, and functioning of platforms                                                                                                                                                                                                          |
| Environmental | Ecosystems restored and ecosystem services recovered                                                                                     | (C1 / O1.2)                                   | At least 8,000 hectares brought under restoration in prioritized watershed, forest, productive, and corridor landscapes.                                                                                                                                                                                                                                                         | Baseline, GIS mapping, geospatial monitoring, project records                                                                                                                                                                                                                     |
|               | Hydrological regulation, infiltration, and soil protection strengthened                                                                  | (C1 / O1.2)                                   | Approximately 3,500 hectares are rehabilitated in prioritized watersheds and water recharge zones.                                                                                                                                                                                                                                                                               | GIS mapping, hydrological analysis, and intervention records                                                                                                                                                                                                                      |
|               | EbA measures implemented across priority landscapes                                                                                      | (C1 / O1.2) indicator 1.1.)                   | At least 45,000 hectares of priority forests, watersheds, productive areas, and biological corridors managed under EbA and sustainable practices.                                                                                                                                                                                                                                | GIS mapping, geospatial change analysis, and project records.                                                                                                                                                                                                                     |

|                      |                                                                                                     |                                    |                                                                                                                                                                                                                             |                                                                                                             |
|----------------------|-----------------------------------------------------------------------------------------------------|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
|                      | Community EbA capacity strengthened                                                                 | (C1 / O1.2 and O.2.2)              | At least 110 municipal or community forest nurseries are strengthened; and at least 150 conservation agreements are established.                                                                                            | Nursery production records signed conservation agreements, project reports.                                 |
|                      | Ecological sustainability of productive systems improved through adoption of sustainable practices. | (C1 / O1.2 and O.2.2)              | At least 4,000 hectares of agriculture and forest productive areas certified.                                                                                                                                               | Technical records, productive monitoring, and adoption of practices                                         |
| <b>Institutional</b> | Adaptation criteria integrated into municipal public management.                                    | (C3/ O3.1-3; C4/ O4.1-O4.3)        | At least 32 municipalities integrate adaptation, EbA, and watershed criteria into territorial planning and public management.                                                                                               | Planning instruments, institutional records, and monitoring system                                          |
|                      | Territorial governance and decision-making strengthened through climate information.                | (C3 / O3.2, O3.3)                  | At least 15 territorial actors and public institutions adopt and apply climate adaptation and integrate watershed management criteria in decision-making instruments.                                                       | Platform records, information systems, and monitoring                                                       |
|                      | Adaptive capacity strengthened via EWS and climate risk management                                  | (C3 / O3.3 – indicators O.1.3,3.3) | 2 local EWS operationalized for hydrometeorological risks, including formal establishment/strengthening of COLREDS.                                                                                                         | Minutes, agreements, institutional records, CONRED accreditation certificates, and functioning of platforms |
|                      | Knowledge management and evidence-based scaling of adaptation                                       | (C4 / O4.1– O4.3)                  | At least 8 local institutions and governance platforms (MTA, watershed committees, biological corridor bodies, and development councils) apply project-generated adaptation evidence in planning and resource mobilization. | Project records, knowledge products, and learning networks                                                  |

### Prevention and mitigation of negative impacts

The project has been screened as **Category B** under the Adaptation Fund's Environmental and Social Policy. Based on the preliminary environmental and social assessment, no significant adverse environmental or social impacts are expected. Potential risks are predictable, site-specific, and manageable through participatory planning, adaptive management, strengthened local governance, and the implementation of environmental and social risk mitigation measures consistent with international standards and culturally appropriate approaches. To avoid and mitigate potential adverse impacts, the project incorporates the following design measures:

- **Customary access and livelihoods:** consistent with UNDP SES, any adjustments to natural resource use (including watershed conservation agreements) will be voluntary, based on meaningful stakeholder engagement and FPIC processes where applicable. Early assessments of resource-use dependencies will inform participatory land-use planning and the identification of appropriate livelihood alternatives.
- **Women's participation:** Potential increases in unpaid care and productive workloads will be addressed through gender-responsive implementation measures (GAP to be developed during PFG), including flexible participation arrangements and childcare support where feasible.
- **Equitable benefit distribution:** Participation in Component 2 value chains, financial mechanisms, and decision-making spaces will follow transparent and inclusive selection processes developed with local and Indigenous authorities.
- **Social cohesion:** Potential tensions related to natural resource management, ecosystem restoration, or water use will be addressed through participatory planning processes, multi-stakeholder governance platforms (Output 1.3), and community agreements established prior to implementation.

A comprehensive **Environmental and Social Management Framework (ESMF)** will be prepared during the PFG phase, with specific **Environmental and Social Management Plans (ESMPs)** developed as required. These will include a **Stakeholder Engagement Plan, Gender Action Plan, and Indigenous Peoples Plan** (PFG, activities 1 and 2).

These preventive design measures will be complemented by an accessible, rights-based stakeholder engagement and feedback system. Capitalizing on proven operational experience (Citizen Engagement System – SAC) from the Promoting sustainable and resilient territories in landscapes of the central volcanic chain of Guatemala “Volcanes” Project, inclusive stakeholder dialogue, participatory oversight, and continuous feedback will be operationalized through coordinated action across national, municipal, and local levels implemented via the SAC. The mechanism combines proactive stakeholder participation and continuous dialogue with concerns-resolution processes, ensuring transparency, accountability and timely response to issues raised during project implementation. This field-tested mechanism will empower local communities, strengthen participatory ownership, and enhance project adaptive management to ensure adaptation actions continuously reflect local priorities and rights.

### C. Describe or provide an analysis of the cost-effectiveness of the proposed project/programme.

The cost-effectiveness of the project is based on an integrated and territorial EbA approach, which simultaneously addresses climate threats—such as increasing temperature, changes in precipitation, intensification of the mid-summer drought, and water deficits—and the institutional, technical and socioeconomic gaps that drive reactive spending, uncoordinated investment and recurrent economic and environmental losses in the baseline scenario. The project addresses these gaps through integrated interventions that combine landscape restoration, watershed management, resilient production systems, and institutional strengthening, reducing risks, avoiding future losses, and improving spending efficiency.

The preliminary cost-effectiveness assessment combines (i) a cost/benefit analysis of representative EbA restoration models and (ii) an avoided-loss analysis using Guatemala's official damage-and-loss methodology. For Component 1, the analysis applies the restoration cost/benefit ratio (**CBR<sub>r</sub>**) using national restoration-opportunity data<sup>41</sup>:  $CBR_r = GB / (Ci + Cm)$  where: *CBR<sub>r</sub>* = Cost-benefit ratio of the forest landscape restoration activity; *GB* = Gross benefit generated by the restoration activity; *Ci* = Implementation cost; *Cm* = Maintenance cost. The ratio estimates the economic return generated per dollar invested in restoration, including productive and ecosystem-service benefits.

Component 2 applies SEGEPLAN's official damage-and-loss methodology<sup>42</sup>, based on CEPAL climate-yield functions for maize, beans and coffee, to estimate avoided climate-related losses within the project's target intervention. This preliminary analysis demonstrate that the proposed integrated EbA approach generates higher economic returns and resilience benefits than conventional sectoral or reactive alternatives. During the PFG phase, a detailed economic analysis, including cost-benefit analysis and comparison of alternatives, will further quantify economic, social and environmental benefits, including avoided losses and ecosystem-service values.

**Component 1.** To compare the project's EbA restoration activities with conventional alternatives, a cost-benefit ratio (CBR) was calculated for the four restoration models identified as most profitable by *Guatemala's National Forest Landscape Restoration Roundtable (2018)*<sup>43</sup>: converting degraded pastureland to agroforestry, to silvopastoral systems, degraded scrubland (guamil) to riparian forest, and guamil to cacao agroforestry. For each model, the CBR is calculated as the gross benefit generated per hectare, including timber, fruit, fodder, and ecosystem-service values, divided by the sum of implementation and maintenance costs. The CBR analysis shows a range from **1.18 to 1.73**, indicating that every dollar invested generates **USD 1.18-1.73 in economic and environmental benefits**. The same national assessment shows that conventional restoration approaches, such as non-integrated reforestation or single-species plantations implemented without complementary land-use planning achieve CBRs at **0.53-0.66**, indicating that full investment costs are not recovered. Comparing both CBRs demonstrates that **the project's EbA approach generates 2.22-2.62 times more benefit per dollar invested than conventional restoration alternatives**, while simultaneously delivering adaptation, biodiversity, soil conservation, and water-regulation benefits.

**Component 2.** Cost-effectiveness analysis comprises two dimensions: 1) **avoided climate-related losses**, and 2) **financial leverage**. Firstly, applying Guatemala's official damage-and-loss methodology (SEGEPLAN, 2003), based on CEPAL climate-yield functions for maize, beans, and coffee, national degradation-related losses in these crops are estimated at **USD 77-171 million annually**. Restoring Guatemala's national target of 425,000 ha would avoid an estimated **USD 21-104 million annually** in losses, equivalent to approximately USD 116/ha/year under the central scenario. The project's 45,000-ha target area includes agricultural land, forestry production systems, protected forest areas, and water-recharge zones. Because the crop-loss coefficient can only be applied to agricultural production areas and pending the detailed land-use breakdown during PFG. A conservative assumption is applied whereby approximately half of the intervention area (**22,500 ha**) is under agricultural production. This results in an estimated **USD 2.5-2.6 million per year in avoided agricultural losses**, equivalent to approximately **USD 14 million in net present value over ten years**. Secondly, the project's incentive-based livelihood mechanisms are estimated to mobilize **USD 31.6 million**, generating **USD 5-10 of value per dollar mobilized** once ecosystem co-benefits are included, versus a multiplier of only **3.57** for Guatemala's conventional forestry-incentive schemes, whose effect is concentrated mainly in short-term wage labor rather than durable productive assets. Together, these two calculations show **Component 2 is 1.4-2.8 times more cost-effective than the subsidy-based approaches**, while simultaneously strengthening adaptive capacity, productive resilience, and access to climate-resilient markets and financing.

The remaining 22,500 ha under forestry, restoration, forest protection, and water-recharge functions generate additional ecosystem-service benefits not yet included in this analysis such as carbon sequestration, watershed regulation, reduced erosion. Consequently, the current estimates can be considered conservative, and the intervention's total economic value is expected to be higher.

<sup>41</sup> Data sources include INAB. (2025). Amounts PROBOSQUE. Act of INAB's Directive Board N°ID.01.32.2025. [www.inab.gob.gt/images/servicios/probosque/7montosprobosque/040925\\_Resolucion\\_montos\\_PROBOSQUE.pdf](http://www.inab.gob.gt/images/servicios/probosque/7montosprobosque/040925_Resolucion_montos_PROBOSQUE.pdf); *Guatemala's National Forest Landscape Restoration Roundtable* (2018). Guatemala: INAB, MAGA, CONAP, MARN, FAUSAC, USAC, UICN: [www.inab.gob.gt/images/publicaciones/guatemala\\_oportunidades\\_de\\_restauracion\\_en\\_guatemala.pdf](http://www.inab.gob.gt/images/publicaciones/guatemala_oportunidades_de_restauracion_en_guatemala.pdf); UNDP BIOFIN (2024). Contributions to the National Strategy for the Restoration of Guatemala's Forests. Guatemala: Biofin Guatemala; Waldrom, A. (2020). Protecting 30% of the Planet for Nature: Costs, Benefits and Economic Implications: [https://www.conservation.cam.ac.uk/files/waldron\\_report\\_30\\_by\\_30\\_publish.pdf](https://www.conservation.cam.ac.uk/files/waldron_report_30_by_30_publish.pdf); WEF. (2020). The Future of Nature and Business Policy Companion. Geneva: World Economic Forum: [https://www3.weforum.org/docs/WEF\\_NNER\\_II\\_The\\_Future\\_of\\_Business\\_and\\_Nature\\_Policy\\_Companion\\_2020.pdf](https://www3.weforum.org/docs/WEF_NNER_II_The_Future_of_Business_and_Nature_Policy_Companion_2020.pdf)

<sup>42</sup> SEGEPLAN (2023). Strategy for Calculating Damages, Losses, Additional Costs, and Human Impact: <https://portal.segeplan.gob.gt/segeplan/?p=8943>

<sup>43</sup> *Guatemala's National Forest Landscape Restoration Roundtable* (2018). Guatemala: INAB, MAGA, CONAP, MARN, FAUSAC, USAC, UICN: [www.inab.gob.gt/images/publicaciones/guatemala\\_oportunidades\\_de\\_restauracion\\_en\\_guatemala.pdf](http://www.inab.gob.gt/images/publicaciones/guatemala_oportunidades_de_restauracion_en_guatemala.pdf);

Overall, the project's cost-effectiveness is demonstrated through (i) higher benefit-cost ratios for EbA restoration models, (ii) avoided climate-related losses estimated at USD 2.5–2.6 million annually, (iii) stronger resource mobilization and financial leverage than conventional incentive schemes, and (iv) more efficient targeting of adaptation investments through climate information and coordinated territorial planning. Compared with conventional reactive and sector-specific approaches, the project delivers greater resilience benefits per dollar invested while reducing future adaptation and recovery costs.

**Additional factors of project cost-effectiveness:** Climate information services, vulnerability assessments, and early warning systems improve investment targeting, directing resources to areas and populations facing the highest climate risks and reducing maladaptation. The integrated territorial approach generates further efficiencies by combining ecosystem restoration, resilient livelihoods, watershed management, and climate governance interventions within the same landscapes and institutional platforms, reducing duplication and transaction costs while maximizing co-benefits.

**Table 7.** Preliminary information on the cost-effectiveness of the project. Source: own elaboration (UNDP).

| Component                                                                                                                                                           | Baseline scenario                                                                                                                                                                                                                                                                                                                                                   | Project approach (EbA / integrated solutions)                                                                                                                                                                                                                               | Conventional alternative                                                                                                                                                                                                                   | Cost-effectiveness rationale                                                                                                                                                                                                                                                                                                                                                          | Beneficiaries                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Component 1.</b><br>Landscape restoration and integrated management for ecosystem-based adaptation in vulnerable socio-ecological watersheds.<br>(USD 5,900,000) | Degraded ecosystems, forest-cover loss, erosion and altered hydrology, worsened by rising temperature and rainfall variability. Weak territorial planning and limited hydroclimatic information reduce preventive-management capacity, increasing exposure to droughts, floods and fires and raising ecosystem/asset rehabilitation costs.                          | EbA approach integrating ecological restoration, assisted natural regeneration, reforestation with resilient native species, ecological connectivity and integrated watershed/micro-watershed management, articulated through landscape planning instruments.               | Conventional structural solutions (hydraulic works, channelization, physical erosion control, post-disaster corrective works), generally isolated, with high investment/maintenance cost and not addressing underlying degradation causes. | EbA restoration models show benefit-cost ratios of 1.18–1.73 versus 0.53–0.66 for conventional structural/forestry alternatives: a <b>2.22–2.62</b> × efficiency advantage <sup>44</sup> .                                                                                                                                                                                            | Rural agricultural and forest producers and their organizations (incl. indigenous peoples, rural women and youth); community structures for water management, environmental conservation and fire prevention; municipal governments and COMUDE; and national/subnational public institutions directly executing landscape and watershed management (INAB, CONAP, MARN, MAGA).                                                                                                     |
| <b>Component 2.</b><br>Adaptation of productive systems and strengthening of resilient livelihoods.<br>(USD 6,750,000)                                              | Productive systems and rural livelihoods highly sensitive to climate variability, with recurrent losses from drought, intense rainfall, soil degradation and water-resource pressure. Low diversification and limited access to climate information, adapted seeds, technical assistance and financing restrict adaptive capacity, increasing income vulnerability. | Agroecological, agroforestry and climate-resilient production practices; climate information and adaptive seed management; inclusive value chains, market access, business development and climate-risk-adapted financing for smallholder farmers, organizations and MSMEs. | Input-intensive conventional production models with low climate adaptation, reliant on subsidies or post-loss assistance, without structural transformation of productive vulnerability.                                                   | Restoring the agricultural production area of the project's target (approx. 22,500 ha) is estimated to <b>avoid USD 2.5–2.6 M/year in agricultural losses</b> (range 1.1–5.5 M; USD 14 M NPV over 10 years). Complemented by a resource-mobilization multiplier of 1:5–1:10 versus 1:3.57 for conventional incentive schemes: a <b>1.4–2.8</b> × efficiency advantage <sup>45</sup> . | At least 4,000 smallholder farmers organized through at least 42 producer organizations, cooperatives or rural enterprises receiving technical assistance, climate information services, improved seed systems, business-development support and climate-adapted financing; rural MSMEs directly participating in value-chain strengthening activities; and public institutions providing extension, technical assistance and implementation support, particularly MAGA and INAB. |

<sup>44</sup> Guatemala's National Forest Landscape Restoration Roundtable (2018), UNDP-BIOFIN Guatemala, 2024.

<sup>45</sup> UNDP-BIOFIN Guatemala, 2024; BANGUAT-URL/IARNA, 2009; WEF, 2020.

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| <p><b>Component 3.</b><br/>Institutional strengthening, territorial governance, and social inclusion for adaptation.<br/>(USD 1,800,000)</p> | <p>Institutional fragmentation, weak coordination and limited integration of climate risk into territorial planning and public investment; insufficient climate information and early-warning systems; structural inequalities restricting participation of women, indigenous peoples and youth.</p>                                                                                            | <p>Strengthened institutional capacities for climate-informed planning and public investment, early-warning systems, territorial coordination platforms and knowledge-management mechanisms enabling coordination, prioritization and scaling through existing structures.</p>                                        | <p>Isolated sectoral investment without climate integration or inter-institutional coordination; low public-expenditure efficiency; limited territorial ownership; absence of learning or replicability mechanisms.</p>                                                                       | <p>Improves public-expenditure efficiency by enabling climate-informed prioritization of adaptation investments, reducing duplication, transaction costs, and maladaptation risks, while strengthening coordination across sectors and levels of government. As an enabling component, its economic value is reflected in improved targeting and efficiency of investments under C1-2.</p>                                                                                                                                                         | <p>Members of territorial governance platforms and mechanisms directly engaged in coordination (SISCOE, watershed and community water committees, MTAs, municipal associations); municipal and departmental governments and their technical units; national/subnational public institutions co-executing (MARN, INAB, CONAP, MAGA, SEGEPLAN, INSIVUMEH).</p>                                                                                                                                                                                                                                              |
| <p><b>Component 4.</b><br/>Knowledge management, learning and evidence-based scaling<br/>(USD 600,000)</p>                                   | <p>Limited systematization of field results and lessons learned; weak knowledge-exchange mechanisms between communities, municipalities and territorial platforms; technical guidance and training not embedded in public planning instruments or budget cycles, so capacity investments are fragmented, one-off, and not sustained, replicated or scaled once project or donor cycles end.</p> | <p>Multi-level knowledge-management and social-appropriation framework: peer-to-peer learning and exchange at territorial level; systematized case studies, and multilingual knowledge products; and training with pre/post assessment. Tools and protocols are integrated into public platforms and instruments.</p> | <p>Stand-alone M&amp;E or communication products disconnected from local institutions' planning and budget cycles, generating knowledge that is not owned or integrated once project support ends, requiring costly re-learning and repeated capacity investment in future interventions.</p> | <p>By incorporating capacity-building tools and lessons learned directly into existing institutional mandates and budget cycles (SISCOE, PDM-OT, SNICC, MTAs), C4 lowers the marginal cost of sustaining and replicating C1-2 results and reduces the risk that adaptation investments are lost after project closure. As an enabling component, its cost-effectiveness is reflected in reduced replication, design, and transaction costs, and in the accelerated incorporation of adaptation approaches across institutions and territories.</p> | <p>Municipal technical units (UGAM, OMAS, DMP, DMM, DAFIM); members of territorial governance platforms (MTAs, COMUDEs, CADERS, watershed committees, biological-corridor coordination bodies); community structures (COCODEs, community water committees) and producer organizations directly engaged in training, peer-learning, and knowledge exchange activities; and national institutions receiving project tools through public platforms (SNICC, SISCOE). At least 8 local institutions/territorial platforms formally applying project-generated knowledge in decision-making by completion.</p> |

**D. Describe how the project/programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national adaptation plan (NAP), national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.**

The project is consistent with the national and subnational policy framework of Guatemala in matters of sustainable development and climate change adaptation, aligning with climate commitments, sectoral strategies, and territorial priorities linked to ecosystems, water resources, productive systems, and governance.

This consistency is based on a systematic analysis of public policy instruments relevant to the intervention area, developed through comparative alignment matrices between the objectives, strategic axes, results, and lines of action of those instruments and the outcomes, outputs, and activities of the project. The analysis included the review of key national instruments such as the National Development Plan K'atun 2032 (2014–2032), Guatemala's Nationally Determined Contribution (NDC 2021 and 2023<sup>46</sup>), the National Climate Change Action Plan (PANCC, 2016), the updated National Biodiversity Strategy and its Action Plan (2026), the National REDD+ Strategy (2018), the National Strategy to Recover and Protect Forests (2025), the National Strategy of Biological Corridors—within the framework of the Mesoamerican Biological Corridor—(2010), the Resource Mobilization and Optimization Strategy for Biodiversity (2016), and the Third National Communication on Climate Change (2021), as well as other sectoral strategies linked to forests, biodiversity, water resources, and rural development. This analysis made it possible to identify direct correspondences between public policy priorities and the proposed interventions, ensuring their coherence with current national strategic frameworks.

Additionally, subnational instruments relevant to the intervention area were analyzed, including departmental development and climate change adaptation plans of Sacatepéquez, Chimaltenango, Sololá, Totonicapán, Quetzaltenango, Suchitepéquez, and San Marcos (2022); the departmental vulnerability atlases corresponding to these same departments (2022); as well as watershed management plans

<sup>46</sup> Guatemala's NDC 3.0 has not yet been officially submitted to the UNFCCC; however, NDC 3.0 adaptation and mitigation targets have been reviewed and incorporated into this proposal to ensure direct alignment.

(2025) corresponding to the Achiguate, Coyolate, Naranjo, Ocosito, Samalá, and Suchiate rivers. This analysis made it possible to verify the alignment of the project with territorial priorities in water resource management, ecosystem restoration, climate risk reduction, and strengthening of local governance, ensuring its effective contribution to the territorial implementation of public policies at the landscape and watershed scales.

In this sense, the project is not only consistent with public policy frameworks but also acts as a mechanism for the effective implementation of their priorities and activities. **Table 8** summarizes this alignment.

**Table 8.** National alignment. Source: own elaboration (UNDP).

| National / subnational instrument                                                                                    | Objective(s) of the instrument                                                                                                                                                                                                                                        | How the project contributes (Aligned project activities)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| <b>National Development Plan K'atun 2032 (2014–2032)</b>                                                             | To guide long-term national development through a territorial, inclusive, and sustainable approach, strengthening governance, reducing structural inequalities, and promoting the responsible management of natural capital as a basis for well-being and resilience. | The project contributes to the axis “Natural resources for today and for the future” of the National Development Plan K'atun 2032. It implements integrated watershed management and resilient infrastructure to recover hydrological services and ensure long-term water availability (Outputs 1.3, 3.1, 3.2). Restores 45,000 ha of degraded forest landscapes and soils, mitigating erosion and enhancing ecological resilience across the Central Volcanic Chain (Outputs 1.1, 1.2). Strengthens 42 producer organizations and green MSMEs through climate-resilient practices, bio-factories, and market access, reducing rural vulnerability (Outputs 2.1–2.4). Integrates climate adaptation criteria into municipal land-use plans and municipal investment frameworks (Outputs 1.1, 3.1).                                                                                                                                      |
| <b>Guatemala's Nationally Determined Contribution (NDC 3.0, 2021)</b>                                                | To define and communicate national mitigation and adaptation commitments, articulating sectoral and territorial priorities to reduce emissions, strengthen resilience, and guide climate action in coherence with the Paris Agreement.                                | The project contributes to the adaptation component of Guatemala's NDC 3.0, particularly in the sectors of agriculture, livestock, and food security; forest resources, ecosystems, and protected areas; and integrated water resources management. Scales up climate-smart agricultural practices, bio-factories, and agroforestry systems to safeguard smallholder crop production against drought and climate shocks (Outputs 2.1). Drives ecosystem recovery across upper and middle watersheds through assisted natural regeneration, native reforestation, and biological corridors (Outputs 1.1, 1.2). Establishes community-based water management plans, rooftop rainwater harvesting, and spring protection infrastructure across strategic sub-watersheds (Output 1.3). Enhances municipal capacities, hydrometeorological information usage, and early warning systems for risk-informed decision-making (Outputs 3.1–3.4). |
| <b>National Climate Change Action Plan (PANCC, 2016)</b>                                                             | To implement, in a coordinated manner, national adaptation and mitigation priorities, integrating them into sectoral and territorial planning to reduce vulnerability and strengthen institutional capacities.                                                        | The project contributes to Adaptation Lines of Action for Agriculture & Food Security; Forests, Ecosystems & Protected Areas; and Integrated Water Resources Management. Targets critical recharge zones with restoration, soil conservation, and community water management plans across 6 watersheds (Outputs 1.1–1.3). Introduces Good Agricultural Practices (GAP), post-harvest processing, and organic bio-inputs to maintain farm productivity under extreme climate variability (Output 2.2). Strengthens local disaster committees (COLREDS), municipal technical units (UGAM/OMAS), and inter-institutional coordination mechanisms (Outputs 3.1, 3.2). Integrates real-time forest monitoring and local climate forecast bulletins into community and municipal planning routines (Outputs 1.2, 2.3, 3.3).                                                                                                                   |
| <b>National Biodiversity Strategy and its updated Action Plan (2026)</b>                                             | To establish the guiding framework for the conservation, restoration, and sustainable use of biodiversity, integrating it transversally into public policies as a basis for development, climate adaptation, livelihoods, and intergenerational equity.               | The project contributes to Axis: Conservation and restoration of biological diversity; Axis: Biodiversity in climate change adaptation; and Axis: Policy and institutional operationalization. Prioritizes high-value biological areas and micro-watersheds for EbA restoration and landscape connectivity (Outputs 1.1, 1.2). Trains and equips local environmental brigades to track forest cover, species recovery, and ecosystem health (Output 1.2). Enhances technical capacities within municipal units (UGAM) and local governance platforms to integrate biodiversity protection into territorial management instruments (Outputs 1.1, 3.1).                                                                                                                                                                                                                                                                                   |
| <b>National REDD+ Strategy (2018)</b>                                                                                | To reduce emissions derived from deforestation and forest degradation through sustainable forest management, strengthening of forest governance, and generation of environmental and social co-benefits.                                                              | Strategic Axes on Reducing Forest degradation and Restoration of forests and degraded lands, through lines on efficient fuelwood technologies, natural forest management, and land recovery. The project procures and installs fuel-efficient stoves in rural households, directly reducing fuelwood extraction pressure on natural forests (Output 1.2). Implements assisted natural regeneration, agroforestry, and community forest nurseries to recover degraded lands (Output 1.2). Connects rural smallholders and Indigenous communities to national incentive mechanisms (PINPEP/PROBOSQUE) to compensate sustainable land stewardship (Output 1.2).                                                                                                                                                                                                                                                                            |
| <b>National Strategy to Recover and Protect Forests (2025)</b>                                                       | To restore, conserve, and sustainably manage forest ecosystems through reducing deforestation, recovering forest cover, and strengthening governance.                                                                                                                 | Axes on Reforestation & Ecosystem Restoration, Reducing Deforestation & Degradation, and Adaptive Forest Governance. The project executes native-species reforestation and slope stabilization across 45,000 ha of strategic watersheds (Outputs 1.1, 1.2). Establishes equipped community brigades and local reporting protocols to monitor, detect, and prevent forest fires (Output 1.2). Delivers technical assistance and application support to enroll smallholders and local groups in PINPEP/PROBOSQUE incentive programs (Output 1.2).                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>National Biological Corridors Strategy — within the framework of the Mesoamerican Biological Corridor— (2010)</b> | To restore and strengthen ecological connectivity through integrated landscape management, biodiversity conservation, and inter-institutional and community coordination.                                                                                             | Pillars on Biocultural Landscape Management, Ecological Connectivity & Connectivity Restoration, and Territorial Governance Platforms. The project restores critical landscape corridors (Candacuchex in San Marcos/Quetzaltenango and Balam-Juyu in Atitlán) to reduce fragmentation (Outputs 1.1, 1.2). Co-creates biological corridor management plans with local communities, municipal authorities, and protected area managers (Output 1.1). Operationalizes community-led biodiversity tracking and field toolkits aligned with CONAP and MARN national platforms (Outputs 1.2, 3.2).                                                                                                                                                                                                                                                                                                                                            |
| <b>Resource Mobilization and Optimization Strategy for Biodiversity (2016)</b>                                       | To increase and optimize financing for biodiversity through sustainable public and private financial mechanisms.                                                                                                                                                      | Lines of Action on Sustainable Public Financial Instruments, Public-Private Partnerships, and Resource Optimization for Rural Production. Facilitates rural smallholder and Indigenous community access to national forest incentive programs (PINPEP, PROBOSQUE) and climate funds (Outputs 1.2, 2.4). Deploys seed grants, soft credit packages, and savings schemes in                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

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|                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                     | partnership with local financial institutions and cooperatives (Output 2.4). Provides technical assistance and business planning to build credit histories for green MSMEs and smallholder producer groups (Outputs 2.1, 2.3, 2.4).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Watershed Protection and Conservation Plans (2025)</b><br><br><i>Suchiate, Naranjo, Ocosito, Samalá, Coyolate y Achiguate</i>                                  | To guide integrated management of territory and water resources at the watershed scale through zoning guidelines, conservation and restoration of strategic areas (recharge zones, riverbanks, springs), regulation of land use, risk reduction, and prioritization of investments to ensure water security and climate resilience. | The project directly contributes to operationalizing key action programmes across 6 watersheds, including Forest Landscape and Biodiversity Restoration, Soil Resource Management and Conservation, Territorial Governance with a Watershed Approach, Water Governance and Management, Solid Waste Management, and Disaster Risk Management. It guides landscape restoration, efficient fuelwood use (cookstoves), riparian restoration, forest fire management, and mangrove ecosystem conservation across target sub-watersheds (Outputs 1.1, 1.2). Implements soil conservation techniques, slope stabilization, and sustainable agroforestry practices to reduce erosion and sedimentation (Outputs 1.1, 2.2). Operates and strengthens watershed organizations (inter-institutional technical tables/committees) and integrates watershed management into local land-use planning (Outputs 1.1, 3.1). Strengthens Local Disaster Reduction Committees (COLREDs), installs participatory early warning systems (EWS) for floods and volcanic hazards, and enhances community disaster readiness (Outputs 3.1, 3.2, 3.4). |
| <b>Departmental Climate Change Adaptation Plans (2021)</b><br><i>Sacatepéquez, Chimaltenango, Sololá, Totonicapán, Quetzaltenango, Suchitepéquez y San Marcos</i> | To operationalize national climate adaptation priorities at the departmental level, identifying vulnerabilities and defining inter-sectoral routes of action                                                                                                                                                                        | The project directly contributes to operationalizing adaptation strategies and programmatic frameworks at the departmental, municipal, and local levels in Sacatepéquez, Chimaltenango, Sololá, Totonicapán, Quetzaltenango, Suchitepéquez y San Marcos. Strengthens municipal technical units (UGAM, OMAS, OFM) and departmental platforms (CODEDE) to integrate climate risk criteria into local planning (Outputs 1.1, 3.1). Executes site-level EbA restoration, resilient production practices, and water infrastructure tailored to departmental climate threats (Outputs 1.2, 1.3, 2.2). Strengthens community disaster committees (COLREDs) and establishes local climate risk monitoring and warning networks across target departments (Outputs 3.1–3.4).                                                                                                                                                                                                                                                                                                                                                          |
| <b>Gender and Climate Change Action Plan of Guatemala (PAGyCC, 2024)</b>                                                                                          | To operationalize Decree 7-2013 and Guatemala's NDCs. The plan aims to ensure equitable access to, participation in, and benefits from climate adaptation across priority sectors for urban, rural and Indigenous women.                                                                                                            | Establishes tailored gender-responsive indicators, targeted budget allocations, FPIC processes, and dedicated leadership quotas across watershed platforms, producer organizations, and water committees (Outputs 1.1, 1.3, 2.1). Deploys household/community rainwater harvesting systems and fuel-efficient stoves (Outputs 1.2, 1.3), directly reducing women's domestic labor burdens. Delivers catalytic seed capital, bio-factory inputs, and market access (Outputs 2.1–2.4), prioritizing female- and Indigenous-led enterprises. Facilitates women's access to national forest incentive programs (PINPEP and PROBOSQUE) and ecosystem payments (Output 1.2).                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>National Plan for Comprehensive Disaster Risk Reduction Management 2024–2034</b><br>(Plan GIRRD, 2024)                                                         | To define the national framework to reduce risk creation, manage existing vulnerability, strengthen multi-level governance, enhance early warning capabilities, and build systemic resilience across communities and critical ecosystems.                                                                                           | Applies official SE-CONRED risk maps and protocols during project design and execution to assess spatial exposure and guide resilient infrastructure/restoration interventions (Outputs 1.1, 1.2). Strengthens community climate monitoring and integrates local early warning mechanisms into multi-level risk governance structures (COLRED, COMRED, CODRED, CONRED) for informed decision-making (Outputs 1.3, 3.1). Deploys watershed restoration and soil conservation practices that attenuate natural hazards (landslides, flooding, droughts) in high-vulnerability priority areas (Outputs 1.2, 2.2).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## E. Describe how the project/programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

The project complies with applicable national technical standards (Table 9) and with the Environmental and Social Policy of the Adaptation Fund, in accordance with the analysis carried out through the Social and Environmental Screening Procedure (SESP). It has been classified as Moderate Risk under the SESP and as Category B under the Fund's policy. The identified risks and impacts are limited and manageable through preventive measures aligned with the national regulatory framework and the Fund's safeguards. During the preparation phase (PFG), the corresponding instruments will be developed, including the ESMF and ESMP, as well as the Stakeholder Engagement Plan, Gender Action Plan, and Indigenous Peoples Plan. The main relevant regulations and their application to the project are described in Table 9 below.

**Table 9.** National Regulatory Compliance and Environmental and Social Safeguards Matrix (SESP). Source: Elaborated by UNDP.

| Norm/Standard                                                                           | Institutions | Scope                                                              | Project's outputs related | Steps to be taken to ensure compliance                                                                                                               |
|-----------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Environmental Impact Assessment</b><br>Environmental Protection and Improvement Law, | MARN         | Mandatory procedures for evaluating, identifying, and categorizing | Outputs 1.2 and 2.2       | 1. Screening of interventions via UNDP SESP to exclude high-risk activities.<br>2. Development of ESMF and site-specific ESMPs during the PFG phase. |

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| Decree 68-86. Regulation on Environmental Evaluation, Control and Monitoring, Governmental Agreement (GA) 137-2016.                                            |                                                           | environmental impacts of all projects prior to execution.                                                                                                                                          |                               | 3. Screening interventions (rainwater harvesting, soil conservation, efficient stoves) against MARN's Listado Taxativo (Category C/PGA).<br>4. <b>Technical support to local partners to encourage the enforcement of MARN environmental guidelines.</b><br>5. Monitoring and reporting throughout project execution.                                                                                                                                                                                           |
| <b>Potable Water Quality</b><br>Standards for Drinking Water, Human Consumption, and Packaged Water (COGUANOR)                                                 | MSPAS (Ministry of Public Health and Social Assistance)   | Mandatory microbiological, physicochemical, and sanitary parameters for water intended for human consumption and community systems                                                                 | Output 2.2                    | 1. SESP screening of water systems during PFG.<br>2. ESMF/ESMP baseline water quality testing against COGUANOR thresholds.<br>3. MSPAS technical validation of filtration/disinfection protocols, sanitary protection, and producers' groups, community-level water committees capacity building.<br>4. Monitoring and reporting of water safety.                                                                                                                                                               |
| <b>Indigenous People</b><br>ILO Convention 169, ratified by Guatemala through Decree 9-96. Political Constitution of the Republic of Guatemala, Articles 66–70 | MARN, PDH (Human Rights Ombudsman) Indigenous authorities | Recognizes Indigenous rights, cultural identity, and territorial governance, guaranteeing Free, Prior, and Informed Consent (FPIC) and constitutional rights (Arts. 66–70) in a multiethnic State. | Outputs 1.1, 1.2, 2.1 and 3.1 | 1. SESP screening & governance mapping during PFG to identify ancestral territories and traditional decision-making structures.<br>2. Formulating Indigenous Peoples Plan (IPP) and culturally appropriate FPIC protocols within the ESMF.<br>3. Executing FPIC processes and co-designing interventions in local Mayan languages with traditional authorities prior to field activities.<br>4. Participatory IPP monitoring ensuring equitable benefit-sharing, cultural relevance, and livelihood protection. |
| <b>Rural Communities</b><br>- Urban and Rural Development Councils Law, Decree 11-2002                                                                         | SEGEPLAN municipalities and development councils          | Promotes community participation, territorial development through the system of development councils, and improved living conditions in rural areas.                                               | Outputs 1.1, 1.3 and 3.1      | 1. SESP screening during PFG to exclude physical/economic displacement and resource restrictions.<br>2. Embedding community engagement guidelines within ESMF and ESMFs.<br>3. Aligning with PDM-OT and securing COCODE/COMUDE endorsements prior to execution.<br>4. Participatory monitoring of resource access and livelihood benefits.                                                                                                                                                                      |
| <b>Gender Equity</b><br>- Law on the Dignification and Comprehensive Promotion of Women, Decree 7-99                                                           | SEPREM, Municipal Women's Offices (OMM), and MARN         | Guarantees equal rights and opportunities for women, promoting full participation in social, economic, environmental, and decision-making spheres.                                                 | All project's outputs         | 1. Gender analysis & SESP screening during PFG to identify barriers for rural/Indigenous women.<br>2. Formulating a project Gender Action Plan (GAP) integrated into ESMF.<br>3. Partnering with OMMs for targeted inclusion in EbA, incentives, and training.<br>4. Gender-disaggregated monitoring of participation and benefit access.                                                                                                                                                                       |
| <b>Territorial Planning</b> -Land Use and Territorial Development Law, Decree 118-98                                                                           | SEGEPLAN, municipalities, MARN                            | Regulates land use planning and the protection of sensitive areas, including water recharge zones, fragile soils, and strategic ecosystems                                                         | Outputs 1.1 and 1.2           | 1. GIS screening during PFG to align EbA site selection with official municipal zoning.<br>2. Integrate spatial climate-risk criteria into site-specific ESMFs.<br>3. Technical endorsement and alignment of EbA interventions with municipal planning instruments (DMP/PDM-OT) prior to implementation.<br>4. Spatial monitoring and verification of targeted EbA intervention sites.                                                                                                                          |
| <b>Water and Soil Resources Management and Quality</b><br>Environmental Protection and Improvement Law, Decree 68-86                                           | MARN, MAGA and MSPAS                                      | Provides the framework for environmental protection, regulating water conservation, watershed management, pollution control, soil restoration, and mandatory evaluations.                          | Outputs 1.2 and 2.2           | 1. SESP screening during PFG (exclude major hydraulic infrastructure or heavy extraction).<br>2. MARN Listado Taxativo screening (Category C / PGA) for soil and watershed activities.<br>3. Filing environmental notifications with MARN prior to rollout.<br>4. Monitoring and reporting of watershed resilience and soil conservation metrics (SESP Standards 1 & 2).                                                                                                                                        |
| <b>Pesticides</b> Regulation for the Control of Pesticides, GA 745-99                                                                                          | MAGA and MARN.                                            | Regulates the registration, use, and safe handling of pesticides and hazardous chemical substances.                                                                                                | Output 2.2                    | 1. SESP screening during PFG to exclude WHO Class Ia, Ib, and II hazardous pesticides.<br>2. Integrate Integrated Pest Management and agroecology protocols into ESMFs.<br>3. Capacity building and PPE provisions for safe handling of low-toxicity bio-inputs.<br>4. Verifying container management and disposal following MAGA guidelines.                                                                                                                                                                   |
| <b>Food Safety and Agricultural Sanitary Standards</b><br>Food Safety Regulation, GA 96. Health Code, Decree 90-97                                             | MAGA and MSPAS                                            | Mandatory sanitary standards for agricultural production and handling of food for human consumption.                                                                                               | Outputs 2.1 and 2             | 1. SESP screening during PFG of post-harvest and value chain interventions to exclude safety risks.<br>2. Integrating GAP/GMP protocols into site-specific ESMFs and training packages.<br>3. Technical alignment of post-harvest handling with MSPAS/MAGA sanitary guidelines.<br>4. Monitoring of food safety and hygiene protocols across target groups.                                                                                                                                                     |
| <b>Integrated Solid Waste Management</b><br>-Regulation for the Comprehensive Management of Common Solid Waste, GA 164-2021                                    | MARN, municipalities and MAGA for agrochemical waste.     | Regulates the separation, collection, processing, and disposal of solid waste.                                                                                                                     | Outputs 1.2 and 2.2           | 1. SESP waste risk screening during PFG to establish waste management protocols for project operations.<br>2. Embedding organic waste separation and composting practices into agricultural site ESMFs.<br>3. Technical coordination with MAGA/MARN for safe handling and disposal of bio-input packaging (SESP Standards 3, 7 & 8).                                                                                                                                                                            |

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|                                                                                                                        |                                                  |                                                                                                                                                                  |                               | 4. Operational monitoring of waste separation and disposal across project events and field sites                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Climate Change</b><br>- Framework Law on Climate Change, Decree 7-2013                                              | MARN and CNCC (National Climate Change Council). | Establishes the legal mandate for climate adaptation, vulnerability reduction, GHG mitigation, and planning instruments.                                         | Outputs 1.1, 1.2, 1.3 and 3.1 | 1. SESP screening during PFG to confirm direct alignment of EbA and watershed interventions with PANCC priorities.<br>2. Integrating national adaptation targets into the project ESMF and M&E framework (Articles 3, 6 & 13).<br>3. Technical registration of adaptation metrics in MARN's Climate Information System (SNICC).<br>4. Annual performance reporting to MARN and CNCC on climate risk reduction.                                                         |
| <b>Forestation and Forest Management</b><br>- Forestry Law, Decree 101-96<br>- PROBOSQUE Law, Decree 2-2015            | INAB (National Forestry Institute).              | Regulates forest protection, restoration, native species reforestation, management permits, and incentives PROBOSQUE/PINPEP for small producers and communities. | Outputs 1.1, 1.2 and 2.1      | 1. GIS spatial screening during PFG against INAB coverage maps to target degraded recharge and connectivity areas.<br>2. Drafting INAB-compliant restoration and forest management plans within site-specific ESMFs under the ESMF.<br>3. Facilitating community registration and technical filings to access PROBOSQUE/PINPEP incentive schemes.<br>4. Field monitoring and survival verification of native species reforestation with INAB regional and local staff. |
| <b>Protected Areas</b><br>- Protected Areas Law, Decree 4-89<br>- Protected Areas Regulation, GA 759-90                | CONAP (National Council for Protected Areas).    | Regulates SIGAP land-use planning, ecological restoration, permits, and allowed activities in protected zones and buffer areas.                                  | Output 1.1, 1.2 and 3.1       | 1. GIS overlay during PFG in line with SIGAP maps and Protected Areas Master Plans.<br>2. Inter-institutional coordination and technical clearance with CONAP for restoration activities within SIGAP boundaries.<br>3. Executing FPIC and co-designing local usage rules under ESMF.<br>4. Joint field safeguard monitoring with CONAP regional and local staff.                                                                                                      |
| <b>Integrated Watershed Management</b><br>- Governmental Agreement 19-2021 – Protection and Conservation of Watersheds | MARN, municipalities and watershed committees    | Establishes guidelines for sustainable watershed management, diagnostics, management plans, and monitoring of water resources.                                   | Outputs 1.1 1.3 and 3.1       | 1. SESP screening during PFG in line with MARN GA 19-2021<br>2. Formulating micro-watershed management plans within site ESMFs in line with Watershed Plans.<br>3. Technical alignment within local Watershed Committees.<br>4. Monitoring and reporting to MARN.                                                                                                                                                                                                      |

## F. Describe if there is duplication of project/programme with other funding sources, if any.

The design of the project is based on an exhaustive analysis of the national programmatic environment, which included an analysis of projects currently under implementation, with the objective of identifying opportunities for synergy, complementarity, and sustainability, as well as avoiding duplication.

In the case of ongoing projects, the analysis identified high thematic, territorial, and institutional complementarity with initiatives led or coordinated by the Ministry of Environment and Natural Resources (MARN), particularly those financed by the Green Climate Fund. Among the most relevant are the projects RELIVE – Resilient livelihoods of vulnerable smallholder farmers in the Mayan landscapes and the Dry Corridor of Guatemala (FAO–MARN), RESICLIMA – Building climate resilience in rural communities of central and eastern Guatemala (FAO–MARN), and Resilient Highlands (IUCN–MARN). These initiatives have the potential to provide significant lessons learned in adaptation of productive systems, watershed management, strengthening of rural livelihoods, and social inclusion approaches, as well as institutional capacities and already established territorial networks.

Likewise, the project “Promoting sustainable and resilient territories in landscapes of the central volcanic chain of Guatemala,” constitutes a key precedent. This project made it possible to develop relevant tools, capacities, and experiences in territorial governance, climate risk management, and ecosystem-based adaptation. The proposed project does not replicate these interventions, but rather provides them with strategic continuity, expands their territorial scale, and strengthens their institutional sustainability, addressing gaps identified during their implementation.

In conclusion, no duplication has been identified between the proposed project and other initiatives financed by different sources.

The review of ongoing projects in Guatemala (including those financed by the GCF, the Adaptation Fund, the GEF, IKI, and bilateral programs) shows that, although there are interventions aimed at strengthening climate resilience, ecosystem restoration, and sustainable livelihoods, these differ in scope, geographic coverage, scale, and specific intervention approaches. The following table summarizes the main information of the analyzed projects.

**Table 10.** Closed and ongoing projects identified for synergies

| Project Title, Timeline, Location, Budget, Implementing/ Executing Entities | Main Interventions & Target Population | Lessons Learned | Synergies with Proposed Project | No-duplication |
|-----------------------------------------------------------------------------|----------------------------------------|-----------------|---------------------------------|----------------|
|-----------------------------------------------------------------------------|----------------------------------------|-----------------|---------------------------------|----------------|

|                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| Climate Change Resilient Productive Landscapes and Socio-Economic Networks (PPRCC)<br>2015–2018   AF   USD 5.4M   Sololá and Suchitepéquez.<br>UNDP (IE) MARN (EE)                                                                                                    | Food security, water source protection, farm-level reforestation and small-scale community nurseries<br><b>Target:</b> Kakchiquel, K'iche', and Tz'utujil smallholder farmers, local community-based organizations women, and youth groups | Farm plot fragmentation reduces corridor effectiveness; micro-grants collapse post-project without market/budget linkages. Integrate the micro-grant model with scalable rural finance mechanisms in partnership with local financial institutions ( <b>Output 2.4</b> ).                                                                                          | Upgrades local resilience committees into regional governance networks. Capitalizes on nurseries to supply certified native seeds (Alnus, Quercus, Pinus) for landscape corridors.                                                                                                       | <b>No duplication or overlap.</b><br><b>Temporal:</b> Project closed in 2018.<br><b>Geographic and scope:</b> Partial municipal intersection in Sololá only; activities will target different micro-watersheds and producer organizations than those reached during 2015–2018, no overlap in beneficiaries or intervention areas.<br><b>Scope:</b> PPRCC supported pilot-scale community interventions.                                                                                                                                                                                                  |
| Promoting sustainable and resilient territories in landscapes of the central volcanic chain of Guatemala (Volcanes)<br>2019–2027   GEF   USD 11.1M   Chimaltenango, Escuintla, Quetzaltenango, San Marcos, Sololá, Sacatepéquez, Suchitepéquez<br>UNDP (IE) MARN (EE) | Biodiversity conservation, landscape management tools, strengthening small producers with GAP/GMP, value chains, and landscape planning.<br><br><b>Target:</b> Smallholders, institutional and municipal teams, and local producer groups. | Integrated multi-focal landscape management creates strong co-benefits, but sustaining long-term EbA adaptation requires dedicated climate finance mechanisms, local DRM frameworks, and community resilience infrastructure. <b>Integrated into Outputs 2.2, 2.4, 3.3:</b> Capitalizes green micro-finance, local hazard mapping, and community disaster response | Leverages baseline platforms to elevate landscape results into structural climate adaptation, risk management, and empowerment. Scales producers' groups into gender-transformative green enterprises. Deepens GAP/GMP with EbA, sub-watershed water harvesting, and adaptation finance. | <b>No duplication or overlap.</b><br><b>Temporal:</b> Project is closing in April 2027.<br><b>Scope:</b> Volcanes addresses multi-focal priorities (mitigation, biodiversity conservation, and land sustainable management). The proposed project focuses strictly on EbA, vulnerability reduction and resilience. Moreover, Volcanes focused on land planning (watersheds plans and biological corridors), but did not finance implementation of landscape adaptation. The proposed project will finance adaptation investments while leveraging public and private financing for long term resilience. |
| GEF Small Grants Programme – Operational Phase 8<br>2025–2029   GEF & ICCA   USD 756,000   Huehuetenango, Sololá, San Marcos, Suchitepéquez, Quetzaltenango, Chimaltenango<br>UNDP (IE) MARN (EE)                                                                     | Small community-level environmental grants, sustainable agriculture, and circular economy initiatives.<br><b>Target:</b> CBOs, indigenous communities, women, and local entrepreneurs.                                                     | Lessons from OP 7 (2023-2025): community innovation and entrepreneurship require continuous technical, administrative, and financial support, plus market access. <b>Integrated into Output 2.2 and 2.3:</b> Provides structural capacity-building and processing infrastructure for community ventures.                                                           | Acts as an incubator for local innovations; the proposed project consolidates, articulates, and scales successful SGP micro-projects into commercial value chains.                                                                                                                       | <b>No duplication or overlap.</b><br><b>Scope:</b> The SGP funds microprojects, while the proposed project articulates, consolidates, and scales these initiatives through structural investments and territorial governance.                                                                                                                                                                                                                                                                                                                                                                            |
| Strengthening Local and National Institutions for Integrated Rural Development in the Highlands of San Marcos – PC FIDAM<br>2020–2026   Sweden   USD 4M   San Marcos<br>UNDP, FAO, PAHO-WHO, UNICEF (IE)                                                              | Rural development with a climate adaptation lens and institutional strengthening for public service delivery.                                                                                                                              | Multi-level and inter-institutional coordination are critical. Local governance enhances access to investment; sustainability and territorial integration are needed.                                                                                                                                                                                              | Direct synergy in local governance through territorial actor coordination and strengthened municipal management. Builds on the San Marcos model to replicate effective strategies for planning, public management, and inter-institutional coordination.                                 | <b>No duplication or overlap.</b><br><b>Temporal:</b> Project has closed in semester 1 of 2026 (Terminal Evaluation ongoing).<br><b>Scope:</b> FIDAM targeted broad rural public service delivery at administrative levels (municipal/departamental), lacking the proposed project's focus on landscape management and EbA.                                                                                                                                                                                                                                                                              |
| Resilient Livelihoods of Vulnerable Small Farmers in the Mayan Landscapes and Dry Corridor of Guatemala (RELIVE)<br>2023–2030   KOICA   USD 29.8M   Alta Verapaz, Baja Verapaz, Petén, Zacapa, Chiquimula<br>FAO (IE) MARN (EE)                                       | Resilient livelihoods, food security, and climate change adaptation for vulnerable small farmers.<br><b>Target:</b> Subsistence farmers, indigenous groups, and rural women in the Dry Corridor.                                           | Capacity development is most effective when linked to tangible livelihood and ecosystem resilience benefits. <b>Integrated into outputs 1.2 and 2.1:</b> Links EbA restoration with value chain development and market-oriented incentives.                                                                                                                        | Cross-exchanges technical methodologies and training modules for climate-resilient agriculture and EbA.                                                                                                                                                                                  | <b>No duplication or overlap.</b><br><b>Geographic:</b> Operates strictly in northern and eastern Guatemala (Dry Corridor/Mayan Landscapes)                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Building Climate Resilience in Rural Communities of Central and Eastern Guatemala (RESICLIMA) 2023–2025   KOICA   USD 7M   Alta Verapaz, Baja Verapaz, Petén, Zacapa, Chiquimula<br/>FAO (IE) MARN (EE)</p>                        | <p>Climate change adaptation, water management, and food security for rural communities.</p> <p><b>Target:</b> Rural communities and local water governance bodies.</p>                                                      | <p>Integration of restoration incentives accelerates adoption; however, interventions remain fragmented and territorially limited. <b>Integrated into Output 1.1:</b> Incorporate hydrological restoration directly into broader sub-watershed management plans.</p>                                                                                                                         | <p>Complementary in water management, hydrological restoration, and local governance.</p>                                                                                        | <p><b>No duplication or overlap.</b><br/><b>Temporal:</b> RESICLIMA closed in 2025.<br/><b>Geographic:</b> Implemented exclusively in eastern/northern departments, outside the volcanic chain project zone.</p>                                                         |
| <p>Resilient Highlands (Altiplano Resiliente) 2021–2028   GCF   USD 22M   Quetzaltenango, Totonicapán, Chimaltenango, Quiché, upper watersheds of San Marcos, Suchiate, and Naranjo; Sisi-Can and Nahualá<br/>UICN (IE) MARN (EE)</p> | <p>Integrated micro-watershed management, sustainable land use, agroforestry systems and small grants for farmers.</p> <p><b>Target:</b> Smallholders, indigenous community forestry groups, and local extension agents.</p> | <p>EbA is effective for water recharge and resilience, but requires stronger inter-institutional coordination, integration of climate information, and territorial planning. <b>Integrated into outputs 1.3, 3.2 and 3.3:</b> Connects agro-climatic advisories directly to micro-watershed planning.</p>                                                                                    | <p>Synergies in watershed management and governance. Transfers and deepens lessons in a new ecoregion, adding components on climate finance, value chains, and connectivity.</p> | <p><b>No duplication or overlap.</b><br/><b>Geographic:</b> Targets distinct upper watersheds and micro-basins.<br/><b>Scope:</b> Proposed project adds specialized green finance, value-chain processing infrastructure, and biological corridor connectivity.</p>      |
| <p>REFORES 2023–2029   AF   USD 13.2M   Regional project (Guatemala, Honduras, Belize) Izabal (Atlantic) BCIE (IE) MARN (EE)</p>                                                                                                      | <p>Ecosystem restoration, Nature-based Solutions (NbS), early warning systems and regional capacity building.</p>                                                                                                            | <p>NbS and EWS failure due to unassigned operational responsibilities, low local ownership, and lack of retained capacity. <b>Integrated into outputs 1.1, 1.2, 3.1, and 3.3:</b> participatory design and promotion of ownership of adaptation actions, formalize EWS operation through COLREDs, apply landscape-scale restoration, and link adaptation measures to municipal planning.</p> | <p>Synergies in EbA to leverage the National Forest Landscape Connectivity Map to systematically target and prioritize restoration areas</p>                                     | <p><b>No duplication or overlap.</b><br/><b>Geographic:</b> REFORES operates exclusively in the Atlantic Corridor / Gulf of Honduras.<br/><b>Scope:</b> REFORES combines reforestation and coastal-floodplain NbS with targeted EWS for flood and storm surge risks.</p> |
| <p>Peace, Action, Resilience and Sustainability in Latin American Landscapes (PARES) 2024–2026   USD 2M   EU, UNEP, CATIE   San Marcos, Izabal, Chiquimula<br/>UNEP (IE) CATIE (EE)</p>                                               | <p>Nature-based Solutions (NbS) with a peace focus, restoration, sustainable agriculture, governance, and grants to local organizations.</p>                                                                                 | <p>Addressing socio-environmental conflicts requires participatory landscape characterization before physical NbS deployment. Integrated conflict-mapping methodologies into territorial governance outputs (Output 1.1 / 1.2)</p>                                                                                                                                                           | <p>Synergies in community-driven NbS and governance with a peace focus. Scaling of forest restoration and water management tools.</p>                                            | <p><b>No duplication or overlap.</b><br/><b>Temporal:</b> Project is closing in 2026.<br/><b>Geographic and scope:</b> Spatial intersection is limited to San Marcos, where PARES targets short-term diagnostic and pilot grant schemes.</p>                             |

An analysis of potential duplication was carried out considering the geographic areas of intervention of relevant initiatives. For this purpose, two maps were developed (see **Figure 14**): (a) a map presenting the areas of influence of the identified ongoing projects, and (b) a second map showing, through transparencies, the preliminary area of influence of the present proposal.

As shown in image (b), the project’s intervention area overlaps with two initiatives. First, the Volcanic Chain Project, which constitutes a direct precedent in terms of themes, approach, and territory, and whose implementation is ongoing until 2027. Second, there is partial overlap with the EbALAC project, which concluded in late 2025. However, these overlaps do not imply duplication, but rather opportunities for complementarity and continuity, leveraging lessons learned, installed capacities, and progress achieved by these initiatives.

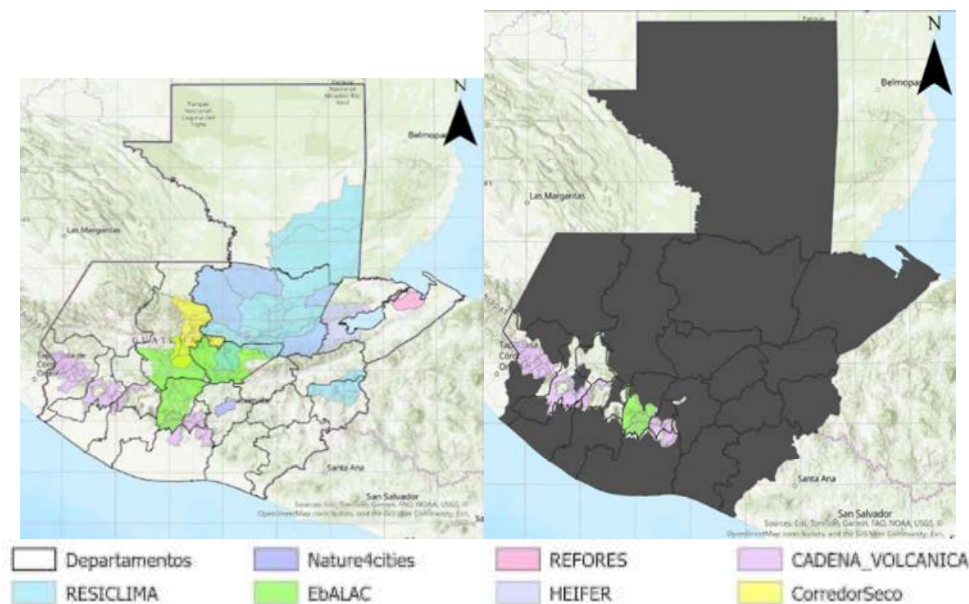


**Figure 14.** (a) Areas of influence of the identified projects (b) Preliminary area of influence of the present proposal. Source: MARN.

### G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

The project incorporates an integrated Knowledge Management (KM) strategy designed to systematically capture, analyze, and scale-up climate adaptation evidence generated across field interventions. **Component 4 (Knowledge management, learning and evidence-based scaling)** serves as the core operational mechanism that links field-level adaptation results under Components 1, 2, and 3 directly into local planning, public financing, and national policy frameworks.

The **specific knowledge products** financed by the AF under Component 4 include:

- **Five (5) policy briefs and scaling roadmaps** documenting adaptation benefits, lessons learned, good practices, and pathways for replication and scaling by municipalities, CODEDEs, and national institutions.
- **Climate-risk screening tools integrated into municipal planning and investment processes**, including SISCODE project profiles and local planning instruments such as PDM-OT and POM/POA, to support climate-informed decision-making.
- **Twenty (20) technical manuals and field guides** on EbA and climate-resilient production practices, providing practical guidance for extension services, producer organizations, training centers, and local governments.
- **Ten (10) multilingual knowledge products**, including audiovisual, digital, and printed materials developed in Spanish and relevant Indigenous languages (e.g., K'iche', Mam, and Q'eqchi') to support inclusive knowledge sharing, learning, and capacity development.
- **Digital knowledge resources and dissemination materials** made available through community, institutional, and digital channels, including relevant national and sectoral information and training platforms.

To keep capacity-building tools effective and impactful, a **feedback mechanism** will be operationalized under output 4.3:

- Immediate post-training surveys: rapid participant feedback assessing clarity, practical utility, and cultural/linguistic appropriateness.
- Pre- and post-capacity evaluations tracking technical skill acquisition, institutional memory retention, and operational readiness within municipal units.
- Iterative material refinement: convene annual review sessions with MTAs, COMUDEs, and CADERs to update training toolkits based on assessment results and emerging field challenges.

Through Activity 4.1.2, the project will facilitate cross-watershed field visits and technical exchanges connecting local community structures (COCODEs, COMUDEs, water committees, producer organizations) with municipal technical directorates (UGAM, OMAS, DMP, DMM) and extension networks (CADERs). Observing operational EbA measures and bio-input production firsthand enables direct peer-to-peer knowledge transfer between territorial actors. M&E reflection workshops and strategic learning reviews will occur semi-annually to evaluate evidence and adapt plans. Platforms (MTAs, Watershed Committees, COMUDEs, CADERs) will be strengthened by providing hydro-meteorological decision-support tools, formalizing exchange protocols, and delivering targeted technical assistance.

Under Outcome 4.1, knowledge products and analytical tools are directly incorporated into institutional procedures **to secure long-term sustainability beyond project closure**. Operational coordination with national entities (MARN, INAB, CONAP, MAGA) and municipal authorities will enable project tools and methodologies to be integrated directly into institutional practices and planning cycles. By capacity-building municipal technical units and multi-stakeholder governance platforms (Watershed Committees, MTAs, and Development Councils), local authorities will use project-generated evidence to:

- Integrate explicit climate-resilience criteria into municipal spatial and development plans (PDM-OT).
- Formulate bankable, high-quality public investment projects to mobilize national climate and public funds (SISCODE, FONCC, FOBOSQUE).
- Enhance municipal extension services and agricultural support programmes.

The project's **monitoring and knowledge generation** will contribute directly to **national information systems** (SNICC and SIA) under MARN and partner sector platforms. This ensures that field lessons inform national climate policy reporting and reporting commitments, including the NDC, NAP, Biennial Transparency Reports (BTR), and National Communications (NCs). Globally and regionally, lessons learned and policy briefs will be disseminated through Adaptation Fund knowledge platforms and UNDP global learning networks to support international EbA benchmarking and replication.

## H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

The Concept Note was co-designed under the leadership of the Ministry of Environment and Natural Resources (MARN), in technical coordination with UNDP Guatemala, ensuring full alignment with national priorities and the AF's ESP and Gender Policy. Institutional ownership was driven through a Technical Advisory Committee (TAC) established by MARN—led by the Department of Vulnerability and Climate Change Adaptation alongside key technical units (International Cooperation, Projects, Geospatial Analysis & Climate Change, and Forests).

The consultative process combined eight TAC technical sessions, expert interviews, a national multisectoral workshop, and targeted field missions (November 25–28, 2025) across prioritized landscapes in Quetzaltenango, San Marcos, and Sacatepéquez, followed by institutional validations in March 2026. In total, the process engaged 225 participants across 18 specialized sessions with 129 women (57.3% female participation). The field mission directly consulted 85 local stakeholders (35% female participation) across 7 meetings and workshops and site visits (urban and rural production areas, protected areas).

**Table 11.** Summary of consulted stakeholders, topics addressed, and their linkage to the project design.

| Consulted stakeholders<br>Date, place<br>Total participants                                                                                 | Target group(s) background<br>information                                                    | Topics discussed, problems/measures<br>identified and agreements                                                                                                                                                                                                                                                                                                                                  | Integration of stakeholder inputs into<br>concept note                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TAC MARN Meeting 1</b><br>Date: 21 Aug 2025<br>Place: Guatemala City<br>Participants: 10 (7F / 3M)<br>Stakeholders: TAC MARN, UNDP Team. | Technical Advisory Committee (TAC) leads Concept Note formulation process with UNDP support. | <b>Topics:</b> Strategic orientation of the Concept Note, initial geographic scoping in high-vulnerability corridors, and review of national baselines in climate information and green finance.<br><b>Agreements:</b> Define priority intervention corridors linking vulnerable high-altitude sub-watersheds with agricultural landscapes.                                                       | Component 1 (O1.1) and Component 2: Established baseline parameters for institutional alignment and preliminary green finance mechanisms.                                                 |
| <b>TAC MARN Meeting 2</b><br>Date: 23 Aug 2025<br>Place: Guatemala City<br>Participants: 10 (7F / 3M)<br>Stakeholders: TAC MARN, UNDP Team. | TAC leads Concept Note formulation process with UNDP support.                                | <b>Topics:</b> Territorial prioritization criteria (6 watersheds from Pacific coast, biological corridors, poverty indices, communal indigenous lands, forest cover) and focus on priority groups (smallholder farmers, indigenous women and youth).<br><b>Agreements:</b> Adopt socio-ecological connectivity, financial sustainability, and evidence-based climate modeling for site selection. | Outputs 1.1, 1.2, 2.2, 3.2, 3.3, 4.1, and 4.3: Formulated core targeting methodology for prioritized sub-watersheds and integrated gender-sensitive criteria into project site selection. |
| <b>TAC MARN Meeting 3</b><br>Date: 27 Oct 2025<br>Place: Guatemala City<br>Participants: 12 (8F / 4M)<br>Stakeholders: TAC MARN, UNDP Team. | TAC leads Concept Note formulation process with UNDP support.                                | <b>Topics:</b> Methodological validation of climate vulnerability analyses, boundary mapping of prioritized intervention zones, and synergy analysis with ongoing AF/GEF portfolios.<br><b>Agreements:</b> Validate territorial maps and approve methodology for upcoming field consultation missions.                                                                                            | Outputs 1.1, 1.2, 3.3, 4.1, and 4.3: Defined territorial scope of intervention corridors and identified operational synergies to avoid project duplication.                               |

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| <b>TAC MARN Meeting 4</b><br>Date: 10 Nov 2025<br>Place: Guatemala City<br>Participants: 13 (8F / 5M)<br>Stakeholders: TAC MARN, UNDP Team, Formulation Consulting Team.                                                                                                                                                                                                                                  | Technical Advisory Committee (TAC) leading Concept Note formulation process with UNDP support.                                                                                                                                                                                                                                                           | <b>Topics:</b> Technical review of climate impact data, mapping of key territorial actors, and procedural planning for regional consultations and national co-design workshops.<br><b>Agreements:</b> Finalize consultation protocols ensuring direct inclusion of indigenous organizations, women's groups, and municipal technical units.                                                                                                                                                                                                                                                                                            | Outputs 1.1, 3.2, 3.3, and 4.1: Standardized field consultation methodologies to capture gender-disaggregated priorities and community-level adaptation needs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>National Co-Design Workshop</b><br>Date: 24 Nov 2025<br>Place: Guatemala City<br>Participants: 31 (17F/14M)<br>Stakeholders: MARN, MAGA, CONAP, INAB, INSIVUMEH, SEEGPLAN, USAC, ANACAFE, ICC, ARPNG, and UNDP Team.                                                                                                                                                                                   | Multi-sectoral national platform bringing together public line ministries, scientific/hydrometeorology institutes, academic research bodies, private sector agricultural associations, and civil society entities.                                                                                                                                       | <b>Topics:</b> Participatory construction of Theory of Change (ToC); structural drivers of climate risk across forest ecosystems, water resources, and agricultural value chains.<br><b>Agreements:</b> Consensus on project intermediate results, enabling institutional conditions, and preliminary multi-sectoral implementation arrangements.                                                                                                                                                                                                                                                                                      | Direct input into project ToC, defining output structures for hydro-met data (3.3), agroforestry (1.1, 1.2 1.3 and 2.2), and watershed restoration (1.2).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Field Mission: Territorial community-based organizations (CBOs) and local NGOs</b><br>Date: 25 Nov 2025<br>Place: Quetzaltenango City<br>Participants: 25 (14F/11M)<br>Stakeholders: Local CBOs (Bosque Modelo Los Altos, Colectivo Orgánico, Agua de Pueblo, ASOGTURC, ASODIL), NGOs (CDRO, REFICOM, CARE, Cáritas, ECO), Indigenous Mam Women Associations (AMTEDICH, ASAEDICH), MARN and UNDP Team. | CBO platform representing smallholders across 18 high-altitude and bocacosta municipalities living in severe poverty with untitled land and severe physical isolation. Includes organized indigenous Mam women farmers (AMTEDICH, ASAEDICH), volunteer community forest rangers, and rural youth groups (ASODIL managing a 34-ha community reserve).     | <b>Problems:</b> Short project cycles, uncoordinated NGOs interventions, economic pressure driving deforestation and land-use change, unused hydrometeorological infrastructure and data gaps, administrative bottlenecks for native seedlings, logistic and communication isolation and aging agricultural workforce<br><b>Key measures:</b> Establish territorial CSO consortia and implement multi-year small grants; scale fuel-efficient cookstoves; allocate O&M for weather stations; adapt procurement for community native nurseries; empower local promoter networks, establish youth/women agricultural leadership schools. | Output 3.1 and 3.2: establish territorial governance platforms for locally led adaptation.<br>Output 2.4: Integrates adapted small grants for youth/women.<br>Output 1.2 and 2.2: installs fuel-efficient cookstoves and agroecological SAF packages on smallholder lands.<br>Output 1.2: Provides financial incentives for native forest conservation.<br>Outputs 1.3 and 3.3: allocates O&M budgets to restore existing meteorological stations and establishes community-level climate information bulletins.<br>Output 2.2 and 2.3: Establishes youth/women agricultural leadership schools, funds youth green MSMEs, and supports medicinal plant value chains.<br>Output 4.1: Systematizes ancestral ecological and medicinal knowledge. |
| <b>Field Mission: Candacuchex Biological Corridor</b><br>Date: 26 Nov 2025 (Morning)<br>Place: San Marcos<br>Participants: 27 (9F / 18M)<br>Stakeholders: Corridor governance body (ECO, ADIMAM, MANCUERNA, CONAP) MARN, INAB NGOs and development associations (Cáritas, ADIPO) Community-based organizations (ADAFIS, ACREDICOM), academia (USAC) and UNDP Team.                                        | Territorial governance platform overseeing 63,912 ha across 16 municipalities and 4 watersheds. Direct beneficiaries are rural and indigenous smallholders living outside formal protected areas in critical buffer zones with fragmented plots (<0.5 ha), high climate vulnerability, and uncompensated stewardship of communal water recharge forests. | <b>Problems:</b> Operational bottlenecks in corridor governance, lack of consolidated spatial data for PINPEP/PROBOSQUE forest incentives, institutional disconnects, and uncompensated water ecosystem services.<br><b>Key measures:</b> Replicate socio-ecological diagnostics across 8 Municipal Parks; finalize Corridor Strategic Plan/POA; accelerate smallholder access to INAB incentives; establish green credit lines via ACREDICOM; formalize micro-watershed water agreements, Leverage academic research partnerships (USAC) for ongoing climate impact monitoring and baseline validation.                               | Output 1.1: legal recognition and operational governance tools for biological corridors.<br>Output 1.2: socio-ecological diagnostics & streamlined forest incentive access.<br>Output 2.2, 2.3: revolving green micro-finance with local credit cooperatives.<br>Output 3.1: micro-watershed restoration and downstream-upstream water compensation schemes.<br>Output 4.1: strengthen territorial governance model for scaling biological corridor governance across non-SIGAP ecosystems.                                                                                                                                                                                                                                                    |

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| <p><b>Field Mission:</b> Smallholder farmers and municipal and local promoters</p> <p>Date: 26 Nov 2025 (2:00–5:00 PM) Participants: 13 (7F/6M)</p> <p>Place: Esquipulas Palo Gordo, San Marcos</p> <p>Participants: 13 (7F / 6M)</p> <p>Stakeholders: ASODIME (Horticulture), ASABRICAP (women-led apiculture association), CADER rural promoters, Municipal Environment Unit (UGAM), Municipal Payment for Ecosystem Services (PES) Committee, MARN and UNDP Team.</p> | <p>Smallholder farming families, women-led apicultural cooperatives, horticultural producers, and CADER rural promoters in high-altitude volcanic landscapes. Smallholders face extreme land fragmentation, high capital barriers, and double gender burdens in unpaid care and farm labor.</p>                                                                                                                                                                                                          | <p><b>Problems:</b> Irregular rainfall and extreme temperatures causing over 40% honey yield declines; pest surges in open-field vegetables; water scarcity and irrigation restrictions during dry spells; post-harvest losses; youth disengagement and migration; high capital costs for water storage or acquiring specialized processing machinery, environmental degradation and chemical dependence, financing and scaling barriers.</p> <p><b>Key measures:</b> Install rainwater harvesting reservoirs; scale municipal PES schemes funding watershed protection and cookstoves; modernize apiculture, horticulture with protective micro-tunnels and bio-factories; establish regional processing centers; strengthen CADER youth/women modules</p> | <p>Output 2.1 and 2.2: finances rainwater storage reservoirs and micro-drip irrigation systems, alongside protective shade structures to shield horticulture and secure crop yields.</p> <p>Output 2.2: apicultural value chains, processing and green enterprise.</p> <p>Output 2.3: youth and women small-grants and CADERs empowerment.</p> <p>Output 1.2 3.1, 4.1 and 4.3: capitalizes and scales the PES scheme, linking downstream water benefits to upstream reforestation, soil conservation, and household fuel-efficient cookstoves.</p> <p>Output 4.1: documents the PES and rainwater harvesting model into a national policy learning guide for replication across municipal environmental units.</p> |
| <p><b>Field Mission:</b> Quetzal Regional Park, Municipal Authorities and Local Stakeholders</p> <p>Date: 27 Nov 2025</p> <p>Place: San Rafael Pie de la Cuesta, San Marcos</p> <p>Stakeholders: Mayor, Council Members, DMM (Director &amp; team), UGAM, Forestry Unit, CONAP, INAB, NGO ECO, USAC, MAGA, UNDP Team.</p>                                                                                                                                                | <p>Regional protected area technical teams, municipal environmental officers, and indigenous/rural forest communities surrounding the Quetzal park. Highly vulnerable to the degradation of critical habitat for the endangered Quetzal (<i>Pharomachrus mocinno</i>), soil erosion on steep slopes, and loss of eco-tourism-based sustainable livelihoods. Local population living in landslide risk areas. Spring recharge drops in plus risks of water contamination from agricultural chemicals.</p> | <p><b>Problems:</b> Expired Master Plan; land invasions, tree logging, and potato farming/fertilizer runoff in upper areas threatening water and Quetzal habitat; broken camera traps; lack of visitor control infrastructure; high firewood use; and need for market access for coffee, cacao, and avocados.</p> <p><b>Key measures:</b> update conservation Master Plan; establish visitor control; build eco-tourism infrastructure; deploy fuel-efficient stoves, rainwater collectors, and latrines; scale women-led initiatives (orchid nurseries, coffee value chains); and expand native nurseries (coffee shade, aguacatillo).</p>                                                                                                                 | <p>Output 1.1: conservation Master Plan update, visitor management protocols, and PDM-OT landslide risk management.</p> <p>Output 1.2 and 1.3: native species nurseries camera trap replacement, species biodiversity training, and spring water recharge monitoring.</p> <p>Output 1.2 and 2.2: fuel-efficient cookstoves, rainwater harvesting.</p> <p>Output 2.2 and 2.3: commercialization and value-addition for coffee, tools/inputs, and capitalization of women-led enterprises</p> <p>Output 3.1 and 4.1: water source protection, quality certification, eco-tourism assets, and DMM/CADER capacity building</p>                                                                                         |
| <p><b>Field Mission:</b> Municipal PES Technical Committee and local promoters</p> <p>Date: 27 Nov 2025</p> <p>Place: Concepción Chiquirichapa, Quetzaltenango</p> <p>Participants: 12 (5F/7M)</p> <p>Stakeholders: Municipal PES Committee.</p>                                                                                                                                                                                                                         | <p>Municipality with over 98% indigenous maya population practicing subsistence agriculture. Municipal PES committee includes representatives from the municipal elected counsellors, municipal technical offices (water, environment, and for women) MAGA and INAB local teams, and community-level governance structures (COCODEs, local water committees, social and indigenous leaders, community forest rangers, and smallholder farmers).</p>                                                      | <p><b>Problems:</b> Wildfires destroying upper cloud forest recharge areas; high firewood dependence driving deforestation; soil erosion on steep monoculture plots; underfunded municipal PES and water tariffs; underrepresentation of indigenous women in decision-making.</p> <p><b>Key measures:</b> Establish native municipal plant nurseries and organic bio-factories; capitalize local PES mechanisms; install fuel-efficient cookstoves, equip community forest rangers, implement soil conservation; promote gender leadership training via OMM.</p>                                                                                                                                                                                            | <p>Output 1.1 and 1.2: fire management protocols and post-fire watershed restoration.</p> <p>Output 1.2: domestic energy efficiency and deforestation mitigation.</p> <p>Output 1.1 and 3.1: municipal PES capitalization, and ecosystem services.</p> <p>Output 2.1 and 2.2: agroecological transition, bio-inputs, soil conservation.</p> <p>Outputs 3.1, 4.1 and 4.3: gender-responsive governance and policy integration</p>                                                                                                                                                                                                                                                                                   |
| <p><b>Field Mission:</b> VEGEXSA Export Association &amp; NGO Tikonel</p> <p>Date: 28 Nov 2025</p> <p>Place: Santa María de Jesús, Sacatepéquez</p> <p>Participants: 9 (5F / 4M)</p> <p>Stakeholders: VEGEXSA Association and NGO Tikonel.</p>                                                                                                                                                                                                                           | <p>VEGEXSA, a youth-founded Kaqchikel indigenous association (100+ smallholders, 20+ ha) exporting GlobalGAP and Fair Trade-certified vegetables (hortalizas). NGO Tikonel provide continuous field extension, agro-climatic monitoring, and climate-smart advisory support for CBOs to develop sustainable value chains.</p>                                                                                                                                                                            | <p><b>Problems:</b> Extreme rainfall volatility and dry spells threatening export quality standards; severe plot fragmentation (minifundios); market price volatility; high capital costs for protective infrastructure (casas mayas, drip system); rural youth disengagement from farming.</p> <p><b>Key measures:</b> Deploy farm-level rainwater harvesting reservoirs and micro-drip systems; scale collective GlobalGAP recertification and sorting hubs; finance protective micro-infrastructure; capitalize youth-led digital agri-tech enterprise modules within the cooperative.</p>                                                                                                                                                               | <p>Outputs 2.1, 2.2 and 3.3: agro-climatic advisory and water harvesting infrastructure.</p> <p>Outputs 2.2 and 2.3: market access, GlobalGAP certification &amp; post-harvest facilities.</p> <p>Output 2.2: protected crop infrastructure and climate-smart farming.</p> <p>Output 2.4: youth/women micro-Grants and green enterprise incubation.</p>                                                                                                                                                                                                                                                                                                                                                            |

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| <b>Meeting with Municipal Technical Leads of San Pedro Sacatepéquez, San Marcos</b><br>Date: 9 Dec 2025<br>Virtual meeting<br>Participants: 6 (3F / 3M)<br>Stakeholders: Protected Areas Unit, Directorate of Local Economic Development, Municipal Directorate for Women. | Municipal technical leads representing local government services, community water administration boards (COCODEs), and rural indigenous women's committees in high-altitude sub-watersheds facing water contamination, deforestation, and high climate vulnerability. | <b>Problems:</b> Environmental degradation, pollution of municipal water sources, risk of agricultural monoculture expansion, and limited technical capacity/training for rural women in natural resource management.<br><b>Agreements:</b> Review and align municipal environmental policies; establish community environmental education; prioritize water source protection, land restoration, and eco-tourism; design specialized adaptation training for rural women | Output 1.1: Municipal environmental policy alignment and water protection protocols.<br>Output 3.1: Watershed restoration and protection of communal water springs.<br>Output 4.1: Municipal capacity building and women-targeted environmental education frameworks. |
| <b>TAC MARN Meeting 5</b><br>Date: 10 Dec 2025<br>Place: Guatemala City<br>Participants: 8 (6F / 2M)<br>Stakeholders: TAC MARN, UNDP Team,                                                                                                                                 | Technical Advisory Committee (TAC) leading Concept Note formulation process with UNDP support.                                                                                                                                                                        | <b>Topics:</b> Integration of national workshop and field mission results; adjustment of the preliminary Theory of Change; baseline gaps and territorial intervention priorities.<br><b>Agreements:</b> Validate ToC structure, define field site validation steps, and align budget allocations with local consultation priorities.                                                                                                                                      | Component 1, 2 & 3 (All Outputs): Structural alignment of Concept Note results framework with field priorities (water harvesting, PES, fire management, export value chains).                                                                                         |
| <b>Meeting with MARN's watershed Directorate team</b><br>Date: 21 Jan 2026<br>Place: MARN Offices<br>Participants: 5 (4F / 1M)<br>Stakeholders: MARN's Directorate of Watersheds Dept. of Climate Change Adaptation, UNDP Team.                                            | Specialized national technical directors responsible for watershed management, hydrological planning, and national adaptation strategies.                                                                                                                             | <b>Topics:</b> technical alignment of Theory of Change with official watershed management plans, localized climate information platforms, and community early warning systems (EWS).<br><b>Agreements:</b> integrate Watershed Protection Plans into Component 1 and integrate INSIVUMEH/MARN climate information channels at the micro-watershed level.                                                                                                                  | Output 1.1, 1.2, 1.3 and 3.3: Operational integration of micro-watershed management plans and community-level EWS.                                                                                                                                                    |
| <b>Meeting with MARN's Ecosystems and Corridors team</b><br>Date: 28 Jan 2026<br>Place: MARN Offices<br>Participants: 5 (4F / 1M)<br>Stakeholders: MARN's Department of Ecosystems, Dept. of Vulnerability and Climate Adaptation, UNDP Team.                              | Institutional leads for biological connectivity, ecosystem restoration, and landscape-level territorial governance.                                                                                                                                                   | <b>Topics:</b> Technical design of biological corridors, landscape connectivity matrices, and socio-ecological governance models outside protected areas.<br><b>Agreements:</b> Prioritize non-protected areas connectivity zones, strengthen biological corridor committees, and integrate socio-ecological landscape diagnostic tools.                                                                                                                                  | Outputs 1.1 and 1.2: Institutional design for biological corridor governance and socio-ecological connectivity diagnostics.                                                                                                                                           |
| <b>Meeting with MARN's Forest Advisor</b><br>Date: 28 Jan 2026<br>Place: MARN Offices<br>Participants: 3 (3F)<br>Stakeholders: MARN's Forest advisor, Dept. of Vulnerability and Climate Adaptation, UNDP Team.                                                            | Institutional lead for the implementation of the National Strategy to Recover and Protect Forests (2025), including forest fire prevention, and socio-cultural value realization of woodland ecosystems.                                                              | <b>Topics:</b> Forest management strengthening, deforestation drivers, post-fire restoration, biodiversity conservation, and alignment with the National Strategy to Recover and Protect Forests.<br><b>Agreements:</b> Integrate native community-managed nurseries, incentivize forest fire prevention protocols, and promote native agroforestry species.                                                                                                              | Output 1.1, 1.2, 3.1: Alignment with national forest recovery strategy, community native nurseries, and post-fire forest recovery.                                                                                                                                    |
| <b>TAC MARN Meeting 6</b><br>Date: 10 Feb 2026<br>Place: Guatemala City<br>Participants: 13 (9F / 4M)<br>Stakeholders: TAC MARN, UNDP Team.                                                                                                                                | Technical Advisory Committee (TAC) leading Concept Note formulation process with UNDP support.                                                                                                                                                                        | <b>Topics:</b> Final validation of Theory of Change, climate rationale, complete Results Framework, indicator matrix, and rights-based gender/indigenous safeguards.<br><b>Agreements:</b> Approve Results Framework and indicator targets; identify integrated gender and environmental/social safeguard mechanisms.                                                                                                                                                     | Formal institutional endorsement at technical level of project indicators, target metrics, and safeguard budget allocations.                                                                                                                                          |
| <b>High-Level MARN Presentation</b><br>Date: 12 Feb 2026<br>Place: MARN offices<br>Participants: 6 (4F / 2M)<br>Stakeholders: MARN's Vice Minister of Climate Change and Team, UNDP.                                                                                       | Executive government leadership ensuring political endorsement, strategic alignment, and official submission authorization.                                                                                                                                           | <b>Topics:</b> Executive presentation of the finalized Concept Note structure, field mission outcomes, strategic alignment with national NDC priorities, and government commitments.<br><b>Agreements:</b> High-level preliminary approval of the proposal for formal endorsement and submission to the Adaptation Fund Secretariat                                                                                                                                       | Full Concept Note: Strategic political validation and formal alignment with Guatemala's National Climate Change Policy and NDCs.                                                                                                                                      |

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| <b>Interview with PC FIDAM project team</b><br>Place : Online<br>Participants : 5 (1F / 4M)<br>Stakeholders: PC FIDAM Project team, UNDP Team.                                                    | Established governance models and multi-level inter-institutional coordination in San Marcos. Local planning frameworks and municipal capacity-building inform the project's strategy, for replication of effective public management and climate adaptation. | <b>Topics:</b> Review of lessons learned, successful rural adaptation models, and governance structures from the FIDAM project implementation in San Marcos.<br><b>Key measures:</b> Replicate FIDAM's proven micro-watershed management tools, community promoter networks, and local water governance mechanisms within the new AF proposal.        | Output 3.1, 3.2: replicated proven FIDAM community water management protocols and decentralized extension frameworks into project design |
| <b>TAC MARN meeting 7</b><br>Place: Guatemala City<br>Participants: 7 (7F)<br>Stakeholders: TAC MARN, UNDP Team.                                                                                  | Inter-institutional technical drafting team preparing the final validation workshop and document package.                                                                                                                                                     | <b>Topics:</b> Procedural review of draft Concept Note narrative, annexes, budget tables, and logistical scheduling for the final multi-stakeholder validation workshop.<br><b>Agreements:</b> Finalize document distribution to key institutional stakeholders and confirm workshop agenda.                                                          | Full Concept Note Package: Quality control and definition of formal endorsement process for final national validation.                   |
| <b>Final review with Volcanes project team</b><br>Place: MARN offices<br>Participants: 8 (6F / 2M)<br>Stakeholders: Volcanes Project Team, Dept. of Climate Adaptation (MARN), UNDP Team.         | Implemented across 32 municipalities in the volcanic chain, the Volcanes project (2019–2027) reaches 80,000 beneficiaries (50% women), prioritizing Indigenous and rural smallholders while providing key baseline data for this concept note                 | <b>Topics:</b> cross-project synergy review, baseline data harmonization, social, economic, environmental benefit quantification, scaling of successful agroforestry models, and preliminary budget review.<br><b>Agreements:</b> leverage existing socio-ecological baselines, scale agroforestry systems and value chains strengthening strategies. | Components 1, 2, 3 and 4: Harmonized target indicators, economic benefit quantification, across volcanic chain interventions.            |
| <b>TAC Final National Validation Workshop</b><br>Date: 25 Mar 2026<br>Place: Guatemala City<br>Participants: 11 (7F / 4M)<br>Stakeholders: TAC MARN, Directorate of Watersheds (MARN), UNDP Team. | MARN departmental teams oversight units (forests, ecosystems, watersheds, adaptation and vulnerability, gender and inclusion) alongside coordination teams (international cooperation, project M&E).                                                          | <b>Topics:</b> Final technical validation of components, outputs, indicators, budget allocations, preliminary implementation arrangements, institutional governance mechanisms and PFG request.<br><b>Agreements:</b> technical validation of the final CN prior to formal institutional endorsement and submission to AF.                            | Final institutional consensus and approval of the complete Adaptation Fund Concept Note package.                                         |

During PFG phase, consultations will be further expanded and refined through a gender analysis and GAP, targeted engagement of women's and youth organizations, and culturally appropriate consultations with Indigenous Peoples, including the application of FPIC, where applicable. Process documentation will also be strengthened through disaggregated participation records and traceability of stakeholder inputs reflected in the final project design.

## I. Provide Justification for funding requested, focusing on the full cost of adaptation reasoning.

The justification for AF financing is based on the full cost of adaptation required to address escalating climate risks in prioritized territories of the CVC in Guatemala. These risks arise from the interaction between climate threats – rising temperatures, altered precipitation patterns, and extreme events– and structural conditions of high socioeconomic vulnerability, ecosystem degradation and pressure on water resources. Current public investment and development programmes address territorial development, production, and environmental management objectives, but do not internalize climate risk nor finance the additional measures required to ensure resilience under existing and future climate conditions. As a result, adaptation actions remain fragmented, sector-specific, reactive, and insufficiently scaled.

**AF resources are therefore required to finance the full cost of adaptation**, defined as the incremental investment and climate-specific costs that go beyond conventional development and are directly attributable to climate change. Then, the requested AF financing will deliver all proposed project's outputs and targets.

Without this targeted financing, public investments and local livelihoods will remain locked into high-risk development trajectories, driving up long-term social, ecological, and fiscal liabilities. These costs are already evident in recurrent crop failures, the degradation of critical water sources, and rising public expenditure on emergency response and food assistance - pressures projected to escalate significantly under future climate scenarios. Within this framework, the full cost of adaptation addressed by the project is characterized by three interrelated features reflecting the nature of the incremental adaptation costs, rather than baseline development investments:

- Systemic and cross sectoral costs:** Effective adaptation in the CVC requires coordinated interventions across landscape, watershed, livelihood, and governance systems that transcend administrative and sectoral mandates. Core adaptation functions such as climate informed territorial planning, integrated watershed governance, and anticipatory risk management fall outside routine sectoral budgets and municipal investment frameworks, as they are required to manage climate variability and risk.

- **Public good and non-market costs:** adaptation generates collective benefits (including reduced disaster risk, ecosystem services, climate information, and inclusive governance) that cannot be fully captured by individual investors or land users, limiting incentives for private investment, especially in poor and Indigenous rural communities.
- **Costs of avoiding future losses and damages:** The cost of inaction is already visible through recurrent crop losses, water degradation, flooding, food insecurity, climate-induced human mobility, and rising public expenditure on emergency response. Without upfront investment in anticipatory adaptation, these social, environmental, and fiscal costs will continue to intensify, exceeding the investment required for preventive adaptation at territorial scale.

AF financing enables a shift from fragmented, reactive responses to an integrated climate resilience model. **Table 12** demonstrates AF additionality in covering adaptation costs not addressed by conventional development financing and required to respond to current and projected climate risks.

**Table 12.** Justification of Financing and Analysis of Incremental Adaptation Costs. Source: own elaboration (UNDP).

| Business-as-usual scenario                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Adaptation Fund additionality                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| <b>Component 1. Landscape restoration and integrated management for EbA in vulnerable socio-ecological watersheds.</b>                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Progressive degradation of forests, watersheds, and soils—driven by unsustainable land use and weak conservation—continues to erode critical ecosystem services, accelerating water scarcity, soil erosion, and landslide risks. Existing public investments remain fragmented, sector-siloed, and reactive, focusing on emergency recovery rather than proactive watershed management. As a result, climate hazards increasingly jeopardize local livelihoods, water security, and downstream public assets. | AF financing covers the incremental costs of transitioning to climate-informed, landscape-scale watershed governance. By funding participatory micro-watershed planning, communal forest conservation, and EbA interventions across recharge zones, communal forests and steep slopes, the project restores hydrological balance and mitigates disaster risk. These public-good benefits generate long-term resilience and prevent escalating emergency expenditures that conventional budgets cannot cover. |
| <b>Component 2. Adaptation of productive systems and strengthening of resilient livelihoods.</b>                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Rural livelihoods depend heavily on rain-fed agriculture vulnerable to rising temperatures, prolonged droughts, and erratic rainfall. Conventional agricultural initiatives focus strictly on yields without integrating climate-risk criteria, soil-water conservation, or micro-finance access. Lacking technical capacity, climate-adapted value chains, and financial tools, smallholder farmers, women, and Indigenous producers face chronic crop failures, income instability, and food insecurity.    | AF financing drives the climate transition of agricultural livelihoods by funding climate-adapted farming practices, bio-inputs, rainwater harvesting, and resilient value-chain development. By combining micro-grant mechanisms with climate information services, AF resources absorb the initial risk-adaptation costs that resource-constrained smallholders cannot bear, stabilizing incomes and food security under future climate scenarios.                                                         |
| <b>Component 3. Institutional strengthening, territorial governance, and social inclusion for adaptation.</b>                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Persistent gaps in institutional capacity, weak territorial coordination, and limited local access to actionable climate data hinder effective adaptation planning. Municipalities operate reactively under tight fiscal limits, while local governance frameworks frequently marginalize Indigenous Peoples, women, and youth from climate risk decision-making processes.                                                                                                                                   | AF financing covers the systemic costs of establishing anticipatory, multi-level adaptation governance. The project embeds climate risk screening into municipal land-use plans (PDM-OT) and institutional budgets (POM/POA), formalizes community-level Early Warning Systems (COLREDs), and builds inclusive coordination platforms to transition territories from reactive disaster management to proactive, climate-resilient planning.                                                                  |
| <b>Component 4: Knowledge management, learning and evidence-based scaling.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| While some adaptation practices and field evidence are documented, they are neither systematically disseminated nor reused across institutional or community levels. Without active mechanisms to translate past lessons into actionable policy briefs or investment screening tools, municipal planning bodies cannot effectively leverage field data to justify and scale EbA investments within national frameworks (SISCODE/CODEDE).                                                                      | AF resources convert static field evidence into active, multi-channel knowledge and scaling mechanisms. The project systematizes, translates, and widely disseminates field-proven EbA models through 5 Policy Evidence Briefs, 20 technical field manuals, and 10 multilingual multimedia products (Spanish, K'iche', Mam, Q'eqchi'), ensuring adaptation lessons are continuously reused to inform municipal investment pipelines and national policy.                                                     |

## J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project/programme.

The sustainability of the project has been systematically integrated into the project design through institutional, financial, social, environmental, and economic mechanisms that ensure continuity beyond the project implementation period.

To ensure **long-term social continuity**, the project integrates local ownership within legally recognized governance structures and customary community frameworks:

- COLREDs will be accredited and integrated into the National System for Disaster Reduction (CONRED) via Municipal Emergency Committees (COMREDs), ensuring continued local leadership for disaster risk management and operation of community early warning systems.
- Water Committees are legally recognized and engaged into municipal water source protection through Municipal Water and Sanitation Offices (OMAS/UGAM).

- Producer associations and MSMEs are formalized and integrated into Municipal Economic Development Offices (OMDEL) and Municipal Development Councils (COMUDEs).
- Women-led producer groups, green MSMEs, and female leaders will receive tailored technical, administrative, and organizational capacity-building through Municipal Women's Directorates (DMMs) for gender leadership.

The project will establish voluntary community agreements with producer organizations, and local stakeholders to strengthen stewardship of adaptation investments while respecting existing land tenure and customary rights. Through MAGA-led CADERS, community promoters, particularly women and youth, will be trained in EbA, climate risk management, and operation of adaptation assets. In parallel, participatory watershed dialogue and conflict-prevention mechanisms will support social cohesion and equitable resource governance.

**Social and knowledge scaling strategy:** Output 4.1 will operationalize a territorial peer-learning mechanism through cross-territorial exchanges, demonstration sites, farmer-to-farmer learning, and materials in relevant Mayan languages. This will facilitate replication of EbA, sustainable landscape management, and climate-resilient livelihood practices.

**Environmental sustainability** will be ensured through EbA measures that restore ecosystem functions, strengthen watershed resilience, and secure the long-term provision of ecosystem services through:

- Reforestation, restoration, biological corridors conservation, soil and water conservation practices, and other landscape management measures implemented across priority micro-watersheds contribute to improve water regulation, reduce erosion, and increase climate resilience.
- EbA methodologies, geospatial information, and climate and environmental monitoring data integrated into national information platforms managed by MARN, MAGA, INAB, and CONAP, including the SNICC and the SIA.
- Critical water recharge zones, riparian areas, and biological corridors incorporated into municipal environmental management instruments, water source protection regulations, and relevant INAB and CONAP management frameworks will reduce future land-use pressures and ecosystem degradation.
- Producer organizations, water committees, Indigenous communities, and watershed platforms will participate in monitoring and maintenance of restored areas and EbA investments.

**Environmental scaling strategy:** The project will systematize and promote spatial prioritization methods, EbA protocols, and biological corridor models through the technical frameworks of MARN, INAB, and CONAP, enabling replication in similar micro-watersheds nationwide.

**Long-term operation and maintenance (O&M)** of project's investment to acquire and install small-scale infrastructure and productive assets will be ensured through:

- Assets, inputs, and municipal supplies (such as seeds, forest nursery equipment) will be formally transferred to participating municipalities, which will integrate maintenance costs into their POA, with support from municipal technical units such as UGAMs and OMAS.
- Local water harvesting infrastructure and productive assets will be operated directly by legally recognized water committees, producer groups, and COCODEs, with technical backing from COMUDEs. The project will deliver O&M protocols and capacity building, while groups establish reinvestment mechanisms for ongoing repairs and operational costs.
- Hydrometeorological equipment and EWS will be handed over to COLREDs under co-management agreements with CONRED and IMGIRDs that define maintenance responsibilities, schedules, and knowledge-transfer procedures

**Operation and maintenance scaling strategy:** The standardized asset management protocols, user-fee structures, and municipal handover templates established under Component 1 will be compiled into a Municipal Asset Maintenance Toolkit. Distributed to the National Association of Municipalities (ANAM), this toolkit allows non-target municipalities to adopt proven O&M governance models for resilient rural infrastructure.

The project will reduce dependence on external assistance by linking adaptation investments to **sustainable sources of income and financing**:

- Under Output 1.2, technical assistance will facilitate the enrollment of target communities and smallholders into national public incentive programs, principally INAB's PINPEP and PROBOSQUE, as well as national climate funds (FONCC, FOBOSQUE). The resulting long-term public financial transfers (lasting 5 to 10 years per forest incentive contract) provide direct, ongoing financial capital to landholders for the maintenance of restored forests, biological corridors, and soils.
- Component 2 (Outputs 2.1–2.4) strengthens 42 producer groups and green MSMEs, coupled with value-addition equipment, organic bio-factory inputs, and formal buyer roundtables, increases smallholder yield (target: increase of 10%) and commercial revenue (target: increase of 10%). Reinvestment of these higher profit margins into group operational capital ensures that productive infrastructure (processing tools, bio-factories, small-scale irrigation) remains financially self-sustaining without external subsidies.
- Output 2.4 will establish partnerships with rural financial institutions (BANRURAL and REFIOM, subject to confirmation during the PFG phase) to provide seed capital and climate-adapted financial products. The project will strengthen financial

literacy, facilitate access to public incentive schemes (PINPEP, PROBOSQUE, FONCC, FOBOSQUE), and promote links with cooperatives and public support programmes, enabling producers to finance future adaptation investments independently.

**Financial and market scaling strategy:** By establishing formal commercial contracts at buyer roundtables and building credit histories for green MSMEs, the project demonstrates commercial viability to commercial banks and regional credit cooperatives (MICOPE). This de-risked financial profile enables financial institutions to independently scale climate-adapted credit lines to non-target producer associations across the region without requiring concessional project seed capital.

To ensure that **governance and capacity improvements** persist beyond the project supervision period:

- Under Outputs 1.1 and 3.1, climate risk criteria, EbA, and watershed management guidelines will be legally integrated into municipal land-use plans, Institutional Strategic Plans, and local water source regulations. Once enacted by municipal councils, these planning instruments become legally binding public policy, promoting municipal enforcement and budget allocation.
- COLREDs will be led by trained local leaders, including women in decision-making roles, and supported through municipal emergency planning and coordination mechanisms to sustain local risk management capacity beyond project closure.
- Capacity development will target more than 200 public officials, municipal technicians, COLREDs, COCODEs, COMUDEs, and community leaders, ensuring long-term technical capacity for adaptation planning, implementation, and monitoring.
- Outputs 4.2 and 4.3 sustain long-term local capacity by establishing actionable policy briefs, standardizing 20 technical EbA field manuals, and delivering 10 multimedia products to ensure continuous technical guidance beyond project closure.

**Institutional scaling strategy:** Integrating EbA criteria into municipal plans aligns local adaptation with the National Public Investment System (SISCODE). Supported by Output 4.2 scaling roadmaps and policy briefs, municipal planning directorates (DMP, DAFIM) can structure and submit field-tested resilience projects to development council budgets, unlocking central public capital to scale adaptation investments nationwide.

## K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project/programme.

The environmental and social screening indicates that the project presents a moderate risk profile (**Category B**) due to its implementation in territories with high socio-environmental sensitivity. Nevertheless, the identified risks are limited and manageable through preventive measures and inclusive governance mechanisms. No Unidentified Sub-Projects (USPs) are included; all project interventions and locations have been fully identified and screened upfront.

The interventions align with regulatory frameworks and do not entail significant adverse impacts on human rights, resettlement, labor conditions, health, or pollution. Through EbA, the project strengthens climate resilience, ecosystem conservation, and landscape management, prioritizing women, Indigenous women, youth, and vulnerable rural households to ensure equitable benefit-sharing.

**Table 13.** Classification of the Environmental and Social Risk Profile in accordance with the SESP. Source: own elaboration (UNDP).

| Environmental and social principles checklist | No further assessment required | Potential impacts and risks – additional assessment and management required for compliance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Compliance with law</i>                    |                                | <b>Low.</b> There is a risk that national laws and international commitments may be inconsistently applied due to local structural inequalities and differing institutional capacities. Potential direct or indirect impacts are low and manageable. <b>To mitigate</b> this risk, the project will conduct comprehensive Stakeholder Mapping, implement a Stakeholder Engagement Plan (SEP), and establish comprehensive stakeholder engagement and grievance. All activities will be legally executed via established authorities (MARN, INAB, CONAP, MAGA, SEGEPLAN, CONRED, municipalities, Indigenous communities and authorities where necessary). |
| <i>Access and equity</i>                      |                                | <b>Moderate.</b> There is a risk that conservation and sustainable land-use mechanisms (in forests, agricultural systems, and biological corridors) could unintentionally restrict access to natural resources or lead to inequitable benefit distribution among Indigenous peoples and vulnerable rural households. <b>Mitigation measures</b> are mapping of local uses, practices, and governance, participatory conservation planning, formal co-management agreements, FPIC, and comprehensive stakeholder engagement and grievance system to ensure fair access and benefit-sharing (to be further detailed in ESMF/ESMPs during the PFG phase).   |
| <i>Marginalized and vulnerable groups</i>     |                                | <b>Moderate.</b> There is a risk that marginalized populations, specifically Indigenous peoples, women, youth, and households in multidimensional poverty, may face structural barriers to equitable access to project benefits in restoration, watershed governance, and resilient livelihoods. <b>To mitigate</b> this risk, the project will implement a targeted GAP, an IPP, co-design of interventions, equity- and culturally responsive approaches, and comprehensive stakeholder engagement and grievance system (to be further detailed during PFG phase).                                                                                     |
| <i>Human rights</i>                           |                                | <b>Moderate.</b> There is a risk that limited capacity among duty-bearers to fulfill obligations and rights-holders to claim rights could restrict access to information, decision-making, and fair benefit-sharing. <b>Mitigation</b> measures are strengthening institutional and community capacities, applying a human rights-based approach, governance mapping,                                                                                                                                                                                                                                                                                    |

|                                                     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                     |   | prioritizing vulnerable groups in governance, participation processes aligned with FPIC, and maintaining inclusive grievance mechanisms (to be detailed in the ESMF/ESMPs).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <i>Gender equality and women's empowerment</i>      |   | <b>Moderate.</b> Moderate. There is a risk that structural gender gaps may limit women's—especially Indigenous and young women's—participation, leadership, resource access, and livelihood opportunities. <b>To mitigate</b> this risk, the project will execute gender-sensitive communication, dedicated women's empowerment strategies, micro-grant channels, implement a GAP, and comprehensive stakeholder engagement and grievance system accessible for women (to be detailed in the GAP)                                                                                                                                                                             |
| <i>Core labor rights</i>                            |   | <b>Low.</b> Community workers and producer groups may be exposed to unsafe labor practices during restoration, agroforestry, and agriculture activities, including handling of inputs and climate-related risks. <b>To mitigate</b> this risk, the project will enforce strict labor safety protocols, mandate Personal Protective Equipment (PPE), provide training on safe input handling, implement transitions to agroecological inputs, and ensure full compliance with national labor laws and ILO core conventions.                                                                                                                                                    |
| <i>Indigenous Peoples</i>                           |   | <b>Moderate.</b> There is a risk that restoration, EbA, watershed governance, and landscape planning activities could directly, indirectly, or cumulatively affect traditional access, governance systems, cultural resources, or Indigenous livelihoods. <b>To mitigate</b> this risk, the project will implement an IPP, participation processes aligned with FPIC, mapping of Indigenous uses and governance, participatory co-design of conservation modalities, and accessible grievance mechanisms (to be detailed in the ESMF/ESMPs during the PFG phase)                                                                                                              |
| <i>Involuntary resettlement</i>                     |   | <b>Moderate.</b> There is a risk that project activities could lead to economic displacement or temporary restriction of access, as direct or indirect impacts, if forest and watershed protection measures inadvertently restrict traditional community access to forests, water sources, or communal lands. (Note: UNDP policies strictly prohibit physical displacement/resettlement). <b>To mitigate</b> this risk, the project will conduct participatory mapping of resource access and uses, co-design conservation zones, implement FPIC processes, and develop a livelihood action plan with targeted livelihood safeguards and compensation mechanisms if required. |
| <i>Protection of natural habitats</i>               |   | <b>Moderate.</b> There is a risk that improperly planned restoration and watershed management activities in forest landscapes, biological corridors, or recharge zones could result in indirect adverse impacts on natural ecosystems. <b>Mitigation measures</b> are carrying out socio-ecological diagnostics, prioritizing EbA with native species, restoration native species under landscape management tools, co-designing interventions with local and Indigenous communities, and facilitating community-led monitoring systems (to be detailed in the ESMF/ESMPs).                                                                                                   |
| <i>Conservation of biological diversity</i>         |   | <b>Moderate.</b> There is a risk that restoration and watershed management interventions—particularly within biological corridors and Municipal Regional Parks—could inadvertently affect local species, ecosystem connectivity, or habitat integrity. <b>To mitigate</b> this risk, the project will restrict restoration exclusively to native species, establish biodiversity conservation zones, implement co-management frameworks with local and indigenous communities, integrate local and ancestral ecological knowledge, and conduct technical review by CONAP (to be detailed in the ESMF/ESMPs).                                                                  |
| <i>Climate change</i>                               |   | <b>Moderate.</b> There is a risk that project activities and outcomes could face climate vulnerability risks, or that indirect operational impacts could occur if interventions fail to account for severe rainfall variability or extreme drought events. (Note: The project will not generate significant GHG emissions). <b>Mitigation measures</b> are deploying climate-resilient restoration techniques, implementing EbA, promoting sustainable agricultural and forestry practices, operationalizing early warning systems, and leveraging climate information services (to be detailed in the ESMF/ESMPs).                                                           |
| <i>Pollution prevention and resource efficiency</i> |   | <b>Low.</b> There is a risk that during the transition to sustainable production models, temporary use of agrochemical inputs could lead to localized chemical exposure or improper container disposal. <b>To mitigate</b> this risk, the project will accelerate transitions to agroecological inputs, enforce safe input management protocols, mandate PPE, implement certified container disposal schemes, and deliver targeted producer awareness training (to be detailed in the ESMF/ESMPs).                                                                                                                                                                            |
| <i>Public health</i>                                | X | <b>Low.</b> There is a risk that community members or field workers could face health or safety hazards associated with input handling or climate-related hazards during field implementation. <b>Mitigation measures</b> are enforcing strict PPE protocols, prioritizing non-toxic organic inputs, linking activities to community early warning systems (COLRED), and promoting sustainable land management practices to prevent environmental health hazards.                                                                                                                                                                                                             |
| <i>Physical and cultural heritage</i>               |   | <b>Moderate.</b> There is a risk that restoration, value chain development, or territorial planning activities could indirectly affect culturally significant sites, Indigenous ceremonial areas, or traditional forest use systems. <b>To mitigate</b> this risk, the project will perform comprehensive mapping of sacred and cultural sites, strictly apply FPIC protocols, integrate ancestral knowledge (e.g., traditional forest calendars), and establish accessible, culturally sensitive grievance mechanisms (to be detailed in the ESMF/ESMPs).                                                                                                                    |
| <i>Land and soil conservation</i>                   | X | <b>No risk.</b> Project interventions (EbA, agroforestry, sustainable land and forest management, use of native species; soil conservation tools; ancestral agroecological practices (milpa); and biological and soil monitoring) directly enhance soil stability and restore degraded lands. No land degradation or soil erosion risks exist.                                                                                                                                                                                                                                                                                                                                |

## PART III: IMPLEMENTATION ARRANGEMENTS

### PART III: IMPLEMENTATION ARRANGEMENTS

- Demonstrate how the project/programme aligns with the Results Framework of the Adaptation Fund

**Table 14.** Project results framework.

| Project Objective(s) <sup>1</sup>                                                                                                                                                                                                                                                                         | Project Objective Indicator(s)                                                                                                                                                                                                                                                                                                         | Adaptation Fund Outcome                                                                                                                                                                                                                                  | Adaptation Fund Outcome Indicator                                                                                                                                                                     | Grant Amount (USD)       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>Objective 1:</b> To strengthen the climate resilience of prioritized communities and landscapes of the Central Volcanic Chain through ecosystem-based adaptation, improving ecosystem functionality, rural livelihoods, and territorial governance capacities to address the impacts of climate change | <b>O.1.1.</b> Number of hectares of landscapes (forest, productive, corridors, watersheds, protected areas) under improved adaptation measures by midterm and end-of-project.                                                                                                                                                          | <b>Outcome 5:</b> Increased ecosystem resilience in response to climate change and variability-induced stress                                                                                                                                            | <b>5.</b> Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress                                                                   | <u><b>5,900,000</b></u>  |
|                                                                                                                                                                                                                                                                                                           | <b>O.1.2.</b> Number of direct and indirect beneficiaries (disaggregated by sex) who benefit from improved climate resilience through project interventions in prioritized territories, including water resource management, strengthened livelihoods, ecosystem services, and institutional capacities by midterm and end-of-project. | <b>Outcome 3:</b> Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level<br><br><b>Outcome 6:</b> Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas | <b>3.2.</b> Percentage of targeted population applying appropriate adaptation responses<br><br><b>6.2.</b> Percentage of targeted population with sustained climate-resilient alternative livelihoods | <u><b>6,750,000</b></u>  |
|                                                                                                                                                                                                                                                                                                           | <b>O.1.3.</b> Number of COLREDs (Local Disaster Reduction Committees) established and strengthened with increased capacity to address climate-related hazards, verified through official CONRED accreditation or local risk management protocols by midterm and end-of-project.                                                        | <b>Outcome 2:</b> Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses                                                                                                             | <b>2.1.</b> Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased                                                                     | <u><b>2,400,000</b></u>  |
| <b>Total outcome level grant amount</b>                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                       | <u><b>15,050,000</b></u> |
| Project Outcome(s)                                                                                                                                                                                                                                                                                        | Project Outcome Indicator(s)                                                                                                                                                                                                                                                                                                           | Adaptation Fund Output                                                                                                                                                                                                                                   | Adaptation Fund Output Indicator                                                                                                                                                                      | Grant Amount (USD)       |
| <b>Outcome 1:</b> Forest and productive landscapes under restoration through ecosystem-based adaptation that strengthen ecosystem services and reduce climate risks.                                                                                                                                      | <b>1.1.</b> Number of hectares where restoration interventions are implemented in water recharge zones, productive areas and priority landscapes for ecological connectivity by midterm and end-of-project.                                                                                                                            | <b>Output 5:</b> Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability                                                                                                     | <b>5.1.</b> No. of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type and scale)                                  | <u><b>5,900,000</b></u>  |

|                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                    |                                                                                                                                                               |                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| <b>Outcome 2:</b> Climate-resilient rural livelihoods through inclusive and sustainable production systems and value chains.                                                                         | <b>2.1</b> Percentage of increase in production (kg/ha/year) per value chain by midterm and end-of-project.<br><br><b>2.2.</b> Percentage variation in agriculture revenue per value chain compared to baseline levels by midterm and end-of-project.<br><br><b>2.3.</b> Amount of public and private financial resources mobilized (USD mobilized, disaggregated by type) to support climate-resilient livelihoods and green business initiatives by midterm and end-of-project.                                      | <b>Output 6:</b> Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability | <b>6.1.1.</b> No. and type of adaptation assets (tangible and intangible) created or strengthened in support of individual or community livelihood strategies | <b>6,750,000</b>  |
| <b>Outcome 3:</b> Territorial actors and public institutions strengthen their capacities to articulate, implement, and sustain climate adaptation actions, informed by climate information.          | <b>3.1.</b> Number of municipalities that integrate climate change adaptation criteria and integrated watershed management into their planning and management instruments by midterm and end-of-project<br><br><b>3.2.</b> Number of public institutions and local organizations implementing climate change adaptation measures, by midterm and end-of-project<br><br><b>3.3.</b> Number of early warning systems strengthened for climate risk management in prioritized project areas by midterm and end-of-project | <b>Output 2.1:</b> Strengthened capacity of national and sub-national centers and networks to respond rapidly to extreme weather events            | <b>2.1.2</b> No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)               | <b>1,800,000</b>  |
| <b>Outcome 4.1.</b> Local institutions and territorial governance platforms are enabled to use evidence and lessons learned to sustain, replicate, and scale climate-resilient development solutions | <b>4.1.</b> Number of local institutions and territorial governance platforms that apply project-generated adaptation knowledge and evidence in planning instruments, investment proposals, resource mobilization processes, or institutional decision-making by midterm and end-of-project                                                                                                                                                                                                                            | <b>Output 3.2:</b> Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning   | <b>3.2.2</b> No. of tools and guidelines developed (thematic, sectoral, institutional) and shared with relevant stakeholders                                  | <b>600,000</b>    |
| <b>Total outcome level grant amount</b>                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                    |                                                                                                                                                               | <b>15,050,000</b> |

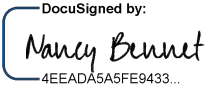
## PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

### ● Record of endorsement on behalf of the government<sup>2</sup>

*Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

|                                                                                            |                             |
|--------------------------------------------------------------------------------------------|-----------------------------|
| <b>Ana Patricia Orantes</b><br>Minister of Environment and Natural Resources,<br>Guatemala | Date: <i>April 20, 2026</i> |
|--------------------------------------------------------------------------------------------|-----------------------------|

### ● Implementing Entity certification *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| <p>I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (Nationally Determined Contribution (NDC) 2021 and NDC 3.0; National Climate Change Action Plan and Departmental Climate Change Adaptation Plans and subject to the approval by the Adaptation Fund Board, commit to implementing the project in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project.</p> |                                       |
| <p><i>Name &amp; Signature Implementing Entity Coordinator</i></p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <small>DocuSigned by:</small><br/> <br/> <small>4EEADA5A5FE9433...</small> </div> <p><b>Nancy Bennet</b><br/> Director, Quality and Impact Hub,<br/> Executive Coordinator, Vertical Funds<br/> Bureau for Policy and Programme Support (BPPS)<br/> United Nations Development Programme</p>                                                                                                                                                             |                                       |
| Date: 12-Aug-2026                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Tel. and email: nancy.bennet@undp.org |
| Project Contact Person: Thania Eloina Felix                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                       |
| Tel. and Email: thania.eloina.felix@undp.org                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                       |



*Ministra*

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

**Letter of Endorsement by Government**

MI-1374-2026/APOT-mafeo (UCI)  
April, 20<sup>th</sup> 2026

To: The Adaptation Fund Board  
c/o Adaptation Fund Board  
Secretariat Email:  
Secretariat@Adaptation-Fund.org  
Fax: 202 522 3240/5

**Subject: Endorsement for Volcanes II: Restoration and Integral Adaptation of Watershed and strategic Ecosystems in the Central Volcanic Chain of Guatemala**

In my capacity as designated authority for the Adaptation Fund in Guatemala I confirm that the above national project proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the country.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by the United Nations Development Programme (UNDP) and executed by the Ministry of Environment and Natural Resources (MARN).

Sincerely,

  
**Ana Patricia Orantes Thomas**  
Ministra  
Ministerio de Ambiente y Recursos Naturales







**Revised PFG Submission Form<sup>1</sup>**  
**Project Formulation Grant (PFG)**

**Submission Date:**

**Adaptation Fund Project ID:**

**Country/ies:** Guatemala

**Title of Project/Programme:** “Volcanes II”: Restoration and Integrated Adaptation of Watersheds and strategic Ecosystems in the Central Volcanic Chain of Guatemala

**Type of IE (NIE/RIE/MIE):** NIE

**Implementing Entity:** United Nations Development Programme

**Executing Entity/ies:** UNDP

**A. Project Preparation Timeframe**

|                               |                         |
|-------------------------------|-------------------------|
| <b>Start date of PFG</b>      | October 2026            |
| <b>Completion date of PFG</b> | July 2027 (9-10 months) |

**B. Proposed Project Preparation Activities (\$)**

| <b>List of Proposed Project Preparation Activities</b>                    | <b>Output of the PFG Activities</b>                                                                                                                                                                                                                                             | <b>US\$ Amount</b> | <b>Budget note<sup>2</sup></b>                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Consultancies and contracts to develop program and/or project options. | <ul style="list-style-type: none"> <li>Fully developed Adaptation Fund proposal and annexes</li> </ul>                                                                                                                                                                          | 32,500             | 1. International Consultant<br>Hiring an International Consultant for Project Development (AF PPG Team Leader) – USD 650/day for 50 days (within 10 months). Total budget is USD 32,500.                                                                                     |
| 2. Consultancies and contracts to develop program and/or project options. | <ul style="list-style-type: none"> <li>Stakeholder consultation report</li> <li>Stakeholder Engagement Plan</li> <li>Validated project design inputs (including project governance arrangements)</li> <li>Environmental and social risk screening and categorization</li> </ul> | 68,899             | 2. Seven (7) National Consultants<br>National Team Coordinator for Project Development – USD 200/day for 100 days (within 10 months). Total: USD 20,000.<br>Water Resources and Watershed Management Specialist: 40 days × USD 175/day (within 04 months). Total: USD 7,000. |

<sup>1</sup> As presented in AFB/PPRC.33/40 Annex 1.

<sup>2</sup> The proposal should include a detailed budget with budget notes indicating the break-down of costs at the activity level. It should also include a budget on the Implementing Entity management fee use.

|                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                 | <p>(SESP/AF ESP compliant)</p> <ul style="list-style-type: none"> <li>• Environmental and Social Management Framework</li> <li>• Indigenous Peoples Plan</li> <li>• Site-specific Environmental and Social Management Plans</li> <li>• Gender Analysis and Gender Action Plan</li> <li>• Location-specific baseline profiles for priority landscapes</li> <li>• Spatial analysis and mapping of priority areas</li> <li>• Adaptation options</li> </ul> <p>Baseline assessment report</p> |        | <p>Forests, Biodiversity, and Biological Corridors Specialist: 30 days × USD 179.13/day (within 04 months). Total approx: USD 5,374.</p> <p>Value Chains and Financial Inclusion Specialist: 35 days × USD 175/day. Total: USD 6,125.</p> <p>National Gender Consultant: 80 days × USD 150/day within 08 months). Total: USD 12,000.</p> <p>Environmental and Social Safeguards Expert: 80 days × USD 185/day (within 08 months). Total: USD 14,800.</p> <p>Environmental and Social and stakeholder mapping: 30 days × USD 120/day (within 06 months). Total: USD 3,600.</p> |
| 3. Travel costs for experts, when required, for consultations and discussions with interested parties and stakeholders, and local participation as needed in project design.    | <ul style="list-style-type: none"> <li>• Field missions, site assessments, and stakeholder consultations completed to inform project design and environmental and social assessment.</li> </ul>                                                                                                                                                                                                                                                                                           | 11,500 | <p>3. Travel</p> <p>Field travel to project locations for stakeholder engagement and Environmental and Social risk management framework development. Total: USD2,000</p> <p>In-country travel and field missions in support of full proposal formulation and validation, including international flights and DSA for the AF PPG International Consultant (16 days), DSA for the National Lead Consultant for project development (20 days), and vehicle rental, fuel, and driver costs . Total: USD 9,500.</p>                                                                |
| 4. Local consultations, and/or workshops to discuss the specific project and program ideas (including translation into local languages, preparation of background papers, etc). | <ul style="list-style-type: none"> <li>• Full proposal validation workshop report</li> <li>• Stakeholder Consultation Report, GAP and SES plans meeting minutes and workshops reports.</li> </ul>                                                                                                                                                                                                                                                                                         | 25,350 | <p>4. Workshops</p> <p>Local and national workshops for stakeholder engagement and Environmental and Social risk management framework (15 field workshops at USD 1,000 each and 1 national at USD 1,500). Total: USD 16,500.</p> <p>Territorial-level workshops to design and validate the Gender Analysis and Gender Action Plan (4 local consultation workshops at</p>                                                                                                                                                                                                      |

|                                        |  |         |                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------|--|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                        |  |         | USD 1,000 each and 1 technical validation meeting at USD 350). Total: USD 4,350.<br>Local field-based technical workshops to support data collection, validation of findings, and identification of adaptation options (5 workshops at USD 500 each). Total: USD 2,500.<br>National-level full proposal validation workshop prior to submission. Total: USD 2,000. |
| IE Fee (8.5%)                          |  | 11,751  |                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Total Project Formulation Grant</b> |  | 150,000 |                                                                                                                                                                                                                                                                                                                                                                    |

### **Activity 1. Consultancies and contracts to develop program and/or project options – Fully developed Adaptation Fund Proposal (USD 32,500)**

This activity will support the full formulation, integration and validation of the Adaptation Fund project proposal (**Full Proposal**), consolidating all technical, analytical and participatory inputs generated under the Project Preparation Grant into a complete, appraisal-ready project document that meets Adaptation Fund and UNDP requirements quality standards.

An International Consultant serving as the AF Project Preparation Grant (PPG) Technical Lead will be responsible to conduct the design and implementation of the project planning formulation process as well as the final consolidation and editing of the **full project proposal and all required annexes**, ensuring consistency across all proposal sections and full alignment with Adaptation Fund technical guidance, templates, and policy requirements. The International Consultant will provide technical quality assurance based on the experience with Adaptation Fund project appraisal processes and will finalize the integration of all contents of the proposal (in English version) for submission to the Fund. The International Consultant will also lead engagement with the Adaptation Fund Secretariat during the **technical review and clarification process** prior to PPRC and Board consideration, ensuring timely coordination and submission of revisions that fully address Secretariat comments.

A proposal **validation workshop** will be convened to review and validate the near-final proposal prior to submission. The activity also includes in-country travel and field missions required to support coordination, field verification, and stakeholder engagement during proposal formulation.

**Activity 2. Consultancies and contracts to develop program and/or project options: (1) National Coordination Lead, (3) Specialized National Consultant to develop location-specific assessments and baseline studies, (1) National Gender Consultant, (2) National Consultant to develop SES frameworks and plans (USD 68,899)**

This activity will generate the technical, environmental, social and gender analyses required to inform project design and selection of adaptation measures across priority landscapes within the Central Volcanic Chain.

Assessments will consider localized climate risks, ecosystem conditions, livelihoods systems and institutional and socio-economic dynamics to support context-specific and evidence-based interventions, project indicators, and the preparation of environmental and social safeguards frameworks and management plans.

A National Consultant serving as **Full Proposal Development and National Coordination Lead** will support the formulation process led by the International Consultant by **coordinating, structuring and consolidating the core proposal content** including drafting technical sections; the results framework (indicators, baselines, and targets); budget; and defining implementation, institutional, and governance arrangements. The National Consultant will also play the role of coordination and integration of inputs from national technical consultants, ensuring **quality assurance of the outputs** and content developed, and **serve as liaison with the National Implementing Entity and relevant stakeholders** to ensure alignment with national and local priorities, thereby encouraging and reinforcing country ownership throughout the project design process.

**Three specialized national consultants** will be recruited to support the development of technical assessments and baseline analyses in key thematic areas relevant to the project design: (i) water resources and watershed management; (ii) forests, biodiversity, and biological corridors; and (iii) value chains and financial inclusion. Their work will provide targeted technical inputs, spatial and sectoral analysis, and evidence-based recommendations to support the identification and prioritization of adaptation measures and implementation arrangements across the selected landscapes. The process will develop **targeted sectoral analysis, studies and baseline information** focused on ecosystem functionality, watershed and landscape management, ecological connectivity, climate-resilient livelihoods, value chains, financial inclusion, and local adaptive capacities. Using available climate and geospatial data, field-level information, and stakeholder consultations, the assessments will identify and prioritize context-appropriate adaptation and climate risk reduction measures as well as key indicators and goals to support project design and implementation arrangements. An additional USD 20,000 in secured co-financing will support early baseline, climate, and geospatial assessments.

A **National Gender Consultant** will develop a context-specific **Gender Analysis** to assess differentiated climate impacts, vulnerabilities, adaptive capacities among women and men in the project areas, with particular attention to women in vulnerable and indigenous communities. The analysis will examine gender roles and norms, access to and control over resources and services, participation in decision-making processes, and barriers for engaging in climate adaptation interventions. This activity will be based on desk review, field-based consultations, focus groups with women's organizations, community-led groups, indigenous groups, and relevant institutions. The analysis will provide key recommendations, and entry points to support gender-responsive adaptation measures, inclusive institutional arrangements, equitable benefit-sharing mechanisms, and relevant inputs to be included in the Full Proposal. Findings will contribute to the development of a practical and results-oriented **Gender Action Plan (GAP)**, aligned with the Adaptation Fund Gender Policy. The GAP will define concrete gender-responsive measures, implementation arrangements, responsibilities, timelines, indicators, targets, budget allocations, and monitoring mechanisms to ensure the effective integration of gender equality considerations across all project components, activities, and the results framework. The GAP will also identify actions to strengthen women's participation, leadership, equitable access to project benefits, and inclusive decision-making processes, particularly for women from vulnerable and indigenous communities. Targeted consultation and validation workshops will

be conducted to confirm the proposed measures and ensure alignment with stakeholder priorities and institutional capacities. This activity will ensure full compliance with the Adaptation Fund Gender Policy.

The project has been preliminarily categorized as moderate risk under the UNDP Social and Environmental Screening Procedure (SESP). Therefore, an **Environmental and Social Safeguards Expert** and the **Environmental and Social Stakeholder Mapping Consultant** will conduct stakeholder consultations and a comprehensive environmental and social risk screening and categorization in line with both the Adaptation Fund ESP and UNDP standards, to identify potential risks and impacts and define appropriate mitigation and management measures. Key outputs will include a **Stakeholder Engagement Plan** capturing local governance frameworks (as well as institutional entry points, adaptation priorities and a validated project governance arrangement), an **Environmental and Social Management Framework (ESMF)**, including provisions for **site-specific Environmental and Social Management Plans (ESMPs)**, as well as an **Indigenous Peoples Plan (IPP)** consistent with FPIC principles.

This activity will be complemented by an additional USD 25,000 grant from UNCCD to strengthen the integration of land degradation and climate vulnerability considerations in value chains, and to support the formulation of the results framework and key sections under Component 2 (Adaptation of productive systems and strengthening of resilient livelihoods).

### **Activity 3. Travel costs for experts for consultations and discussions with interested parties and stakeholders, and local participation (USD 11,500)**

This activity will support **field missions and in-country travel** required for the development of the full proposal.

Travel by the international and national consultants will enable site visits across the priority landscapes of the Central Volcanic Chain to collect and validate technical information, conduct baseline assessments, assess climate risks and vulnerability conditions, identify potential adaptation investments, and inform the development of environmental and social safeguard instruments.

The activity will also facilitate technical coordination among implementing partners and government counterparts to ensure that project design is based on field-verified evidence and reflects local biophysical, socioeconomic, and institutional conditions.

### **Activity 4. Consultations, and/or workshops to discuss the specific project and program ideas (USD 25,350)**

This activity will support the participatory design, validation, and refinement of the full Funding Proposal through a series of national and sub-national consultations, technical workshops, and validation meetings. The activity will ensure that proposed adaptation interventions, results framework indicators, gender actions, and environmental and social management measures are informed by stakeholder perspectives and validated by relevant institutions and project beneficiaries.

**SES. Structured and inclusive stakeholder engagement processes (including 15 field-based workshops)**

will be conducted to inform environmental and social risk screening and the preparation of safeguard frameworks and management plans, ensuring compliance with the Adaptation Fund Environmental and Social Policy (ESP) and UNDP Social and Environmental Standards. Engagement will involve national institutions, local authorities, Indigenous Peoples, community representatives, producer organizations, civil society organizations, women, youth, and other stakeholders in the proposed intervention areas. Where relevant, consultations will be conducted in a culturally appropriate, inclusive, and gender-responsive manner, consistent with UNDP SES requirements and international principles of **Free, Prior and Informed Consent (FPIC)**. Outputs include a **Stakeholder Consultation Report, meeting minutes, and inputs** to the Environmental and Social Management Framework and Plans.

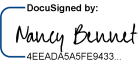
**GAP.** This activity will finance **(4) territorial consultation workshops** and **(1) technical validation meeting** to support the preparation and validation of the Gender Analysis and Gender Action Plan, ensuring that project interventions adequately address differentiated climate vulnerabilities, barriers to participation, and opportunities for women's leadership and empowerment.

**Technical validation of assessments and adaptation options.** Five **(5) field-based technical workshops** will support the review and validation of baseline assessments, climate-risk analyses, adaptation options, and project assumptions. These workshops will contribute to the refinement of the project's theory of change, the validation of Adaptation Fund Results Framework indicators and project-specific indicators, the establishment of baseline values, and the strengthening of the project's monitoring and evaluation framework.

**Full proposal validation.** A **national validation workshop** will be convened prior to submission to review and endorse the proposed intervention package, implementation arrangements, results framework, and safeguard and gender instruments, ensuring broad stakeholder ownership and alignment with national priorities.

### C. Implementing Entity

This request has been prepared in accordance with the Adaptation Fund Board's procedures and meets the Adaptation Fund's criteria for project identification and formulation

| Implementing Entity<br>Coordinator, IE Name                                                                                                                                                              | Signature                                                                           | Date<br>(Month,<br>day, year) | Project<br>Contact<br>Person | Telephone | Email<br>Address                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------|------------------------------|-----------|-----------------------------------------|
| Nancy Bennet<br>Director, Quality and<br>Impact Hub<br>Executive<br>Coordinator,<br>Vertical Funds<br>Bureau for Policy and<br>Programme Support<br>(BPPS)<br>United Nations<br>Development<br>Programme |  | 12-Aug-2026                   | Thania<br>Eloina<br>Felix    |           | thania.eloina.felix.canedo@<br>undp.org |

## Initial Gender Assessment

### Initial gender analysis

The project recognizes that the impacts of climate change are not gender-neutral . In prioritized territories, women — including Indigenous women — play a central role in water management, subsistence agriculture, food security, forest conservation, nurseries, restoration, agroforestry, local bioeconomy, and the transmission of ancestral knowledge on seeds, soils, and biodiversity. Yet they face barriers in access to land (only 7.8% are owners ), productive resources, finance, training, technical assistance, climate information, and decision-making spaces, limiting their adaptive capacity. The analysis identifies gaps in access to assets, participation in governance, unpaid workload, and additional inequalities for Indigenous women and youth.

Climate risks exacerbate these gaps: greater exposure to respiratory diseases from firewood use, increased time spent collecting water during dry seasons, limited access to climate information and early warning systems, and heightened risks of gender-based violence during water collection or community participation.

The project will increase the participation of women, especially Indigenous women, in territorial adaptation planning, development councils, and local governance. It will strengthen their technical and organizational capacities in resilient agriculture, restoration, water management, and sustainable value chains, while reducing structural barriers through adapted schedules, accessible formats, and culturally relevant engagement strategies. Women's essential roles and ancestral knowledge — including native seeds, sustainable agriculture, and water management — will be recognized to ensure meaningful participation, equitable access to benefits, and sustainability of measures, in line with Adaptation Fund gender and environmental policies. During full formulation, a substantive gender gap analysis and Gender Action Plan will be developed, with specific goals, indicators, and allocations, and preliminary targets for participation and benefits subject to validation.