ADAPTATION FUND

AFB/PPRC.5/8
June 6, 2011

Adaptation Fund Board
Project and Programme Review Committee
Fifth Meeting
Bonn, June 20, 2011

PROPOSAL FOR GUATEMALA

I. Background

1. The Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund, adopted by the Adaptation Fund Board, state in paragraph 41 that regular adaptation project and programme proposals, i.e. those that request funding exceeding US$ 1 million, would undergo either a one-step, or a two-step approval process. In case of the one-step process, the proponent would directly submit a fully-developed project proposal. In the two-step process, the proponent would first submit a brief project concept, which would be reviewed by the Project and Programme Review Committee (PPRC) and would have to receive the approval by the Board. In the second step, the fully-developed project/programme document would be reviewed by the PPRC, and would finally require Board's approval.

2. The Templates Approved by the Adaptation Fund Board (Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund, Annex 3) do not include a separate template for project and programme concepts but provide that these are to be submitted using the project and programme proposal template. The section on Adaptation Fund Project Review Criteria states:

> *For regular projects using the two-step approval process, only the first four criteria will be applied when reviewing the 1st step for regular project concept. In addition, the information provided in the 1st step approval process with respect to the review criteria for the regular project concept could be less detailed than the information in the request for approval template submitted at the 2nd step approval process. Furthermore, a final project document is required for regular projects for the 2nd step approval, in addition to the approval template.*

3. The first four criteria mentioned above are:
   1. Country Eligibility,
   2. Project Eligibility,
   3. Resource Availability, and
   4. Eligibility of NIE/MIE.

4. The fifth criterion, applied when reviewing a fully-developed project document, is:
   5. Implementation Arrangements.

5. According to the Adaptation Fund Board Decision B.12/10, a project or programme proposal needs to be received by the secretariat no less than nine weeks before a Board meeting, in order to be considered by the Board in that meeting.

6. The following fully-developed project document titled "Climate change resilient production landscapes and socio-economic networks advanced in Guatemala" was submitted for Djibouti by the United Nations Development Programme (UNDP), which is a Multilateral Implementing Entity of the Adaptation Fund. This is the second submission of the project. It was first submitted as a project concept, using the two-step proposal process, for the 11th Adaptation Fund Board meeting, and endorsed by the Board. It was received by the secretariat in time to be considered in the 14th Adaptation Fund Board meeting. The secretariat carried out a technical review of the project proposal, assigned it the diary number AFB/MIE/Rural/2010/1 and filled in a review sheet.

7. In accordance with a request to the secretariat made by the Adaptation Fund Board in its 10th meeting, the secretariat shared this review sheet with UNDP, and offered it the opportunity

of providing responses before the review sheet was sent to the Project and Programme Committee of the Adaptation Fund.

8. The secretariat is submitting to the Project and Programme Review Committee the summary of the project, prepared by the secretariat, in the following section. The secretariat is also submitting to the Committee the technical review sheet and the responses provided by UNDP, in an addendum to this document.

Project Summary

Guatemala – Climate change resilient production landscapes and socio-economic networks advanced in Guatemala
Implementing Entity: *UNDP*
Project/Programme Execution Cost: USD 475,000
Total Project/Programme Cost: 5,000,000
Implementing Fee: USD 425,000
Financing Requested: USD 5,425,000

Project/Programme Background and Context:

The proposed Project aims to increase climate resilience in production landscapes and socio-economic systems in the target municipalities threatened by the impacts of climate change and climatic variability, in particular hydrometeorological events that are increasing in frequency and intensity. The Project proposes to achieve this through a set of key outcomes that range from enhancement of institutional capabilities to support for building more resilient local economies, and increasing the adaptive capacity of communities.

It also aims to strengthen the processes and mechanisms of recovery, processing, and dissemination of information for decision-making at all levels.

Component 1: Development of capacities and tools that enhance national and local capabilities for climate change adaptation (USD 300,000)

Through Component 1, the Project will strengthen capacities for downscaling climate information in order to make it more useful to the specific climate change production planning process of the target area, improving capacities for recording and analyzing information at local and national levels, while strengthening communication mechanisms, bottom-up and top-down decision-making processes, and developing financing mechanisms for adaptation.

Component 2: Recovery and development of climate change resilient practices that reduce the vulnerability of communities (USD 2,600,000)

Components 2 of the Project will identify, bring to consensus, and implement local adaptation strategies in order to improve the social, production, and ecological resilience of the production landscapes in the target area—that is, production systems and practices and their coordination with other components of the target area's socio-ecological system.

These strategies will be identified, prioritised, and agreed upon in a participatory manner among organizations, community leaders, and local governments, using a community-based adaptation approach. Also, strategies will be implemented by the families identified as direct beneficiaries, with technical support from the Project.

Component 3: Improvement of food security and livelihood options in the target municipalities (USD 1,445,000)

Production landscapes affected by climate change hazards will increase their resilience from the activities implemented in Component 2. This will be complemented by increasing the adaptive capacity of local communities to support vital economic and social processes,

strengthening resilience through investments in community organization, micro finances (community-based loan systems, organizational capital build-up) and index insurance systems where feasible. The project will also conceptualise, design, and plan the subsequent construction of central storage facilities (agricultural services warehouses) located in places accessible to different groups of farmers in outlying areas, with easier access to routes and major roads.

Component 4: Informed decision-making and awareness-raising, supported by decentralized information systems (USD 180,000)

Component 4 is designed so that results and lessons learned from the implementation of adaptation strategies are fed back into the process of strengthening the adaptive capacity at local and national levels, and fed back as well into the creation of technical standards and manuals and the establishment of a national information system on climate change adaptation.

ADAPTATION FUND

DATE OF RECEIPT:

ADAPTATION FUND PROJECT ID:

(For Adaptation Fund Board Secretariat Use Only)

PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

PROJECT/PROGRAMME CATEGORY**: Regular**
COUNTRY/IES**: Guatemala**
TITLE OF PROJECT/PROGRAMME: **Climate change resilient production landscapes and socio-economic networks advanced in Guatemala** (UNDP PIMS 4386; Atlas IDs - Proposal 00060326, Project 00075911, GTM10)
TYPE OF IMPLEMENTING ENTITY: **Multilateral Implementing Entity**
IMPLEMENTING ENTITY**: United Nations Development Programme (UNDP)**
EXECUTING ENTITY/IES**: Guatemalan Ministry of Environment and Natural Resources (MARN)**
AMOUNT OF FINANCING REQUESTED**: 5,425,000** (In U.S Dollars Equivalent)

PROJECT/PROGRAMME BACKGROUND AND CONTEXT

A. *Climate Background*

Current Situation and Climate Trends

Guatemala is a country with high levels of social inequality and poverty (51% of the population is poor, and 15% live in extreme poverty) and an infant malnutrition rate of 43%. Most of the poor are women and indigenous people.[1] Most of the indigenous populations are grouped in rural regions that have the lowest human development indices and the highest poverty and extreme poverty indices.[2] Projected climate variability and climate change will cause a regression in human development levels that will impact a range of issues including food security, health, forestry, ecosystems, and water resources.

Projections and scenarios indicate increases in temperature, decreases in total mean precipitation, and increases in the frequency of extreme precipitation events[3] as well as in the frequency and intensity of extreme climatic events.[4] The First National Communication on Climate Change indicates that the historical behaviour (1961-1990) of annual average temperature in Guatemala shows an increasing trend, with a predominance of positive anomalies since the 1970s. It also shows negative anomalies of precipitation for the same period, with the largest reductions occurring between the months of June and August.[5]

According to the 2009 Global assessment report on disaster risk reduction, Guatemala has been

[1] GEO Guatemala (2009).
[2] National Human Development Index (2005).
[3] Aguilar, E. et al (2005). Changes in Precipitation and Temperature Extremes in Central America and Northern South America, 1961–2003.
[4] MARN (2009) Environmental Report GEO 2009 State of Guatemala.
[5] MARN (2001) First National Communication on Climate Change, Guatemala. Climate change scenarios utilized were IS92A, IS92c, IS92e.

classified as one of the world's top ten countries most vulnerable to disasters.[6] Hurricane Mitch (1998) resulted in US$748 million in economic losses, 77% of which affected production sectors. Tropical storm Stan (2005) caused US$989 million in economic losses, over 1,400 deaths, and over half a million victims (70% of whom were indigenous peoples).[7] The 2010 rainy season was one of the worst in history. In that year, tropical Storms Alex, Agatha, Frank, and Matthew affected 723,000 people, killed 262, injured 778, required the evacuation of 243,000, and left 44,500 homes at risk and 76,000 homes damaged.[8] Agatha's estimated economic damage was US$1 billion.[9]

National climate change projections[10] indicate that mean annual temperatures could increase by 1 to 3 °C by 2050, with the month of May being the hottest, with temperatures exceeding 28°C. Areas with higher temperatures are expected to expand, and this expansion will encroach upon areas in which temperatures are currently lower, such as mountainous ones. These scenarios include high, medium, and low climate sensitivities, (3.5 C°, 2.5 °C, and 1.5 °C respectively) and a wide range of predictions of global warming based on increased GHGs. All three scenarios (optimistic, moderate, and pessimistic) point to an average reduction in precipitation by the year 2050 for the July-September quarter, with the month of August showing the most severe reduction. This will lead to an intensification of the "canícula"[11] period, with serious implications for agriculture.[12] An increase in the intensity of rainfall and floods has likewise been recorded as well as projected.[13]

The climate change scenarios for Guatemala were constructed using Global Circulation Models (CGN) and downscaling models using the local data. Based on national climate change scenarios, progressive warming is projected for Guatemala's western region, in which maximum and minimum temperatures show a tendency to increase in all scenarios (from 0.8 to 1.5 °C), while precipitation tends to decrease at the beginning of the rainy season. October tends to be the wettest month.[14] (See Appendix 1: Maps.)

Effects on Water Resources and Water Availability

The major threats of climate change are hydrometeorological (floods, landslides, and droughts). MARN has indicated that 87.5% of Guatemalan territory has some degree of drought susceptibility, with 49% present showing high drought risk. Eighteen of the country's twenty-two departments contain areas threatened by desertification. According to the vulnerability study for water resources, the scenarios for 2030 show a probable reduction in surface water flow of between 10% (moderate scenario) to 50% (pessimistic scenario).[15] This reduction in water flow, along with the predicted increases in temperature and decreases in precipitation, will result in a diminished water supply for ecosystems, human consumption, and irrigation, with consequential impacts on human welfare.

An increase in water demand of 300% by 2050 and 1,600% by 2100 has been estimated, while total water availability, compared to current levels, could fall by 35% for the B2 scenario and 63% for the A2 scenario by 2100.[16] This leads to an estimate of changes in water-use intensity that

[6] UNISDR (2009) Global Assessment Report on Disaster Risk Reduction. This analysis was conducted to include not only climate change risks, but also risks associated with seismic and volcanic activity.
[7] SEGEPLAN (2006).
[8] Informative Bulletin No. 1382, 30 November, 2010 SE- CONRED.
[9] EM-DAT (2011) The OFDA/CRED International Disaster Database.
[10] MARN (2001) First National Communication on Climate Change, Guatemala. Climate change scenarios utilized were IS92A, IS92c, IS92e.
[11] A characteristic of the rainy season in Central America, the "canícula" is a hot spell that occurs in the middle of the season. If it is out of phase or prolonged, it threatens crops and can lead to their partial or total loss.
[12] MARN (2001) First National Communication on Climate Change - Guatemala.
[13] CEPAL (2010) The Economics of Climate Change in Latin America and the Caribbean, Synthesis 2010. United Nations, Santiago de Chile, Chile.
[14] MARN (2007) Future Vulnerability and Adaptation Measures and Strategies.
[15] MARN (2001) First National Communication on Climate Change, Guatemala.
[16] The IPCC Special Report on Emissions Scenarios (SRES) estimates the global population, economic activity, and greenhouse gas emissions to the year 2100. These scenarios simulate the global climate system, comprised of a set of interrelated variables (GDP, population, technology, energy, emissions, etc.) which are internally consistent. Each scenario describes a possible future. The A2 family of scenarios—economic growth with strong focus on the regional—describes a very heterogeneous world based on self-sufficiency and the preservation of

shows all Central American countries except Belize exceeding critical values of water stress to an extent similar to that of Egypt and some countries of the Arabian Peninsula today.[17]

An increase in the intensity of rainfall will produce an increase in the frequency and intensity of floods. Flow rate studies in the basins of the Nahualate, Coyolate, and Madre Vieja Rivers show an increase in average flow rates in May (the beginning of the rainy season) of 89% to 141% over historical averages.[18] Estimated erosion rates are 45 tons of sediment per hectare per year.[19]

Despite the increased risk of flooding, no structural measures have been taken to prevent floods. Actions taken focus on infrastructural projects for flood mitigation (e.g. levees and dredging of rivers). However, these projects do not rely on technical studies that take climate change and variability into account, and the result is that some end up exacerbating problems downstream as well as creating a false sense of security.[20]

Effects on Ecosystems and Ecosystem Services

The increased frequency and intensity of extreme events (hurricanes, floods, and droughts), as well as altered temperature and precipitation patterns and rising sea levels, threaten ecosystems and biodiversity in Central America. Processes such as coastal erosion, depletion of aquifers, saline intrusion into groundwater, and desertification have been reported. On the other hand, the rise in sea level presents other risks, such as increased coastal erosion and coastal flooding that affect wetlands, estuaries, and the abundance and diversity of hydrobiological resources.

For increases above 2.5 °C, major changes in the structure and function of ecosystems, changes in ecological interactions, and geographical shifts in species are projected, with negative impacts on biodiversity and ecosystem services (e.g. water and food security).[21]

The effects of a changing climate on ecosystems have already been observed. Such observations include changes in the carbon and nitrogen cycles, species distributions, population sizes, timing of reproduction or migration, and length of growing season. Some climate change impacts on tropical ecosystems are shown in Table 1.[22]

With respect to expected changes in ecosystems in Guatemala, the country's First National Communication on Climate Change, simulated the distribution of ecosystems in accordance with each scenario and concluded that coniferous forests will be most affected by climate change, due to habitat reduction caused by expanding dry areas. Because coniferous forests contribute 49.13% of forest productivity, their intolerance to expected climatic conditions will have an economic impact. Broadleaf forests are expected to expand. Recent studies project a reduction in evergreen tropical forests and seasonal forests, showing an expansion of dry ecosystems[23]. The composition of forests could be affected due to climatic variations, and this could result in the loss of species incapable of withstanding higher temperatures, reducing biodiversity. According to the optimistic, normal, and pessimistic scenarios, between 0.38% and 3.67% of Guatemala will undergo severe changes in forest cover. An increase in the frequency of forest fires is also expected.

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local identities, and showing a slow convergence of regions, while the B2 family of scenarios—environmental sensitivity with a highly regional approach—describes more gradual and less extreme changes, including geopolitical developments, demographics, growth in productivity, technological dynamics, etc.

[17] CEPAL (2010) The Economics of Climate Change in Latin America and the Caribbean, Synthesis 2010. United Nations, Santiago de Chile, Chile.

[18] INSIVUMEH (2010) Water flow trends in hydrometeorological stations during May, 2010.

[19] MARN (2009) GEO Guatemala.

[20] MARN (2007) Analysis of Future Vulnerability of Water Resources to Climate Change. National Climate Change Policy, Guatemala.

[21] IPCC (2007) Climate Change 2007. Synthesis Report. Contributions from Work Groups I, II, and III.

[22] Locatelli et al (2008) Facing an Uncertain Future: How Forests and People Can Adapt to Climate Change.

[23] MARN CONAP (2011) Preliminary assessment of Climate Change potential impacts on Biodiversity and Forests of Guatemala; recommendations for mitigation and adaptation. Draft version.

Table 1. Climate change impacts on tropical ecosystems[24]

Ecosystems	Potential Impacts
Tropical rain forest	Significant shifts in the extent and distribution of tropical rain forests are likely because several forest types are highly sensitive to warming of 1°, and most types are sensitive to changes in precipitation. The sensitivity of tropical rain forests to climate is increased by interactions with ongoing extensive fragmentation. Climatic changes will probably tend to favour invasive species over rare and threatened species.
Tropical cloud forest	Even small-scale shifts in temperature and precipitation are expected to have serious consequences for tropical forests in the high mountains; indeed, changes in climate have already caused species extinctions. Tropical cloud forests are especially sensitive because they are in areas with steep gradients and highly specific climatic conditions. Atmospheric warming is raising the altitude of cloud cover, so the habitat for these species will shift up the mountains as they follow the retreating cloud base, forcing them into smaller and smaller areas. Climatic changes will probably tend to favour invasive species over rare and threatened species.
Tropical dry forest	Ecosystems in semi-arid areas are very sensitive to changes in rainfall, which can affect vegetation productivity and plant survival. Tropical dry forests are likely to be most affected by drought and fire. A slight decrease in annual precipitation is expected to make tropical dry forests subject to greater risk from forest fires in the immediate future. Climatic changes will probably tend to favour invasive species over rare and threatened species.

Ecosystem functions provide services of benefit to humans. The main services provided by ecosystems, such as nutrient cycling, carbon sequestration, pest regulation, and pollination, sustain agricultural productivity. In Guatemala, the main services provided by ecosystems are erosion control, food provisioning and products derived from biodiversity and agro diversity[25]. For example Guatemala produces close to 19 million m^3 of timber, per year, with a high proportion (93%) to be used as wood fuel [26].

Ecosystem services help reduce exposure or sensitivity and increase the adaptive capacity of most sectors of society. Ecosystem services provide agriculture with important factors of resistance and risk mitigation, and the value of these increases when the climate is changing. When conditions change, the existence of a greater number and variety of interactions that facilitate the functioning of an ecosystem helps favour different groups of organisms (e.g., pollinators) so that they can continue to provide ecosystem services. Climate change has implications for the quality and extent of forests, the loss of genetic resources available for agricultural production, the loss of food, and the distribution and productivity of certain species.[27]

Current climate change trends, combined with other pressures on ecosystems, will lead to reduced ecosystem services, and this loss will reduce human well-being at all levels.[28] Some foreseen changes to ecosystem services include a decrease in the availability of water, food, timber, and fuel (provisioning services), a loss of genetic diversity (supporting services), altered flow volumes in streams, an increase in polluted runoff, and changes in the distribution pattern of disease vectors and pests, due to changes in temperature (regulating services).[29] Some reported effects on biodiversity and ecosystems in Guatemala are changes in ecosystems composition and structure, changes in altitudinal and latitudinal distribution, and species isolation, with subsequent changes in services provisioning. In addition, there have been reported changes in water regimes and an increase in landslides. In Guatemala, the most affected ecosystems will be mountain forests (coniferous forests, cloud forests and evergreen tropical forests). As a result, the government has highlighted the importance of building altitudinal corridors for climate change adaptation. This

[24] Adapted from Locatelli et al (2008).
[25] MARN CONAP (2011) Preliminary assessment of Climate Change potential impacts on Biodiversity and Forests of Guatemala; recommendations for mitigation and adaptation. Draft version.
[26] UNEP (2010) Global environment outlook:Latin America and the Caribbean GEO LAC 3
[27] FAO (2008) Climate Change.
[28] Locatelli et al (2008) Facing an Uncertain Future: How Forests and People Can Adapt to Climate Change.
[29] Pereita et al (2005) Condition and Trends of Ecosystem Services and Biodiversity.

recommendation has been emphasized for Highlands zone[30].

Effects on Agriculture

The agricultural sector is one of those most affected by climate change. This is documented in First National Communication on Climate Change and is highlighted by the recent food crisis in Guatemala (September, 2009), due to prolonged drought in the eastern and north-western parts of the country, which caused losses of 72,798 hectares of crops (worth about US$32 million). In 2010, after Agatha, the government should invest about US$203 million to ensure food security in the country.[31]

A significant impact of climate change on small farm production is the loss of organic matter in soils due to soil heating. High air temperatures can accelerate the decomposition of organic matter in soils and increase levels of other soil processes that affect fertility. Under drier soil conditions, root growth and the decomposition of organic matter are significantly suppressed, and as ground cover is then reduced, vulnerability to wind erosion is increased, especially if winds intensify. This is especially true on slopes. A warmer climate also favours conditions for the proliferation of insect pests. Most studies conclude that insect pests are more abundant as temperature increases.[32]

Most climate change models predict that damages will be most sorely felt by small farmers, particularly rain-fed farmers.[33] Current temperatures are near or above optimal values for agricultural production, so it is expected that the warming projected for the rest of the century, along with an increase in variability of rainfall, will affect the productivity of the agricultural sector. By 2100 in Central America, the index of agricultural production is projected to decrease by about 9% in the A2 scenario and by 3% in the B2 scenario.

The ECLAC study on climate change effects on agriculture in Guatemala noted that temperatures required to achieve optimum yields in maize production have already been surpassed. Similarly, precipitation levels are already well below the average levels required for optimum maize yields. The A2 scenario shows maize yields remaining at around the historical average of 2 tons per hectare for the short term and then decreasing by up to 1.4 tons per hectare by 2050. Maize production under the B2 scenario will decrease to 0.5 tons per hectare by 2100. Maize yields in Guatemala could reach very low levels if no adaptation measures are taken.[34] (See Figure 1.)

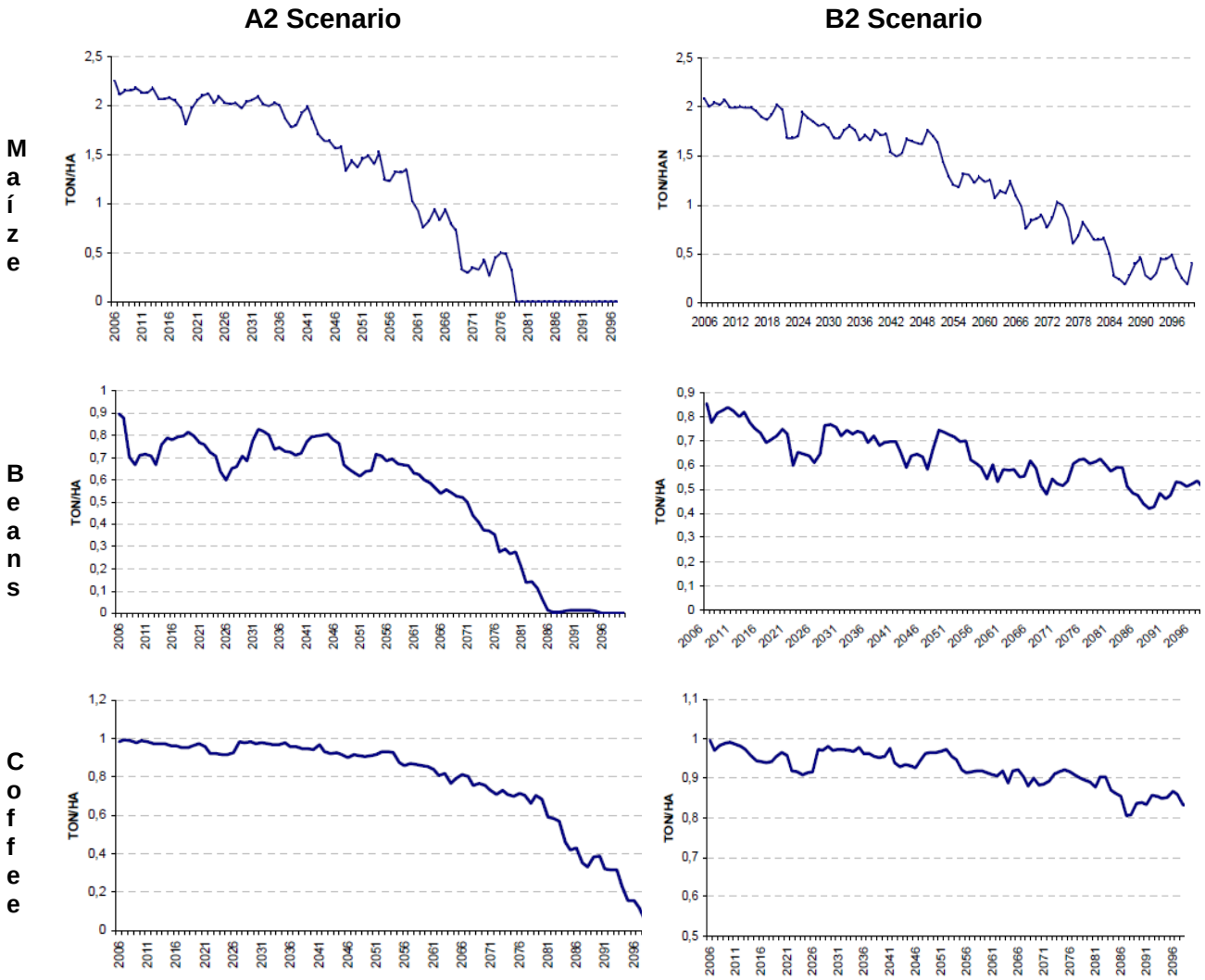
With respect to bean growing, average temperatures required for optimum yields have already been surpassed, and current precipitation levels are slightly lower than optimal ones. It is likely that, with further increases in temperature and reductions or variations in precipitation, bean production will be seriously affected. In both the A2 and the B2 scenarios, bean yields will suffer substantial reductions by 2100, ranging from more than 0.7 to less than 0.1 tons per hectare in the A2 scenario and 0.5 tons per hectare in the B2 scenario. (See Figure 1.) Yields may reach much lower levels in Guatemala (without taking adaptation measures into account). Since many bean growers are small farmers with scarce resources and very low yields, the impact of a temperature increase of 1 to 2 °C—not to mention the higher projections of 4 to 5 °C—will have major impacts, not only in Guatemala but throughout Central America, endangering food security for large segments of the population.

Models show that coffee production will remain relatively stable for the short term because optimal temperatures for the crop have not been reached. Current precipitation is less than desirable, however, and in the long-term, production will fall dramatically. From 2050 onward, costs for the

[30] MARN CONAP (2011) Preliminary assessment of Climate Change potential impacts on Biodiversity and Forests of Guatemala; recommendations for mitigation and adaptation. Draft version.
[31] MAGA (2010) Guatemala.
[32] Altieri and Nicholls (2009) Climate Change and Peasant Agriculture: Impacts and Adaptive Responses.
[33] Altieri and Koohafkan (2008) Enduring Farms: Climate Change, Smallholders and Traditional Farming Communities.
[34] CEPAL (2010) Effects of Climate Change on Agriculture in Guatemala.

entire agricultural sector will increase rapidly, reaching 7% of GDP by 2100 in the B2 scenario.[35]

Figure 1. Projected changes in the production of basic grains and coffee in scenarios A2 and B2



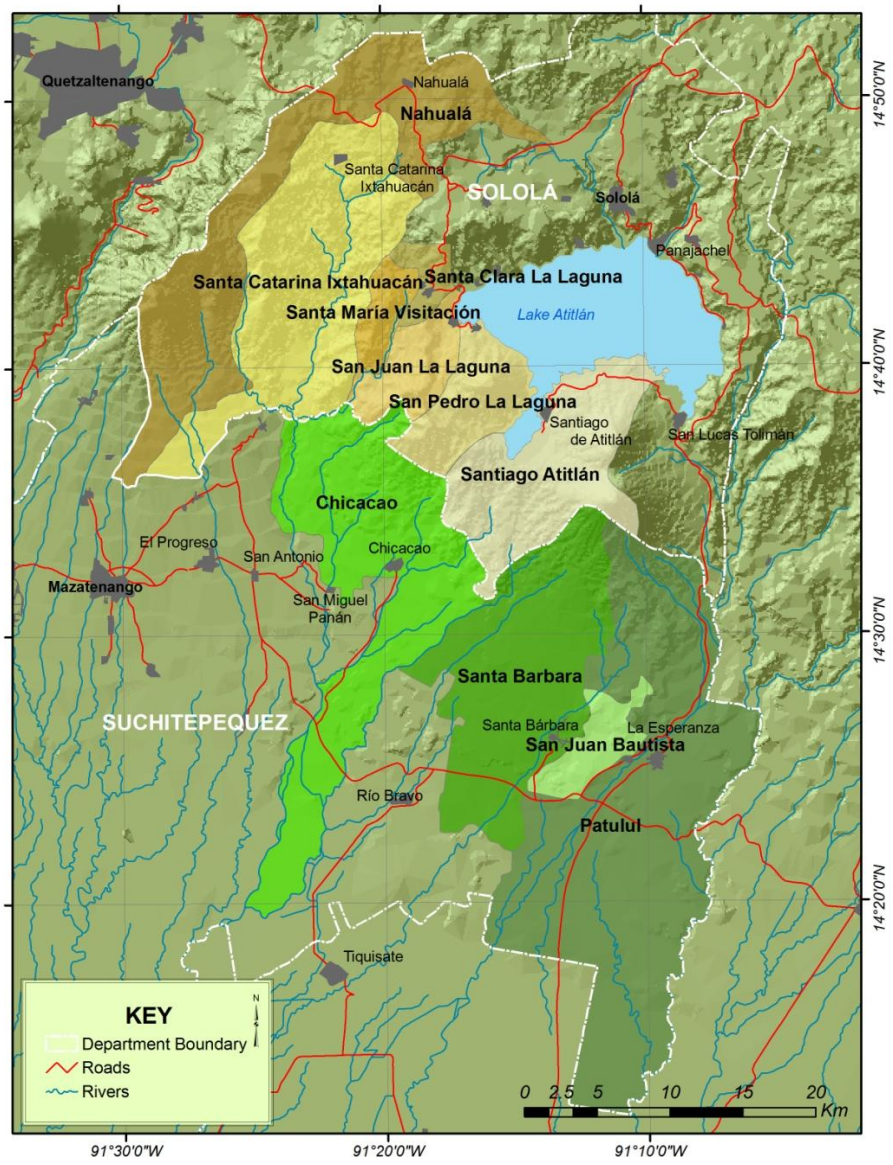
B. *Target Area of the Project*

The government of Guatemala selected eleven municipalities as a target area, in the departments of Suchitepéquez and Sololá. (See Figure 1 and Appendices 1 and 2.) This selection was made based on the following criteria: quality of life index, frequency of extreme hydrometeorological events (floods and landslides), presence of groundwater replenishment areas, and percentage of indigenous population. An integrated, continuous spatial configuration was also a consideration when including municipalities in the target area. This configuration comprises the upper reaches of the four basins of interest as well as a variety of natural ecosystems and production systems. This variety will enhance the project results, since it means diverse production landscapes and livelihoods against which climate change risks will be addressed, expanding project impacts in both geographical and thematic terms. It also facilitates the logistics and operation of the project.

[35] CEPAL (2010) The Economics of Climate Change in Latin America and the Caribbean, Synthesis 2010. United Nations, Santiago de Chile, Chile.

The target municipalities cover 1,376 km^2 and comprises the middle and upper parts of the Nahualate, Madre Vieja and Coyolate River basins, as well as those of the south shore of Lake Atitlán and the Sis-Icán and Samalá Rivers (comprising 63%, 13%, 12%, 9%, 1% and 0.41% of the target area respectively). Major on the ground investment for adaptation measures will take place in the upper Nahualate river basin.

Figure 2. Eleven municipalities of target area, where Sololá municipalities are in shades of brown, and Suchitepéquez municipalities are in shades of green.



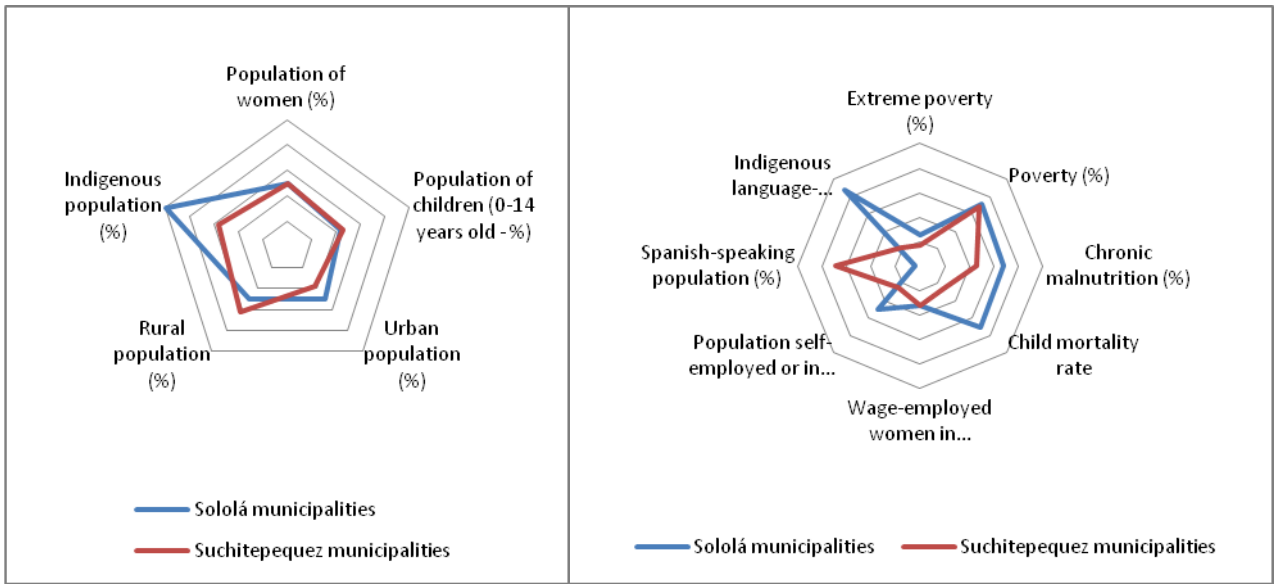
The target area of the project has a total population of 255,333. Of this total, 208,629 (78%) are indigenous, 127,611 (50%) are women and 113,530 (45%) are children (0-14 years); who make up the most vulnerable population sectors.[36] (See Table 2 and Figure 3.)

The population of the Sololá municipalities is mostly indigenous (99%), the majority being of the

[36] UNDP (2008) National Report on Human Development.

Mayan kaqchiquel, k'iche' and tz'utujil ethnic groups. Only 4% of the total population of the Sololá municipalities speak Spanish as their first language. These municipalities have the highest rates of poverty, extreme poverty, malnutrition, and infant mortality in the study area. (See Table 2.) Poverty levels reach 70% (nineteen points above the national average), and 22% of the population lives in extreme poverty, with a chronic malnutrition rate of 57%.[37] In most of the target municipalities, chronic malnutrition exceeds 50%. (See Appendix 2.)

Figure 3. Demographic data and development indicators[38]



As shown in Table 2, 57% of the population is classified as rural. It should be pointed out that the urban population is concentrated in seven principal towns, in which 37% of the target area's total population lives. These towns and their populations are: Santiago Atitlán (21,276), Chicacao (10,405), San Pedro La Laguna (9,034), San Lucas Toliman (8,670), Patulul (6,468), Cerro de Oro (4,592), and San Juan La Laguna (4,179).

Table 2. Characteristics of population[39]

Indicator	Sololá Municipalities in target areas	Suchitepéquez Municipalities in target area	All municipalities in target area
Area (km^2)	615	762	1,376
Total population	70,481	104,367	174,848
Population of women (%)	50.13	49.77	49.95
Population of children 0-14 years old (%)	43.69	45.56	44.63
Extreme poverty (%)	26.10	16.98	21.54
Poverty (%)	71.79	68.71	70.25
Chronic malnutrition (%)	68.06	46.19	57.12
Child mortality rate	69.86	26.29	48.07
Literacy	79.37	72.07	75.72
Literacy in women	74.56	66.05	70.30
Literacy in men	84.49	78.17	81.33
Rural population (%)	50.16	62.95	56.56

[37] INE (2006) National Statistics Institute, National Poll on Human Development.
[38] INE (2002) National Statistics Institute and CONALFA (2009).
[39] INE (2002) National Statistics Institute and CONALFA (2009).

Indicator	Sololá Municipalities in target areas	Suchitepéquez Municipalities in target area	All municipalities in target area
Wage-employed women in agricultural sector (%)	32.15	31.56	31.85
Self-employed or in family business (%)	49.40	25.00	37.20
Indigenous population (%)	99.44	56.10	77.77
Spanish-speaking population (%)	4.31	68.81	36.56
Indigenous language-speaking population (%)	87.66	21.51	54.58

The Project will work at both national and local levels, involving government agencies as well as producer organizations (cooperatives, associations, and others), providing an efficient and effective way of building their capacities for adaptation. The project will indirect benefit more than 200,000 indigenous people, and more than 100,000 children and young people, who live the target municipalities. The project will direct benefit communities, producers, associations, and organizations in the Nahualate River basin, defined by Government as direct beneficiaries in target area. The Nahualate River basin has a total population of 152,263 of whom more than 39,000 live in extreme poverty. Of the total population, 94,877 (87%) are indigenous, 76,350 (50%) are women and 70,264 (46%) are children (0-14 years); who make up the most vulnerable population sectors.

C. *Ecosystems in target area municipalities*

The types of ecoregions found in the target area are Central America Dry Forest, Central American pine-oak forest, Central American montane forest, and Sierra Madre de Chiapas moist forest.[40]

Natural forest covers 20.47% of the target area and is composed of broad-leaf, coniferous, mixed, and secondary forest.[41] These ecosystems cover a total of 282 km2, and of them, mountain broadleaf forests are the largest remnants preserved. (Figure 4)

An analysis of how these ecosystems fare within the context of ecoregions worldwide shows that the Central American dry forest has relatively little remaining natural remnants in the target area, while Central American pine-oak and Central American montane forests are better represented. (Table 3). Central American pine-oak forests have very important functions in terms of providing ecosystem services that support the reduction of vulnerability to hydrometeorological events. For this reason, the Project will aim to preserve and restore them. (See Component 2 below.) Of the remaining natural ecosystems, 84% are located in the Highlands Subsistence Agriculture livelihood zone. These are mostly broadleaf forests and correspond to the Central American montane forests ecoregion. (See Figures 4 and 5.) Of these forest remnants, the largest patch measures 6.7 km^2. Secondary forests occupy substantial areas in the Sierra Madre de Chiapas moist forest ecoregion, with a total of 15 km^2.

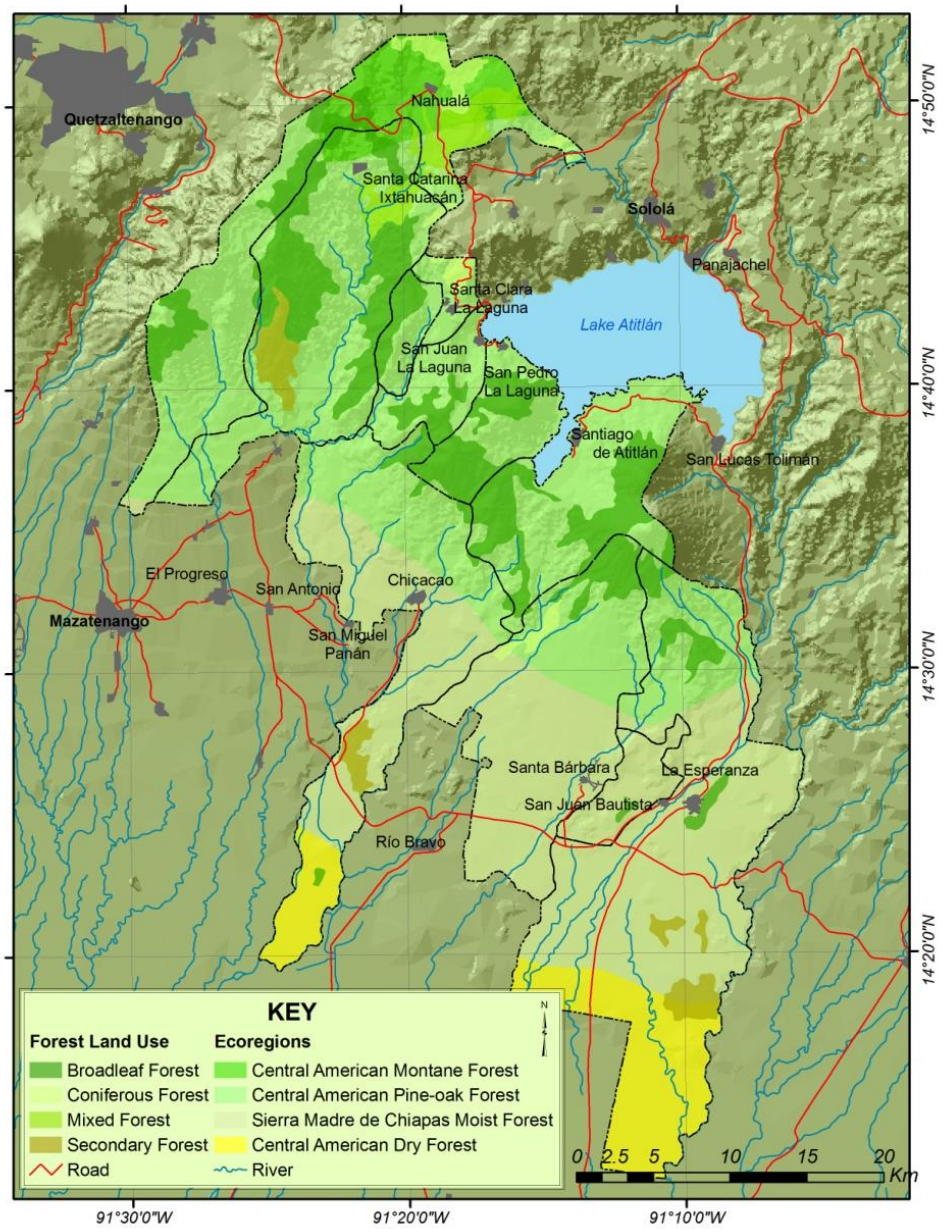
[40] WWF Ecoregions of the World.
[41] MAGA (2006) Vegetative Cover and Land Use Map.

Table 3. Agro-ecosystems and natural ecosystem remnants in each of the ecoregions of the target area[42]

Ecoregion	Agro-ecosystems and Natural Ecosystem Remnants	Area (km^2)	Percentage
Central American dry forest	Pasture	56	50.01
	Sugar cane	51	46.04
	Secondary forest	4	3.34
	Broadleaf forest	1	0.58
	Other crops	0.04	0.03
Subtotal		*111*	100.00
Central American montane forest	Basic grains (maize and beans)	34	50.25
	Coniferous forest	10	14.40
	Mixed forest	8	12.07
	Broadleaf forest	8	11.81
	Pasture (natural)	6	8.45
	Vegetables	1	2.19
	Towns	1	0.83
Subtotal		*68*	100.00
Central American pine-oak forest	Coffee	315	42.53
	Broadleaf forest	189	25.47
	Basic grains (maize and beans)	137	18.50
	Other crops	40	5.36
	Mixed forest	20	2.72
	Secondary forest	12	1.68
	Coniferous forest	10	1.39
	Ash or sand	7	0.94
	Pasture	5	0.72
	Sugar cane	2	0.26
	Rock	2	0.20
	Towns	1	0.15
	Vegetables	1	0.08
	Lakes and ponds	0	0.00
Subtotal		*741*	100.00
Sierra Madre de Chiapas moist forest	Coffee	155	33.96
	Sugar cane	105	23.01
	Pasture	76	16.71
	Basic grains (maize and beans)	56	12.33
	Pasture (natural)	35	7.63
	Secondary forest	15	3.23
	Other crops	8	1.72
	Broadleaf forest	4	0.98
	Towns	1	0.31
	Coniferous forest	1	0.12
Subtotal		*456*	100.00
Total		***1,376***	

[42] MAGA (2005) Data from the Thematic Atlas of the Republic of Guatemala.

Figure 4. Ecoregions and forest remnants in the target area



D. *Livelihoods in the target Area of the Project*

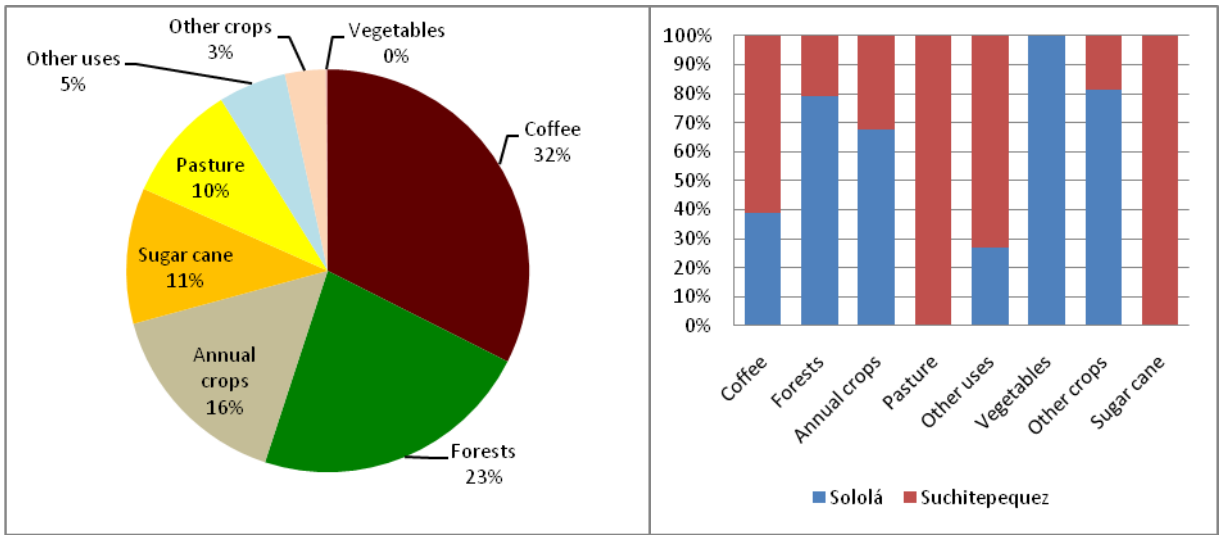
The target area is mountainous, with volcanic soils, of which 60% (821 km^2) are unsuitable for agricultural use (Class VII and VIII)[43]. The remaining 40% (556 km^2) of the lands are suitable for agricultural use (Class I, II, III, and IV).

In order of importance, the production systems present are: coffee (34%), annual crops (16%), sugar cane (11%), and pasture for livestock (10%).[44] Livelihoods on which the poorest populations depend are annual crops (maize, beans). These cover 228 km^2 of the target area. It is important to

[43] Data from the Physiographic – Morphological Map of the Republic of Guatemala.
[44] MAGA (2006) Vegetative cover and land use map.

note that Guatemala has a high diversity of maize and beans, with thirteen of the fourteen maize varieties reported for Central America. Guatemala is the centre of origin of the common bean (*Phaseolus sp.)*, and there are at least twelve wild bean species.[45] This provides additional potential in terms of maintaining a genetic pool from which to select varieties that are resistant or more adaptable to the climate changes expected for each site.

Figure 5. Percentage of each type of land use (left) and proportion of each type of land use by department in the target area (right) [46]



As shown in Figure 5, sugar cane, pasture, and coffee are mostly found in the Suchitepéquez municipalities, while the Sololá municipalities are the only ones where vegetables are grown and have a higher proportion of forest remnants.

A study of livelihoods in Guatemala by MFEWS[47] shows three different livelihood zones present in the target area: 1) Agro-industry for export and basic grains, 2) Highlands subsistence agriculture, and 3) Coffee. (See Table 4, Figure 6, and Appendices 1 and 3.)

In each of the livelihood zones, socio-economic groups were defined according to their ownership of land, livestock, assets, education, skills, labour availability, social capital, and access to credit. In the three livelihood zones of the target area, there are four socio-economic groups: the affluent group, the middle group, the poverty group, and the extreme poverty group.

Table 4 shows clearly that the majority of the population (81%) belong to the extreme poverty and poor groups. These people do not have certainty on land ownership and therefore they do not have access to credit, irrigation, or grain storage. This high percentage of the population depends on other socio-economic groups for their livelihoods. People of middle and affluent groups are landowners and have irrigation systems and post-harvest storage but they represent only 23% of the population in the target area.

The majority of the population in the target area (59%) live in the coffee zone, while 38% live in the highlands subsistence agriculture zone. The least populated zone is that of agro-industry for export, with 4% of the population.

[45] MAGA FAO (2008) The State of Phytogenetic Resources in Guatemala. Second National Report.
[46] MAGA (2005) Data from the Thematic Atlas of the Republic of Guatemala.
[47] MFEWF (2007) Central American Early Warning System for Food Security. Profiles and Livelihoods. Guatemala.

Figure 6. Livelihood profiles in the target area

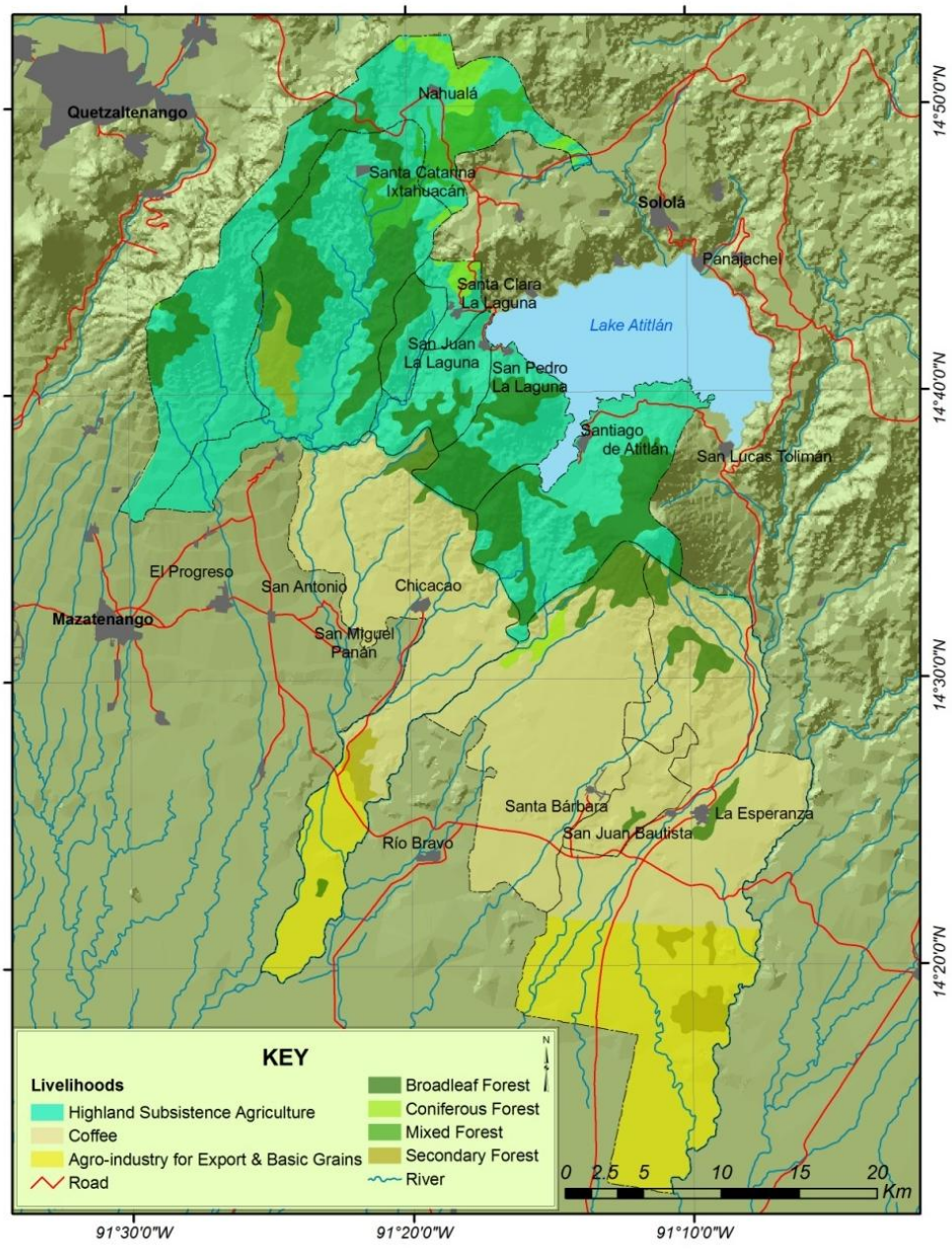


Table 4. Socio-economic characteristics of the livelihood zones[48]

Livelihood Zone	Socio-economic Group	Population (%)	Population	Household Size	Land Ownership	Assets	Grain Reserves	Production Activities	Animal Husbandry
Agro - industry for export and basic grains	Extreme poverty group	60	5.643	9	Do not own or rent land	Basic tools, no post-harvest storage facilities	0	Subsistence agriculture of basic grains; provide unskilled labour in agricultural activities	no
	Poverty group	30	2.822	8	Own 0.05 ha or rent 0.7 ha	basic tools, fumigators, post-harvest storage facilities	3 to 4 months	Subsistence agriculture of basic grains; provide unskilled labour in agricultural and non agricultural activities	1 to 2 pigs 5 to 10 fowl
	Middle group	4	376	5	Own 10 to 20 ha	tractor, car, irrigation system, chainsaw	12 months	Livestock farmers producing tomatoes, okra, bananas, maize, sesame. Forestry.	15 cattle for meat 3 to 5 cattle for milk 25 to 30 fowl 2 to 3 horses
	Affluent group	6	564	4	Own more than 200 ha	tractor, car, irrigation system, aircraft, machinery, processing plants, greenhouses	0	Livestock producers, palm, banana, sugarcane and rubber	200 or more cattle 5 to 10 horses
Highlands subsistence agriculture	Extreme poverty group	33	31.656	10	Own 0.04 ha for production; no land title	basic tools, no post-harvest storage facilities	1 month	Subsistence agriculture of basic grains; provide unskilled labour in agricultural and non-agricultural activities	2 to 8 fowl
	Poverty group	45	43.167	6	Own 0.21 ha; no land title	basic tools, no post-harvest storage facilities	4 months	Subsistence agriculture of basic grains; provide unskilled labour in agricultural and non-agricultural activities	8 to 15 fowl 1 pig 1 to 10 sheep
	Middle group	18	17.267	5	Own 1 to 5 ha; land title and credit access	basic tools, irrigation systems, mechanical equipment, post-harvest storage facilities	10 months	Small-scale merchants and employees	1 to 30 fowl 1 to 3 dual-purpose cattle 15 sheep 1 to 2 horses

[48] MFEWF (2007) Central American Early Warning System for Food Security. Profiles and Livelihoods. Guatemala.

Livelihood Zone	Socio-economic Group	Population (%)	Population	Household Size	Land Ownership	Assets	Grain Reserves	Production Activities	Animal Husbandry
	Affluent group	5	4,796	4	Own more than 5 ha; land title and credit access	irrigation systems, mechanical equipment, post-harvest storage facilities	12 months	Merchants and employees	More than 30 fowl More than 15 sheep 6 to 10 dual-purpose cattle
Coffee	Extreme poverty group	30	45,001	8	Own 0.25 ha for home only	basic tools, no post-harvest storage facilities	0	Sell unskilled labour in agricultural and non-agricultural activities	3 to 5 fowl
	Poverty group	45	67,501	6	Own 0.25 to 1 ha	basic tools, post-harvest storage facilities	4 to 5 months	Agriculture (basic grains, coffee, bananas); sell unskilled labour	5 to 10 fowl
	Middle group	20	30,000	5	Own 5 to 6 ha	draft animals, tools, post-harvest storage facilities	12 months	Trade; agriculture (citrus, grains, and coffee); employees	10 pigs 20 fowl 5 to 10 dual-purpose cattle
	Affluent group	5	7,500	4	Own 40 to 160 ha	vehicles, machinery, processing facilities	12 months	Diversified agriculture; coffee; employees	10 pigs 20 fowl More than 20 dual-purpose cattle

Zone of Agro-industry for Export and Basic Grains

The municipalities in the zone of agro-industry for export and basic grains are characterized mainly by sugar cane cultivation and production of palm oil, maize, bananas, and other fruits. Most people provide their labour in these activities, in addition to growing basic grains for consumption. In this zone, there are high levels of migration throughout the country during the harvest season.

Differences between socio-economic groups in this zone are based on access to land, credit, and means of production. The extreme poverty group (60% of the total population) has no land or credit, provides labour in the sugar cane fields, and receives food aid. The poverty group (30% of the total population) has small plots of land with no title and leases land for cultivation. These people also have temporary jobs in the sugar cane fields. The middle group (4% of the total population) owns titled larger lands (9 to 12 ha) and employs people from the poverty and extreme poverty groups. These people have access to credit and own livestock. The affluent group (6% of the population total) owns larger tracts of land (200-4,000 ha), has irrigation systems, high technology, and access to credit.

The main climate hazards in this zone are:

- Flooding from swollen rivers, primarily at the end of the rainy season, which affect all socio-economic groups. This results in partial or total losses in crops and poultry. Communities are left isolated, hampering access to food.
- Droughts affecting the extreme poverty and poverty socio-economic groups, who have neither irrigation systems nor means for storing basic grains for more than 3 months.

The main strategies to address these threats are shown in Table 5.

Table 5. Some current strategies for addressing climate threats in the zone of agro-industry for export and basic grains[49]

Socio-economic Groups	Floods and Overflowing Rivers	Droughts
Extreme poverty and poverty groups	Increase job search within their zone and do not migrate to another zone temporarily or permanently	Reduction in food consumption, with effects on the population's nutritional status
	Ask for food assistance, with little success	Ask for food assistance, with little success
Middle and affluent groups	Ask for technical assistance	Irrigation
	Store products until prices stabilize	Early harvest or no harvest in order not to increase production costs

Zone of Highlands Subsistence Agriculture

The land in this zone is suitable for forestry, but out of necessity, people use it for cultivating basic grains, despite of the low yields. The plains are the best places for growing, but most of the valley floors have been urbanized. The main sources of employment are found in the agricultural area, in the production of basic grains and vegetables.

This zone has the highest percentage of indigenous population, who work in basic grain production for subsistence and as agricultural labourers. Women raise fowl, cultivate, and weave. Also in this zone, people cultivate a variety of vegetables (snow peas, cabbage, mini-vegetables, and strawberries) for market and for export. The production of basic grains (maize and beans) is low-yield and is located on land that is steeply sloped and more suitable for forestry.

The four socio-economic groups present, and their percentages within the total population, are:

[49] MFEWF (2007) Central American Early Warning System for Food Security. Profiles and Livelihoods. Guatemala.

extreme poverty (33%), poverty (45), middle (18%) and affluent (5%). The affluent group owns the transportation, exports and imports agricultural products, and raises livestock. The middle group is made up of merchants and brokers who collect and market the production of the poorest. The poverty and extreme poverty groups are farmers and agricultural labourers.

Differences such as land ownership, access to production assets, and access to credit are the determiners of how people in each socio-economic group generate income. The poorest groups do not have high capacity for production for market because their landholdings are very small, so working as labourers is essential for them in order to earn money to survive. This means that events affecting the demand for labour (such as low yields or reduced harvests) can impair their total income. Adaptation strategies promoted by the project should consider this dynamic in a comprehensive manner.

The major climate hazards in this area are:

- Floods and landslides - These occur in the rainy season during storms. They affect people who live on steeply sloped and/or in deforested areas and cause material and human losses.
- Fluctuations in temperature - These occur in all months, with abrupt changes within the day from low temperatures during mornings and nights and high temperatures at midday.
- Droughts - These result in decreased availability of water for crops, which affects the poverty and extreme poverty groups, who don't have irrigation systems, and who consequently lose jobs and food sources.
- Changes in the frost pattern - These produce losses of crops and food sources upon which the majority of the population depends.

The extreme poverty and poverty groups' current strategies to respond to these threats lack sustainability. They consist of sales or total consumption of animals, migration and land abandonment, and the sale or exchange of production assets for food, resulting in increased de-capitalization. Table 6 shows some of the strategies implemented by different socio-economic groups. As can be seen, some strategies of the middle and affluent groups are based on access to information and media. Such access could be extended to the extreme poverty and poverty groups as part of the adaptation strategies of the project.

Table 6. Some current strategies for addressing climate threats in the zone of Highlands Subsistence Agriculture[50]

Group	Frosts	Droughts
Extreme poverty and poverty groups	Temporary migration	Creation of water reservoirs, water conservation
	Reduction in food consumption	Reforestation and other environmental activities through programmes with support from NGOs
		Decrease in acreage for redistribution of available water into the farm.
		Delayed planting period
Middle and affluent groups	Delayed planting of vegetables when frost is expected	Manage soil moisture through irrigation
	Spray water at dawn, avoiding frost accumulation on crops	
	Construction of greenhouses and mesh covers	

[50] MFEWF (2007) Central American Early Warning System for Food Security. Profiles and Livelihoods. Guatemala.

Coffee Zone

In the municipalities of the coffee zone, the most important livelihoods are those of labourer (in coffee plantations), the cultivation of basic grains for consumption, and the cultivation of citrus, avocado, and bananas. This area was historically used for coffee production, but is currently in the process of diversification of production and/or specialization of the coffee. Because of this, many people who depended on coffee have to seek alternatives such as the cultivation of citrus, avocado, and rubber. This is an area of large private estates, and the majority of the population works as labourers.

The four socio-economic groups present, and their percentages within the total population, are: extreme poverty (45%), poverty (30%), medium (20%) and affluent (5%). For the extreme poverty group, the most important livelihood is that of unskilled labourer in coffee, citrus and rubber plantations. For the poverty group, the most important livelihoods are unskilled labourer and the cultivation of basic grains for consumption and sale within the area. For the middle group, who already have some level of education, livelihoods include wage labourer, small-scale cultivation of grains, citrus, coffee, and bananas, and small-scale livestock raising. For the affluent group, landowners with access to international markets and who own processing centres livelihoods are large-scale livestock raising and trade. In addition, these people rent land to other groups in the area.

Lands with higher soil quality belong to the middle and affluent groups. Those with lower soil quality and less access to water belong to the extreme poverty and poverty groups.

The main climate hazards in this zone are:[51]

- Prolonged rains - These result in floods that cause crop losses. When they persist for more than three days at the onset of the rainy season during May, they cause saturation of the soil and losses of crops that are the economic base for the population. Prolonged rains affect all socio-economic groups: the extreme poverty and poverty groups because their sources of employment are negatively affected, the middle and affluent groups because the sale of their production is negatively affected. Conversely, reductions in the length of the rainy season have been observed, when compared with records from 15 years ago. Inadequate rain distribution has also been recorded.
- Floods - These are caused by the overflow of major rivers that cross the area, improper management of solid waste, loss of forest cover, silting, and occupation of land near the rivers. Floods cause crop losses and affect physical access to markets.
- Droughts - These affect the extreme poverty and poverty groups, who lack irrigation systems to counteract the effects of drought, resulting in strong negative impacts on their main food sources, their sources of labour, and their own production. A month without rain after the coffee flowers means that there will be damage to production. Drought in the early stage of the plant affects the growth of the seeds and, therefore, quality and volume at selling time.

Some of the strategies used by the extreme poverty and poverty groups in this area to address these threats include family migration (of the father and older children, with the consequent breakdown of the family), application for credit and loans (strategies that are highly risky, since if debts go unpaid, they compromise land ownership for the next harvest), and searching for alternative employment. The middle and affluent groups are not so strongly affected because they have activities other than agriculture. Also, for those with irrigation systems, these threats do not have the same impact.

[51] MFEWF (2007) Central American Early Warning System for Food Security. Profiles and Livelihoods. Guatemala.

Relevant issues related to livelihoods in target area

Among the most important aspects to note about production landscapes and livelihoods in the target area are the following:

- About 37% of the people work for themselves or in a family business, while the remaining 63% are hired as labourers. This in an area in which nearly 70% of the population is rural and working as wage labourers. This implies that a high proportion of the population depends on the adaptation capacities of the minority who owns the land and the crops (coffee and sugar cane). To ensure an appropriate adaptation process, it will be extremely important to include among the project beneficiaries both small and large landowners, and focus on strengthening social resilience and expanding the bases of commitment and participation.[52]
- Climate change will mostly affect subsistence farmers who cultivate small plots and agricultural workers who depend on the stability of coffee and sugar cane. These make up the largest source of manpower in the area. If the coffee and sugar cane plantations are negatively affected by climate change, sources of employment can be undermined and extreme poverty and malnutrition can be further exacerbated.
- Both these production areas and the remnant natural ecosystems are highly vulnerable to changes in climatic conditions, so the vulnerability of populations will increase significantly in the years to come. This social vulnerability and food insecurity is generated and exacerbated by the absence of alternative livelihoods and appropriate marketing mechanisms. Climate change risks threaten the very survival of families. When families face acute water and food shortages, a desperate but common family survival strategy is to limit food intake by the most vulnerable members, who are the least likely to survive (the elderly, children, and the sick).

PROJECT OBJECTIVES

The proposed Project aims to increase climate resilience in production landscapes and socio-economic systems in the target municipalities threatened by the impacts of climate change and climatic variability, in particular hydrometeorological events that are increasing in frequency and intensity. The Project proposes to achieve this through a set of key outcomes that range from enhancement of institutional capabilities to support for building more resilient local economies, and increasing the adaptive capacity of communities.

PROJECT COMPONENTS AND FINANCING

The Project will have four components:

1. Development of capacities and tools that enhance national and local capabilities for climate change adaptation.
2. Recovery and development of climate change resilient practices that reduce the vulnerability of communities.
3. Improvement of food security and livelihood options in the target municipalities.
4. Informed decision-making and awareness-raising, supported by decentralized information systems.

[52] ODM National Report (2002 - 2008).

PROJECT COMPONENTS	EXPECTED CONCRETE OUTPUTS	EXPECTED OUTCOMES	AMOUNT (US$)
1. Development of capacities and tools that enhance national and local capabilities for climate change adaptation	1.1 Strengthened capacities and tools at local and national levels for development of downscaled climate change scenarios (95,000). 1.2 Increased capacity by local authorities and communities to mainstream climate change and variability issues into municipal and departmental development plans and other development planning instruments (140,000) 1.3 Development of new and innovative financial mechanisms that work to support adaptation processes and initiatives at national and local levels (65,000).	1. Local and national capacities and tools enable decision makers and communities to reduce vulnerabilities and strengthen adaptive responses.	300,000
2. Recovery and development of climate change resilient practices that reduce the vulnerability of communities	2.1 Undertaking of vulnerability analyses of production practices and land uses in target municipalities, to identify options for enhancing resilience (470,000). 2.2 Recovery and systematisation of ancestral and traditional practices and knowledge for production systems and hydrometeorological risk management (140,000). 2.3 Adoption/advancement of climate-change resilient production practices and investments in target municipalities (1,990,000).	2. Production landscape resilience increased through application of traditional and ancestral practices and other production activities, as well as targeted investments.	2,600,000
3. Improvement of food security and livelihood options in the target municipalities	3.1 Incorporation of climate change themes into marketing of community products in order to reduce socio-economic vulnerability (971,000). 3.2 Strengthening of community social networks in order to build more resilient social environments (156,000). 3.3 Development of micro-financing schemes, for the most vulnerable populations (indigenous and women) (318,000).	3. Socio-economic adaptive capacity of communities improved.	1,445,000

PROJECT COMPONENTS	EXPECTED CONCRETE OUTPUTS	EXPECTED OUTCOMES	AMOUNT (US$)
4. Informed decision-making and awareness-raising, supported by decentralized information systems	4.1 Establishment of an information system, based on existing sub-national and national centres of expertise, to support more robust science-based decision-making (76,000). 4.2 Development of an awareness and advocacy programme on climate change for a range of target audiences (41,000). 4.3 Systematisation and documentation of lessons learned and best practices derived from efforts to develop more resilient production systems, including ancestral and traditional practices (30,000). 4.4 Formulation of technical standards for development and implementation of climate change adaptation proposals (20,000). 4.5 Creation of manuals on new, traditional, and ancestral adaptation practices at the community level (13,000).	4. Effective knowledge management results in informed decision-making at all levels through an integrated information system.	180,000
5. Project Execution Cost			475,000
6. Total Project Cost			5,000,000
7. Project Cycle Management Fee Charged by the Implementing Entity (8.5%)			425,000
Amount of Financing Requested			5,425,000

PROJECTED CALENDAR

Indicate the dates of the following milestones for the proposed project

MILESTONES	EXPECTED DATES
Start of Project Implementation	July, 2011
Mid-term Review (if planned)	July, 2013
Project Closing	July, 2015
Terminal Evaluation	September, 2015

PART II: PROJECT JUSTIFICATION

A. *Describe the project components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience.*

The proposed Project aims to reduce vulnerability to climate change and climate variability through a comprehensive strategy which strengthens social and ecological resilience of production landscapes, arising from the specific needs of target area inhabitants and their livelihoods and marketing systems. It also aims to strengthen the processes and mechanisms of recovery, processing, and dissemination of information for decision-making at all levels.

Through Component 1, the Project will strengthen capacities for downscaling climate information in order to make it more useful to the specific climate change production planning process of the target area, improving capacities for recording and analyzing information at local and national levels, while strengthening communication mechanisms, bottom-up and top-down decision-making processes, and developing financing mechanisms for adaptation.

Components 2 and 3 of the Project will identify, bring to consensus, and implement local adaptation strategies in order to improve the social, production, and ecological resilience of the production landscapes in the target area—that is, production systems and practices and their coordination with other components of the target area's socio-ecological system.

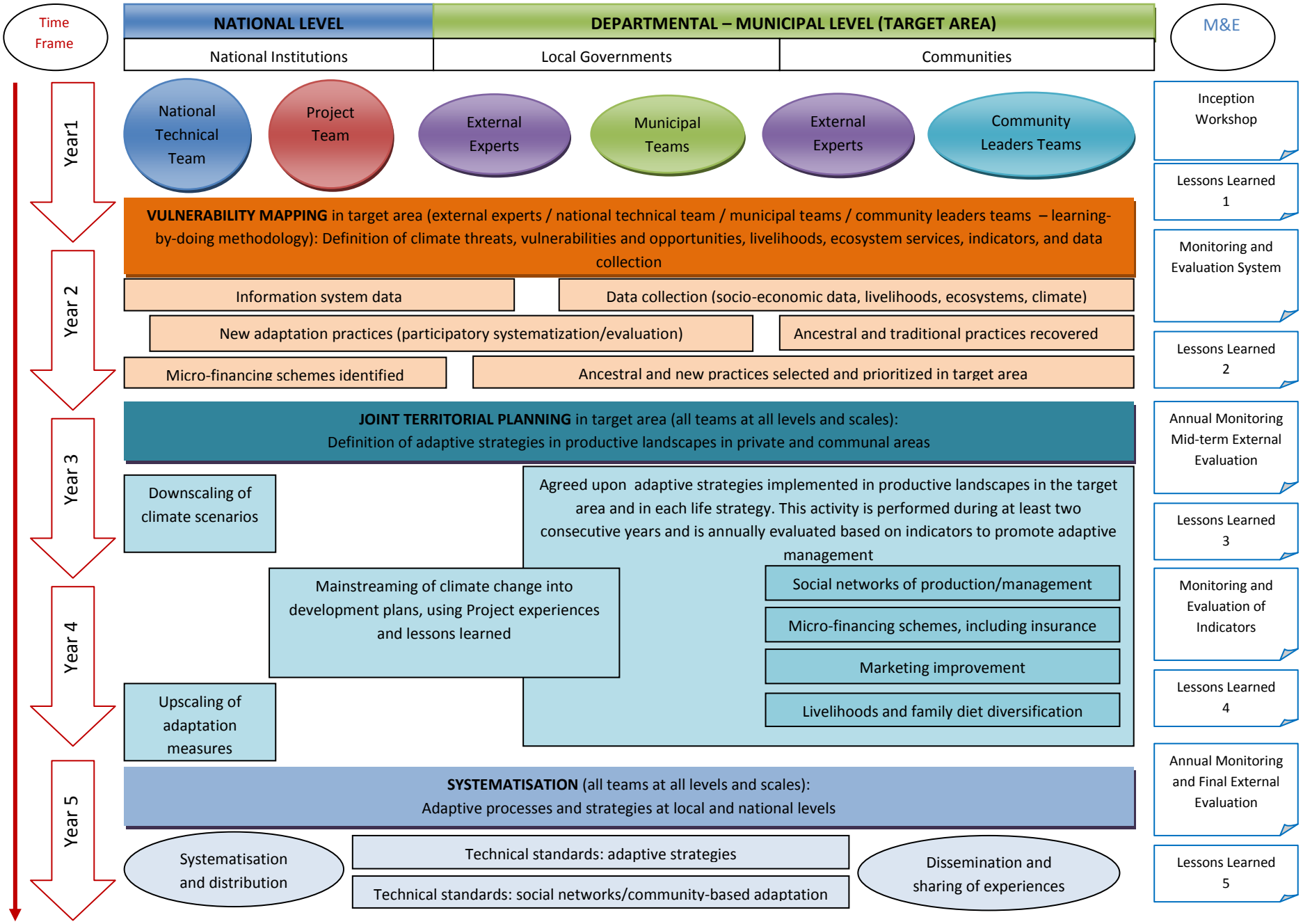
These strategies will be identified, prioritised, and agreed upon in a participatory manner among organizations, community leaders, and local governments, using a community-based adaptation approach. Also, strategies will be implemented by the families identified as direct beneficiaries, with technical support from the Project.

The process of defining and implementing adaptation strategies will provide core elements for the rest of the components of the project, including feedback on downscaling processes, capacity development and development planning, and integrating climate change adaptation considerations. It will also be the basis for defining financial mechanisms that support other adaptive processes in Guatemala (Component 1).

Component 4 is designed so that results and lessons learned from the implementation of adaptation strategies are fed back into the process of strengthening the adaptive capacity at local and national levels, and fed back as well into the creation of technical standards and manuals and the establishment of a national information system on climate change adaptation.

Project components and activities are described in the sections below. Figure 7 shows the critical route.

Figure 7: Critical route for project implementation



Component 1: Development of Capacities and Tools That Enhance National and Local Capabilities for Climate Change Adaptation

Today's Guatemalan society, led by its government, is initiating efforts to establish cross-cutting agendas in a comprehensive approach to climate resilient development. There are several policies and strategies that define relevant actions for an adaptation process. This is the case with the Policy of Conservation, Protection, and Improvement of Environmental and Natural Resources, the Forestry Law, and the National Food Safety and Nutrition Policy. However, none of these refers to climate change as a reason for action. That is, climate change issues do not have the level of importance they deserve in policies and public or private investment plans.

There are also a number of initiatives that explicitly involve climate change issues. These include the National Climate Change Policy (MARN), the National Policy on Integrated Rural Development (MAGA), the Marine and Coastal Policy (MARN), the Climate Change Agenda (CONAP), the Strategy for a Healthy and Productive Guatemala (SESAN), and the Transformation Plan for Reconstruction (Presidency of the Republic of Guatemala). MARN has developed the primary research on climate change[53] and has also developed the National Climate Change Policy. Furthermore, in 2009, the Presidency of the Republic of Guatemala created the Interagency Commission on Climate Change, established by various ministries. One objective of this is to "promote political strategies and actions to reduce climate change impacts in development planning at various levels." [54]

At municipal and departmental levels, climate change adaptation measures have not been integrated into development processes, nor are basic risk prevention measures even performed. Departmental and Municipal Development Plans are being formulated, but these do not integrate the theme of climate change adaptation.

To strengthen multi-sectoral processes and agendas on the climate change issue, the Project will create an enabling environment for climate change adaptation in Guatemala. Activities in this component are based on the four outputs described below. It should be noted that activities within this component will be underpinned by an information system that will be created based on existing centres of experience at the sub-national level. (See Component 4.)

Component 1 will encompass the following outputs and activities:

1.1 *Strengthened capacities and tools at local and national levels for development of downscaled climate change scenarios, including acquisition of equipment, software, and hardware*

Currently, national capacities to manage and analyze information on climate change hazards and slow-onset changes are limited and are based largely on extrapolations from regional models. Downscaled information and climatic scenarios, and improvements of the capacity to utilize these in formulating robust strategies, policies, and responses in the context of uncertainties associated with climate change, are largely non-existent. The project seeks to enhance national and local capacities for developing climate change scenarios (including impact scenarios, costing scenarios, etc.) as a tool for informed decision-making at all levels.

Activities under Output 1.1 will include:

- Design and implement local observation networks for climate change indicators. Local leaders and authorities participate jointly with national experts and project teams.
- Train teams for national model calibration. National teams will be trained to perform downscaling and calibration of national models from local data. There are already experts

[53] These include: The National Inventory of Greenhouse Gases (1990-2001 and 2000-2007), the First National Communication on Climate Change (2001), Studies of Current Vulnerability in Guatemala for the San José and Naranjo River Basins (2007), Identification of Climate Change Adaptation Measures and Strategies (2007), Future Climate Vulnerability of Water Resources (2007), and Future Climate Vulnerability of Basic Grain Production (2007).

[54] Executive Body - Government Accord N° 253- 2009.

trained in INSIVUMEH, who will assist in the training process.

- Develop national and local climate scenarios (downscaled) for various future conditions. There will be two main data sources for the development of local scenarios: 1) new data from new meteorological stations installed by INSIVUMEH, and 2) information gathered by local observation networks during local vulnerability mapping processes and local land use planning. A planning exercise with local authorities and communities will be carried out as part of Component 2. (See below.)

Aim

By the end of the second year of the Project, four National Institutions, in conjunction with the Sololá and Suchitepéquez Territorial Development Units (UTD), as well as at least four Planning Units of the target area municipalities, will be involved in the creation of local information networks and the implementation of downscaling exercises based on gathered climate information.

Implementing Partners and Stakeholders

The process will be led by the Ministry of Environment and Natural Resources (MARN). Other institutions that will participate actively are:

- UTDs of the Sololá and Suchitepéquez Departments
- Municipal Planning Unit in each target area municipality
- National Institute of Seismology, Volcanology, Meteorology, and Hydrology (INSIVUMEH)
- National Council of Protected Areas (CONAP)
- Ministry of Agriculture, Livestock, and Food (MAGA)
- National Forestry Institute (INAB)
- Secretariat for Food Safety (SESAN)
- Ministry for Planning and Programming of the Presidency (SEGEPLAN)
- National Coordination for Disaster Reduction (CONRED).

1.2 *Increased capacity by local authorities and communities to mainstream climate change and variability issues into municipal and departmental development plans and other development planning instruments*

The COCODEs, COMUDEs, and CODEDEs[55] are Development Councils at local, municipal, and departmental levels. Together, they form a Development Councils system, which is the primary official means of public participation in governance and development planning. They include stakeholders from private and public sectors, as well as representatives of all resource user groups, women, and youth. One of the functions of CODEDEs and COMUDEs is to promote and facilitate organization and effective public participation in the prioritisation of needs, problems, and solutions for development in the departments and municipalities respectively.

Through the Project local authorities and development councils members (COCODES, COMUDES and CODEDES) will be trained so that they can understand and apply vulnerability assessments and maps to their decision making and planning processes. Capacity building will include development of vulnerability maps as well as overall mainstreaming of climate change adaptation considerations, with particular emphasis on Municipal Development Plans and Departmental Development Plans (see below). The proposed project is quite timely given that the recently approved Municipal Code has given municipalities the mandate and obligation to develop these plans[56]. If these local actors are not able to visualize and appreciate the implications of long-term climate change, decisions on investments and resource use allocations could be taken that could increase vulnerabilities or actually result in maladaptation.

Activities under output 1.2 will include:

- Support municipalities and departments of the target area in the incorporation of local

[55] COCODE: Community Development Council, COMUNDE: Municipal Development Council, CODEDE: Departmental Development Council.
[56] Reforms to the Municipal Code. Decree n° 22-2010.

scenarios and climate projections into their planning and investment decisions by preparing the Municipal and Departmental Development Plans.

- A representative group of both local authorities (COCODEs, COMUDEs, and CODEDEs) and production organizations, will be trained for:
  - Development of spatial analyses and climate vulnerability assessments in production landscapes. The Project will apply a learning-by-doing approach (recursive learning) through the application of knowledge in the implementation of Component 2 activities, with the participation of local, national, and community leaders.
  - Training and exercises on mainstreaming climate change risks and opportunities.
- Conduct climate change mainstreaming,[57] with particular emphasis on Municipal Development Plans and Departmental Development Plans.[58] The technical team will ensure the timely delivery of tools and information to the process of mainstreaming. Climate change mainstreaming could follow UNDP's Quality Standards, which have the objective of reviewing plans in order to assess their vulnerability to climate risks and identify possible interventions and opportunities for climate change adaptation. The standards consist of four steps:[59]
  - Identification of climate change risks,
  - Identification of the likelihood that these risks will result in maladaptation,
  - Identification of adaptation opportunities and synergies in the development process,
  - Identification and assessment of potential adaptation measures and proposed planning changes.
- Conduct workshops with the target municipalities in order to share experiences of vulnerability mapping and mainstreaming of climate change risks into development plans. These workshops will be conducted with a multilingual approach and systematise the lessons learned.
- Promote exchange of successful experiences related to climate change adaptation and resilience of production landscapes in other parts of the country.

Aim

The project aims, by the third Project year, to have mainstreamed climate change risks and opportunities in at least four Municipal Development Plans and in Department Development Plans of the Suchitepéquez and Sololá.

Implementing Partners and Stakeholders

These processes will be implemented by a group of teams: the Programme Steering Committee, the Inter-institutional support committee, the Project team, an external climate expert with experience in scenario downscaling and vulnerability assessments, and community leaders. These processes will be led by Departmental Development Units and UDTs.

1.3 *Development of new and innovative financial mechanisms that work to support adaptation processes and initiatives at national and local levels*

The government of Guatemala recognizes that the identification of climate change adaptation measures and their prioritization in development planning processes at national, sub-national, and local levels is to no avail if adequate funding cannot be mobilized. The government is considering various ways of financing and this work is a priority. However, to date, funding mechanisms are insufficient to meet projected needs. Therefore, the Project will identify possible sources and financial mechanisms to support adaptation measures at the national level.

The Project will support MARN in conducting technical, legal, institutional, financial, and political viability studies for the implementation of a National Fund for Climate Change Adaptation. This adaptation funding mechanism should include the promotion of support programmes involving the private sector, small producers associations, cooperatives, and social protection programmes, in order to reduce the risks of climate change and avoid setbacks in human development. Activities in this

[57] Climate Change Mainstreaming: The Integration of Prioritised Measures into Projects, Programmes, and Strategies Aimed at Reducing Potential Climate Change Risks. UNDP (2009).
[58] Reforms to the Municipal Code. Decree n° 22-2010.
[59] UNDP. (2009). UNDP's Quality Standards for the Integration of Adaptation to Climate Change into Development Programming.

output include the promotion of alliances of public and private investments such as payment for environmental services schemes and the adoption of commodities and services certification schemes such as Rainforest Alliance, Utz, Organic, Fairtrade, Green Deal and others.

Activities under output 1.3 will include:

- Support the formulation and discussion of the National Climate Change Fund, currently a bill under discussion in Parliament. According to current proposal, the Fund would be replenished by:
    - Income from bonds or securities received from climate change mitigation and adaptation.
    - Payment of compensation for greenhouse gas emissions, a requirement of the Ministry of Environment and Natural Resources under the rules of the Climate Act.
    - Funds from negotiations of debt-for-adaptation and mitigation swap.
    - National or International Cooperation Funds to be allocated via this mechanism, for the same objectives stated in the Act for the National Climate Change Fund.
    - Contribution (TBD) of the Income and Expenditure Budget of the State, held annually, which may not be transferred.
- Create, strengthen or replicate innovative mechanisms, for providing financial capital or investment in best practices, so that adaptation measures are carried out in a sustainable and timely fashion. Examples of these mechanisms are:
    - Payment for ecosystem services (PES), which involves channeling funds to the National Fund for Climate Change Adaptation or through local mechanisms established for financing actions by others to maintain, strengthen, or generate ecosystem services in their localities or regions (e.g. reforestation, protection of natural areas, groundwater maintenance, runoff control, erosion prevention). The existence of PES schemes between sugarcane producers and a civil society association of the micro watershed of Ixtacapa, Nahualá, provides a positive scenario which could be replicated with other existing initiatives in the area.
    - Bio-rights payments[60], in which climate change actions on the part of communities or groups of individuals are recognized by various actors who contribute to their sustainability through the provision of financial resources or their equivalent. Bio-rights that will be promoted through the Project will be related to the recovery of natural ecosystems and their ecosystem functions for key ecosystems in the target area. The National Council for Protected Areas is currently studying possible mechanisms for implementation of the Nagoya Accord.
    - Analyze if existing certification schemes such as Rainforest Alliance, etc. contribute to reduction of vulnerability (through the adoption of best practices) and develop a strategy to promote or reduce barriers for the adoption of small producers to these certification schemes.

Aim

Upon completion of the Project, the National Fund for Climate Change Adaptation is designed at least one public-private partnership to finance adaptation processes has been established, and existing certification schemes that contribute to reduction of vulnerability have been validated.

Implementing Partners and Stakeholders

The process will be led by the Ministry of Environment and Natural Resources (MARN). Other institutions will participate actively:

- Local governments
- Private companies

[60] Bio-rights is an innovative financing mechanism for reconciling poverty alleviation and environmental conservation. By providing micro-credits for sustainable development, the approach enables local communities to refrain from unsustainable practices and be actively involved in environmental conservation and restoration. Micro-credits are converted into definitive payments upon successful delivery of conservation services at the end of a contracting period (Wetlands International, 2010). Also, the concept of Bio-rights meets capital investment to cover the local costs of introducing and maintaining the sustainable use of natural resources. In this sense, investments are focused on long term benefits from natural resources, providing an improvement to the income of local people.

- NGOs
- Small and medium producers
- Communities
- Other partners identified in the implementation process.

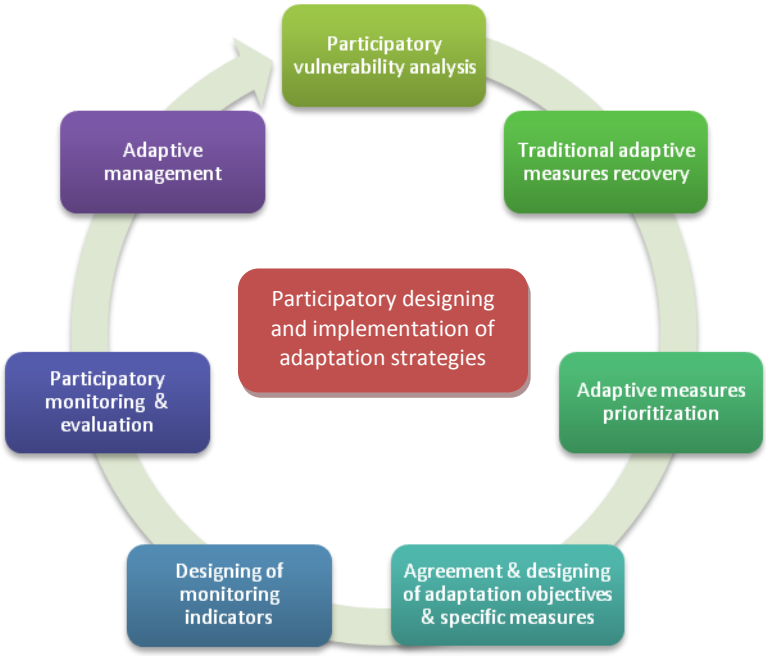
Component 2: Recovery and Development of Climate Change Resilient Practices That Reduce the Vulnerability of Communities

Activities under this component are the most important in the Project, since they will pilot adaptation strategies in selected municipalities and they will influence land management decision-making. These activities, described below, will receive 47% of Project funds.

Adaptation is a continuous process. It should be implemented using a learning-by-doing approach, and therefore, it will require adjustments and adaptive management. This process should cover the cycle of adaptation from the generation of scenarios through the implementation of measures and the evaluation of their effectiveness.

Communities and local governments will define and implement participatory adaptation strategies in the target area. (See Figure 8.) They will identify key entry points for reducing vulnerability and increasing resilience (e.g. increased water-holding capacity in soils, increased crop yields, reduced erosion, increased food security). From this, and relying on a set of adaptation measures (traditional, ancestral, and new), communities will define an adaptation strategy and its monitoring indicators.

Figure 8. Adaptive strategies implementation process



As mentioned earlier, the process of implementing adaptation measures will be defined by communities, ensuring a community-based adaptation approach. Community-based adaptation to climate change is a community-led process, based on communities' priorities, needs, knowledge, and capacities, which must empower people to plan for and cope with the impacts of climate change.

Community-based adaptation needs to incorporate information on climate change and its impacts into planning processes. This includes scientific information as well as local knowledge about trends and changes experienced by communities locally and the strategies these communities have used in the

past to cope with similar extreme events or gradual climatic changes.[61] This is why this component includes the identification and characterization of livelihoods present and past in the target municipalities, the systematisation of ancestral practices, the evaluation of changes in climate suitability for livelihoods, the identification of adaptation measures and climatic projections, and the implementation of development plans based on these participatory analyses, including infrastructure for soil and water conservation, such as terraces, berms and barriers. It also involves an on-going process of systematisation of lessons learned (with an adaptive management approach).

Component 2 will encompass the following outputs and activities:

2.1 *Undertaking of vulnerability analyses of agro-ecosystem, production practices and other land uses in target municipalities, to identify options for enhancing resilience*

Among the foreseen impacts of climate change and climate variability in the target municipalities are an increase in the frequency and severity of hydrometeorological events that result in flooding and landslides during the rainy season and severe droughts during the dry season. The landscape in the target area consists of 86% non-adapted crops (including annual crops, coffee, livestock, sugar, and vegetables and other crops), and 14% forest (broadleaf, coniferous, and mixed),[62] constituting an ecosystem that is very vulnerable to the hazards described above. (See Appendix 1: Maps.) This vulnerability is compounded by the high dependence of local communities on agricultural production. In Guatemala, the livelihoods of six out of ten people depend directly on agriculture, which will be one of the sectors most impacted by climate change.

The Project will promote processes of joint regional planning, based on analyses of current and future vulnerability of production landscapes in the target area.

Activities under output 2.1 will include:

- Analyse climate change trends including the likelihood of extreme events, using information from the local observation networks implemented in Component 1.
- Analyse land use intensity and its relation to micro watershed's geology and hydrogeology for risk assessment.
- Map sites with a high risk of flooding, landslides, and drought.
- Analyse the exposure of agro-ecosystems and other production systems, ecosystems, human settlements, and infrastructure to extreme hydrometeorological events.
- Analyse ecosystem services that natural forest remnants provide to local communities and climate change impacts projected for them in the target area.
- Analyse the requirements of current livelihoods, future climate suitability for them, and alternative livelihoods that would be feasible in future climate scenarios.
- Analyse land ownership and rights to access and use of common goods and ecosystem services.
- Define resilience objectives and adaptation goals in a participatory manner. From vulnerability analysis, communities will be able to identify specific areas, livelihoods, agro-ecosystems, and natural ecosystems in which they must build resilience (including decreased flooding, increased water retention capacities in soils, and increased yields).
- Develop a system of multi-scale indicators for monitoring and evaluation in terms of reducing vulnerability and for evaluating climate change adaptation processes.

Aim

By the end of the third year of the Project, two joint regional planning processes will have been developed in the Sololá and Suchitepéquez departments, and objectives of resilience and adaptation goals will have been defined, based on the vulnerability analyses conducted during the first year of Project.

[61] IIED (2009) Community-based adaptation to climate change. Participatory Learning and Action 60.

[62] Vegetative cover and land use map (MAGA, 2006).

Implementing Partners and Stakeholders

The process will be undertaken in a participatory manner with community members, municipal and departmental authorities, local NGO's specialized in risk management, national technicians, and the Project team. This activity will be supported by national and local authorities trained under Component 1 and will be carried out with the participation of indigenous communities and peasants. These communities will be able to incorporate their traditional and ancestral knowledge about hazards and risks into frameworks that take into account likely future events. Bodies that will be actively involved are:

- Local municipal and departmental governments in the target area
- The Development Councils System and local coordination units:
  - COCODEs
  - COMUDEs
  - CODEDEs
  - UDTs
  - Suchitepéquez Departmental Environmental Commission (CODEMA)
  - Sololá Natural Resources Committee (These commissions are comprised not only of the delegates of municipalities and departments, but also of government agencies.)
  - Regional delegations of CONAP, INAB, MARN, MAGA, CONRED
- Organized civil society:
  - Cooperatives (including the Renaissance Cooperative)
  - Associations of producers and communities (including Ixtacapa Friends Association, United Association for Better Living, IJATZ Association, Atitlán Union Association of Agricultural Producers, Integral New Sower Mayan Association)
  - Women's Associations (including Santa Barbara Women's Association)
  - NGOs (including Vivamos Mejor Association)
  - Nahualá Rangers Organization
- Other partners identified in the implementation process.

2.2 *Recovery and systematisation of ancestral and traditional practices and knowledge for production systems and hydrometeorological risk management*

The recovery of indigenous knowledge to implement adaptation technologies is seen as a way to increase the chance of success so that the indigenous peoples of Guatemala adapt better to climate change risks and hazards.[63] In fact, there already exist activities of recovery of traditional and ancestral practices in Guatemala. For example, CONAP has recovered collective traditional knowledge on biodiversity,[64] which includes a variety of cultural practices relevant to climate change adaptation. These are examples of traditional practices that may be recovered during Project implementation, expanding the list to specific sites and climate risks.

A high percentage of the indigenous population (73%; approximately 126,862 people) live in these areas. The proposed Project recognizes that the recovery of ancestral and traditional knowledge is important to inform adaptive strategies and to ensure knowledge continuity for future generations. Currently, this knowledge is being lost. Finally, the recovery of traditional and ancestral knowledge and traditional production practices in an area where most of the population is indigenous strengthens the process of empowering communities to manage production landscapes and is the first entry point in the participatory definition of adaptation measures to be implemented in each target municipality. This emphasizes the view that no adaptation measures will be imposed by the Project, but rather agreed upon and defined by the community, using a community-based adaptation approach.

Project activity will focus on the recovery and systematisation of this ancestral and traditional knowledge, in order to increase the resilience of production systems in the target municipalities in anticipation of expected climate change. The Project will also recover and systematise ancestral knowledge related to flooding and drought management.

[63] Berger, M. and I. Azurdia (2008) Adaptive Resilience and Technological Syncretism (Adaptation to Climate Change). Guatemala: Final Report. Sustainability Watch.

[64] CONAP (2009) Guatemala and its Biodiversity: Traditional Knowledge and Biodiversity (Chapter 3).

Activities under output 2.2 will include:

- Gather baseline information on traditional and ancestral practices.
- Recover ancestral knowledge about water harvesting, drainage, water management, the use of seed varieties resistant to drought or flooding, climate proof cultivation methods, farming methods that diversify livelihoods, soil conservation and other factors.
- Characterize traditional and ancestral practices (both those that lead to adaptation and those that can lead to maladaptation).
- Assess the contribution of these practices to climate change adaptation.
- Prioritise those traditional and ancestral practices to be implemented in conjunction with new practices for climate change adaptation.

Some traditional and ancestral practices that can be used when defining adaptation strategies are shown in Table 7. These are the starting point, but they must be extended, modified, and agreed upon in each particular case in the target area.

Table 7. List of potential adaptation measures and their links to traditional practices potentially applicable to production systems in Guatemala[65]

Adaptation Measures	Best Practices/Low Input	Traditional Practice Recovered		Linguistic Communities
Conservation Agriculture, Soil Conservation, and Improved Water Management (maintain and enhance soil carbon, improve water and soil management)	Conservation tillage. Zero tillage. Minimum soil disturbance. Direct seeding or planting. Live or residue mulching.	Land selection and preparation	When clearing plots, felling of broadleaf trees of greater height and diameter and of ample foliage is avoided; tree age is respected.	achi', kaqchikel, mam, and poqomchi'
			Cluster stones in plots in rocky areas as a means of soil management and pest control.	
		Fertilization, pest and disease control	Use previous crop residues, household waste: ash, leaves, and manure.	All
Conservation and Use of Plant Genetic Resources for Food and Agriculture	Improvement of stress tolerance through selection and participatory plant breeding by farmers. Use of stress-tolerant and fast-maturing crop species and varieties.	Seed selection	Each culture has its own criteria for seed selection and storage of grain for each crop type.	
		Sowing / Planting	Traditional techniques involve planting distance, species composition, seed planting depth, and temporality. The planting distance should allow the development of other species which have different ecological functions.	All
			Indigenous peoples planted 7 seeds, one for the hungry, one for the thief, one for birds, one for other animals, and three for the owner of land.	kaqchikel
Diversification of Agricultural Landscapes and Production Systems	Alley cropping Polycultures, trees in milpas Nitrogen-fixing trees in pastures	Crops in association and traditional agro- forestry systems	Maize-beans-squash combined with shrubs, trees, and fruits, including plums, mangos, nances, guavas, and others.	achi'
			Maize-beans-squash combined with tree species and fruit trees, mainly pines and avocados.	kaqchikel and mam
			Beans-squash corn combined with fruit tree species such as pines, broadleaf trees, avocados, and shade trees.	poqomchi'
Improved Storage and Processing of	Efficient harvesting. Prompt processing of	Storage	Cobs are stored on raised beds separated from the soil to repel mould and rodents.	All

[65] Data Source: CONAP (2009) Platform for Agro-biodiversity Research - Climate Change Project (2010); FAO (2010)

Adaptation Measures	Best Practices/Low Input	Traditional Practice Recovered		Linguistic Communities
Agricultural Products	agricultural produce. Using co-products and by-products. Improved storage.		Branches of *Croton ciliatoglanduliferus* are used to repel insects.	

Aim

By the end of its first year, the Project will have recovered, systematised, evaluated, and prioritised at least two traditional or ancestral practices for each ethnic group in the target area, with the aim of increasing the resilience of production landscapes.

Implementing Partners and Stakeholders

The recovery of ancestral and traditional practices will be led by a technical team and will have the support of local community leaders. The process will be conducted in coordination with:

- Local governments
- Indigenous and peasant associations in the target area
- Director General of Training, Organization, and Social Participation DG (DIFOPAS – MARN)
- Ministry of Culture and Sports
- Defence of Indigenous Women (DEMI)
- Other partners identified in the implementation process.

2.3 *Adoption/advancement of climate-change resilient production practices and investments in target municipalities*

Agriculture that is more productive and more climate resilient requires changes in natural resources management (e.g. land, water, soil nutrients, and genetic resources) as well as greater efficiency in the use of these resources and inputs for production. The transition to these resilient production systems could also generate significant benefits in terms of mitigation, increasing carbon sinks and reducing emissions per unit of agricultural product.[66]

In this output, the Project will agree upon and implement adaptive strategies for resilience objectives identified through vulnerability mapping, during at least two consecutive years. These strategies should include options that combine mitigation and adaptation, and adaptation based on ecosystems.

Activities under output 2.3 will include:

- Implement adaptation strategies defined and agreed upon in a participatory manner, taking into account the following measures:
  - **Adaptation measures to improve ecosystem resilience:** Better ecosystem management can optimize resilience to climate change, protect carbon storage, and contribute to adaptation strategies. Ecosystems contribute to adaptive strategies in two ways: 1) maintaining and improving the provision of ecosystem services to local communities, and 2) acting as soft infrastructure against extreme events. Specifically, the project will promote ecosystem approaches to adaptation which include:
    - *Enhancing landscape connectivity* through the implementation of agro-forestry and silvo-pastoral and hillside reforestation activities in the target area. The project will also pilot forest restoration activities, taking into account species and management systems that are more suited to high risk areas, in order to increase landscape resilience as a whole under emerging long-term climate conditions. This includes lands designated for reforestation, conservation of existing ecosystems (and their ecosystem services), and promotion of small forest enterprises.
    - *Protecting and enhancing ecosystem services* such as water flows and water quality through restoration of forest patches near communities. These restored forest patches

[66] FAO (2010) "Climatically Intelligent" Agriculture: Policies, Practices, and Financing for Food Security, Adaptation, and Mitigation.

can also provide habitats for wild relatives of crops and other agro-biodiversity to increase genetic diversity and resilience aimed at crop improvement.

- *Rehabilitating rangeland* and improving pasture management.

- **Adaptation measures to improve the resilience of production systems:** Work will be undertaken with communities to analyse agricultural practices in order to reduce vulnerability. (See Table 7.) Practices analysed will include:
  - *Conservation agriculture*: The Project will implement measures in agriculture to 1) minimize mechanical soil disturbance, 2) maintain carbon-rich organic matter to cover and nourish the soil and 3) implement crop rotations and associations, including trees and legumes. Conservation agriculture can reduce crop vulnerability by keeping the soil cool, reducing moisture loss, and facilitating deep rooting and rainwater infiltration. Plant residues that cover the soil surface protect the soil from sealing and crusting from raindrop impacts, thereby enhancing rainwater infiltration and reducing runoff. The effect of increased water infiltration combined with a higher content of organic matter is increased soil storage of water.
  - *Diversification and agro-forestry:* The Project will promote the incorporation of trees and shrubs in agricultural systems. Agro-forestry systems diversify production while reducing risks associated with climate variability and climate change. It has also been shown that trees and shrubs reduce the impacts of extreme hydrometeorological events, prevent erosion, stabilize soils, increase infiltration rates, and reduce land degradation. It is also internationally recognized that agro-forestry systems contribute not only to buffering farmers against climate variability and climate change, but also reduce atmospheric loads of greenhouse gases because of their high potential for seizing carbon. This will be particularly important in the case of coffee plantations, in which the Project will promote the inclusion or expansion of shade-tree cover.
  - *Conservation and use of genetic resources for food and agriculture:* In addition to adopting a strategy of inter-species diversity, many resource-poor farmers also exploit intra-species diversity by growing different cultivars of the same crop simultaneously in the same field. With respect to this, the Project will implement measures to restore and preserve genetic resources, cultures, breeds, and wild relatives, in order to improve resilience to climate change, better use resources, shorten production cycles, and generate higher returns. Genetic diversity also provides security to farmers against diseases, especially pathogens, that may be enhanced by climate change.
  - *Water harvesting and efficient water use*: The Project will implement measures to better harvest and retain water (e.g. ponds, retaining walls, water-retention chains, and the use of clay jars for watering crops), as well as measures to increase water-use efficiency (e.g. crop irrigation systems).
  - *Soil and nutrient management measures*: Practices will be implemented to increase inputs, retention, and use of nutrients that reduce dependence on synthetic fertilizers. These include the composting of manure and crop residues and crop diversification by the introduction of nitrogen-fixing forbs and trees. (See Table 7.)

Aim

By its third year, the Project will have implemented, in a participatory manner in the target area, adaptive strategies based on the resilience objectives. These strategies will include ecosystem-based adaptation in each of the departments.

Implementing Partners and Stakeholders

The process will be developed in a participatory manner with members of communities, municipal and departmental authorities, national technical teams, and the Project team. This activity will be supported by national and local authorities trained as part of Component 1, and it will be carried out with the participation of indigenous and peasant communities in order to enable them to incorporate their traditional and ancestral knowledge about risks and adaptation to climate change. Bodies that will be actively involved are:

- Municipal and departmental governments in the target area
- The Development Councils System and its local coordination units:

- COCODEs
- CODEDEs
- CODEDEs
- UDTs
- Suchitepéquez Departmental Environmental Commission (CODEMA)
- Sololá Natural Resources Committee (These commissions are comprised not only of the delegates of municipalities and departments, but also of government agencies.)
- Regional delegations of CONAP, INAB, MARN, MAGA, CONRED (local)

- Organized civil society:
  - Cooperatives (including the Renaissance Cooperative)
  - The Veracruz community of the San Juan Bautista municipality
  - Associations of producers and communities (including Ixtacapa Friends Association, United Association for Better Living, IJATZ Association, Atitlán Union Association of Agricultural Producers, Integral New Sower Mayan Association)
  - Women's Associations (including Santa Barbara Women's Association)
  - NGOs (including Vivamos Mejor Association)
  - Nahualá Rangers Organization
- Other partners identified in the implementation process.

Once tested and validated in terms of reducing vulnerability to current and projected climate change trends and events, these practices will be incorporated into the activities of the Municipal Development Plans and Departmental Development Plans. This output will thereby serve to demonstrate, in a practical, hands-on manner, requirements and processes for effectively mainstreaming climate change into development processes, as described in Component 1. It is important to note that this process will promote the widest participation possible, including small and large producers and landowners. This is because the largest source of employment, and hence income, for poor families in the target area is seasonal agricultural employment. If this is affected by the impacts of climate change and climate variability, so is family income. By including landowners and large producers, the Project expects to have an impact on larger territories and local economies, thus improving the supply of farm labour.

Component 3: Improvement of Food Security and Livelihood Options in the Target Municipalities

Production landscapes affected by climate change hazards will increase their resilience from the activities implemented in Component 2. This will be complemented by increasing the adaptive capacity of local communities to support vital economic and social processes, strengthening resilience through investments in community organization, micro finances (community-based loan systems, organizational capital build-up) and index insurance systems where feasible.

Component 3 will encompass the following outputs and activities:

3.1 ***Incorporation of climate change themes into marketing of community products in order to reduce socio-economic vulnerability***

The vulnerability of communities includes the factor not only of exposure to climatic events and trends, but also that of limited livelihood options and limited markets for specific crops that are likely to be successful under long-term climate change conditions. Therefore, the Project will support local economic diversification as part of a process of establishing more resilient local economies.

The Project will diversify local economies, especially those most dependent on climate-sensitive natural resources. The Project will also improve marketing processes and undertake activities to reduce short-term and longer-term vulnerability. Food and Nutritional Security through the Strategic Plan for Food and Nutritional Security -2009-2012 (SESAN) have clearly identified that capacities for marketing need to be strengthened alongside those that aim to strengthen productive processes. Small and poor producers have no capacity to manage their crop surpluses – in infrequent event but one that if well managed could substantially enhance coping ranges – and when partial or total crop losses occur, face losing their entire savings perpetuating a cycle of grinding poverty. Efforts to increase their

capacity to process their produce and to shorten the value chain by eliminating or reducing intermediaries, will therefore prove critical components of effectively reducing the exposure of communities to the variability of climatic conditions and events.With respect to this, the Project will focus on strengthening local marketing capacities by improving conservation, storage, transport and handling of merchandise, marketing, and sales. Women, who are largely responsible for marketing and processing their produce, will play a critical role in this. The project will therefore have a strong emphasis on gender, working with the Indigenous Women Advocacy Council (DEMI).

Activities under output 3.1 will include:

- Conceptualise, design, and plan the subsequent construction of central storage facilities (agricultural services warehouses) located in places accessible to different groups of farmers in outlying areas, with easier access to routes and major roads. These will initially be small storage installations that integrate some necessary facilities for better management and marketing of local products. These core facilities will seek to provide additional solutions to difficulties in the areas of storage, initial management, marketing, and shipping of agricultural products. The conceptualization of agricultural warehouses and their services is the responsibility of the Project. However, the search for funding for construction will be the initial responsibility of municipalities, and the feasibility of their development and administration will eventually be determined through mechanisms of public/private partnership, such as concessions or similar mechanisms.
- Design mechanisms to access different markets for the sale of products from resilient production landscapes, strengthening the sustainability of activities in Component 2.

Aim

By the end of the third year, the Project will have designed at least one agricultural service warehouse in the target area, formed two new associations or cooperatives -or strengthen existing ones- and designed a mechanism of market access for products from various climate-change-resilient production landscapes.

Implementing Partners and Stakeholders

The process will be led by teams from the Project, MARN, and UNDP. Bodies that will be actively involved are:

- Local municipal and departmental governments in the target area
- Departmental Development Units and UDTs
- Regional delegations of CONAP, INAB, MARN, MAGA, CONRED
- Organized civil society:
  - Cooperatives (including the Renaissance Cooperative)
  - Associations of producers and communities (including Ixtacapa Friends Association, United Association for Better Living, IJATZ Association, Atitlán Union Association of Agricultural Producers, Integral New Sower Mayan Association)
  - Women's Associations
- Other partners identified in the implementation process.

3.2 *Strengthening of community social networks in order to build more resilient social environments*

Within the context of climate change, social resilience is the ability of groups or communities to adapt in the face of external social, political, or environmental stresses and disturbances. To be resilient, societies must generally demonstrate the ability to: 1) buffer disturbance, 2) self-organize, and 3) learn and adapt. The expansion of networks of engagement appears to be critical to the enhancement of social resilience in communities affected by climate change.[67] Building successful community-based adaptation that favours co-management arrangements, for example, can potentially enhance the resilience of communities as well as maintain ecosystem services and ecosystem resilience. For this reason, in the social sphere, the project will enhance social networks, focusing on the development of

[67] Tompkins and Adger (2004) Does Adaptive Management of Natural Resources Enhance Resilience to Climate Change? Ecology and Society.

resilient social environments that improve the adaptive capacity of local communities.

It has been shown that, at the community level, reducing the barriers to communication through information sharing is an important element in consolidating networks of engagement, thereby enhancing social resilience. At the institutional level, integrated institutional structures may be better able to support the inclusion of climate change stakeholders in decision-making processes and to ensure that their needs can be addressed by as widely as possible. Providing spaces for deliberation within adaptive and co-management decision-making processes can facilitate this, as can opening up channels of communication and ensuring that important stakeholders are engaged. In this context, the Project will improve associative processes between producers in the poorest and most vulnerable populations.

Activities under output 3.2 will include:

- Map current and relevant organizational processes in the target area, including linguistic mapping. Current capabilities and structures will be diagnosed and the project will propose ways to strengthen social networks. This includes means that involve the active participation of vulnerable groups. It is known that a closely knit and well-organized community has better options and capacities for successfully coping with climate variability and change than does a fragmented community.
- Recover and re-evaluate ancestral forms of organization. The Project will take into particular account traditional organizational forms where they exist and respect existing community rules. For example, some community norms for biodiversity conservation have existed, leading to practices and forms of social organization of indigenous peoples, with explicit targets in the area of biodiversity conservation. Some community agreements and standards contribute to the regeneration of species diversity, their utilization and protection, the preservation of communal forests, and revenue raising for investment in these forests. These agreements are backed by the social community, contribute to conservation, and can be the basis of social construction to increase ecosystem resilience.[68] Table 8 shows some examples of standards and community agreements that have been registered in Guatemala.
- Establish and strengthen associations, cooperatives, and groups of individuals for starting or strengthening economic initiatives (agricultural production, marketing, services, restaurants, food processing, craft production, tourism, etc.) The coordinated management of several individuals within a joint production project helps reduce transport and marketing costs and increases access to supplies, funding, and services for production or marketing, among other things. To determine the highest priority groups, the Project will evaluate existing conditions in each locality or region, the business concept to develop, the strength of the applicant group in terms of harmony among its members, and the type of participation.
- Strengthen organizational capacities for land management (conflict management, fund management, M&E), through learning by doing. The Project will take into particular account women's groups organized around production options, civil rights, and culture.
- Support mechanisms for social organizations, providing guidance, legal advice, and training for the creation of different types of organizations (committees of neighbours, co-operatives, and NGOs).
- Investigate and provide soft financial resources for these groups from financial institutions operating in the region and interested in participating in the initiative, through micro-financing mechanisms developed as part of the Project (Output 3.3).

[68] CONAP (2009) Guatemala and Its Biodiversity: Chapter 3 - Traditional Knowledge and Biodiversity.

Table 8. Community practices, social agreements, and arrangements for conservation and recovery of ecosystems[69]

Type of Community Practice	Objective
Establishment of nurseries	Grow plants for reforestation
Reforestation of communal areas	Reinstate consumption, recover areas, increase density
Pruning and cropping	Shape trees
Cleaning	Protect natural regeneration
Sanitation	Eliminate pests or diseased trees
Gaps and firebreaks	Prevent or control forest fires
Authorization of extraction	Regulate and control logging
Protection of seed trees	Ensure the production of forest seed
Water Source Protection	Ensure the provision of drinking water
Use of specific species	Protect rare species or those with cultural value
Surveillance	Maintain an annual harvest quota
Temporary closures	Allow forest recovery
Sanctions	Avoid excesses

Aim

By the end of the third year, at least two social networks of production and/or marketing will have been formed and strengthened, applying knowledge acquired in the Project.

Implementing Partners and Stakeholders

The actions implemented in this activity will be coordinated using the "Platform Curriculum for Teacher Training in Environmental Education with an Emphasis on Climate Change," implemented nationally by the Department of Education, Organization, and Social Participation of the Ministry of Environment and Natural Resources. Other participants will be:

- Associations of producers and communities (including Ixtacapa Friends Association, United Association for Better Living, IJATZ Association, Atitlán Union Association of Agricultural Producers, Integral New Sower Mayan Association)
- Women's Associations. As noted above, gender issues play a key role in these processes, as women are often the linchpins of both social structures and production processes in many rural communities. Therefore, women will be taken into particular account. Women, who are largely responsible for marketing and processing their produce, will play a critical role.
- Other partners identified in the implementation process.

3.3 *Development of micro-financing schemes, for the most vulnerable populations (indigenous and women)*

Prioritising the most vulnerable populations, the Project proposes to improve access to micro-financing, primarily through micro-financing mechanisms, and secondly through the provision of collateral guarantees. Both mechanisms lend special importance to the provision of resources to marginalized groups, such as populations of indigenous peopls and women.

Activities under output 3.3 will include:

- Develop micro-financing mechanisms formed by local individuals oriented to the provision of micro-loans, the manner and operation of which will be established and regulated by the Project. This particular initiative aims to form micro-groups of five or more individuals who receive specialized training and should be able to raise seed capital for the start-up activity of locally operated micro-lending. Growth of capital may be increased through new contributions from its partners, the integration of new partners, or through funding requests to a financial institution or some other form of cooperation beyond the scope of this Project. Small projects, but of great local or community importance, aimed at building greater social resilience may be

[69] Data Source: CONAP (2009) Guatemala and Its Biodiversity: Traditional Knowledge and Biodiversity.

funded by this mechanism. This way, the purchase of construction materials for small water reservoirs for irrigation or human consumption, the enabling of infrastructure for the development of natural fertilizer and compost and operated by a group of farmers or neighbours, the purchase of equipment, materials, supplies, or other similar small-scale projects could be funded expeditiously by these micro-savings and credit unions.

- Develop a collateral guarantee of an amount ranging from 30% to 70% of loan applications, in order to reduce the need for collateral to access funds requested by associations, cooperatives, or other groups (formed under output 3.2). Funding for the collateral guarantee will be allocated by the National Fund for Climate Change Adaptation. Via this mechanism, the Project will support:
  - Specific actions to adapt to climate change to be made locally in the communities defined in the joint land use planning processes (Component 2).
  - Initiatives of marginalized groups e,g, women, and indigenous groups with limited access to resources.
  - Diversification initiatives for the introduction of new crops in the area.
  - Social entrepreneurship, specifically referring to initiatives with private entrepreneurs, but focused on helping solve specific social problems related to climate change adaptation.
- Analyse options for expanding the INAB Incentive Programme for small holders of land suitable for forestry and agro-forestry (PINPEP) in the target municipalities, as a way to finance adaptation activities related to ecosystem functions recovery. PINPEP proposes to increase coverage for owners of small plots supporting reforestation and natural forest management.[70] This mechanism may complement project activities, since it focuses on both social organization and the recovery of forest and agro-ecosystems, which will improve both ecological and social resilience.

Marketing efforts will be linked to existing certification schemes. With this certification schemes and corresponding advertising, it is expected that micro and small enterprises in the region will differentiate themselves and improve their position vis-à-vis Guatemalan consumers and companies involved in the marketing.

Aim
By the end of the third year, the Project will have developed at least two functioning local micro-finance entities for locally operated micro-lending.

Implementing Partners and Stakeholders
The process will be led by teams from the Project, MARN, and UNDP and will be implemented by groups of local entrepreneurs.

Component 4: Informed Decision-making and Awareness-raising, Supported by Decentralized Information Systems

Component 4 will encompass the following outputs and activities:

4.1 *Establishment of an information system based on existing sub-national and national centres of expertise, to support more robust science-based decision-making*

The main activity of this output is to establish a decentralized information system that builds upon existing centres of experience at national and sub-national levels and linked to the Planning and Programming Secretariat of the Presidency (SEGEPLAN), to serve as a basis for knowledge management and decision-making on climate change in the country. Improving the use of scientific data on climate in agricultural planning can reduce the uncertainties caused by climate change and improve early warning systems for drought, floods, pests, and disease, thus increasing the capacity of farmers and agricultural planners to allocate specific resources to effectively reduce risk. For this

[70] The components of the Project are: 1) natural forest management for protection or production, 2) establishment and maintenance of plantations or agro-forestry systems. These are organised in parcels of up to 15 hectares for individual projects and larger than 15 hectares for organized groups of small producers.

purpose, the information system will collect and analyze relevant information for downscaled vulnerability assessments, the development of climate change scenarios, and other requirements of the decision and planning processes at all levels in Guatemala. The capacity to generate and analyze information will be provided through Component 1. This output will ensure that the information is readily available to stakeholders at all levels, thus effectively mainstreaming climate change issues in development processes in the country. The information on livelihoods and vulnerability is derived from the results of Components 2 and 3, in which analyses of these dynamics are conducted. The system will also provide data for assessing and incorporating the potential costs of adaptation to climate change into municipal, departmental, and national budgets.

Activities under output 4.1 will include:

- Recover information from information systems already established for the target area.
- Conduct a gap analysis based on the monitoring and evaluation indicators defined in the Project.
- Define responsibilities of each institution involved in monitoring and evaluation and ways of standardizing information.
- Establish inter-agency agreements that include municipalities, for information collection and analysis on the indicators defined (including climate data, production practices, livelihoods, and ecosystem services). These agreements will include protocols for sharing, compiling, and analysing information on the various issues addressed in the process, from the construction of scenarios to the evaluation of vulnerability of livelihoods, establishing a nested set of indicators for assessing the impact of adaptation and the evolution of climate change and climate variability on the Pacific Coast of Guatemala.
- Design user-friendly information formats for use by local actors.

Aim

This information system will be developed during the first Project year, through arrangements and mechanisms for cooperation and coordination between centres with experience in data analysis.

Implementing Partners and Stakeholders

- Planning and Programming Secretariat of the Presidency (SEGEPLAN)
- Ministry of Environment and Natural Resources (MARN)
- Ministry of Agriculture, Livestock, and Food (MAGA)
- Secretariat for Food Safety (SESAN)
- Institute of Agriculture, Natural Resources, and Environment (IARNA)
- Geographic Planning and Risk Management Unit (UPGGR) of the Ministry of Agriculture, Livestock, and Food (MAGA)
- National Institute of Seismology, Volcanology, Meteorology, and Hydrology (INSIVUMEH).

4.2 *Development of an awareness and advocacy programme on climate change for a range of target audiences*

The information generated and processed through the Project will provide basic inputs for the design and development of an awareness and advocacy programme that will serve to enable a broader range of stakeholders in this very vulnerable country to better understand the impacts of climate change, as well as response measures.

Activities under output 4.2 will include:

- Design the awareness and advocacy programme. The awareness programme should include relevant information and tools centred on the following main topics:
    - Clear and concrete information on current and projected climate change impacts in the country and the expected effects on different sectors. Information on climate change risks should be aimed at a variety of audiences (small and large producers, water resource managers, local governments, private sector, and others) and emphasize the multi-sectoral nature of adaptation actions.
    - Changes in crop productivity and packages of adaptation measures for agriculture, including information from the experiences in the target municipalities.

    - Adaptation strategies for communities and specific sectors, including a cost analysis of diverse options. This should provide information, targeting small farmers, about more resistant crops, product diversification, improved irrigation systems, and greater access to technical assistance, incentives, and financial aid.
    - Ancestral and traditional knowledge and practices related to livelihood and hydrometeorological risk management that can be applied elsewhere in the country.
    - Recovery of natural ecosystems functions and their provision of ecosystem services as one of the tools for adaptation to extreme hydrometeorological events.
- Establish agreements and find dissemination spaces for manuals, journals, and videos produced in Component 2.
- Training of trainers with a multicultural approach.

Aim
By the last year of the Project, an awareness and outreach programme with a multilingual approach will have been designed and implemented.

Implementing Partners and Stakeholders
- Guatemalan Ministry of Environment and Natural Resources (MARN)
- United Nations Development Programme (UNDP).

4.3 *Systematisation and documentation of lessons learned and best practices derived from efforts to develop more resilient production systems, including ancestral and traditional practices*

The Project proposes to recover ancestral and traditional practices as well as to validate field-tested, production approaches that enhance the adaptive capacity and resilience of highly vulnerable rural communities. It also proposes to address critical aspects of vulnerability within social structures. These valuable efforts will be documented by the Project in order to facilitate their replication and upscaling. Through activities in this output, the lessons learned and best practices generated by the Project will be systematized and disseminated.

Activities under output 4.3 will include:
- Design mechanisms for gathering lessons learned, broken down by component.
- Compile and systematise lessons learned in each component.
- Disseminate lessons learned systematised for different media.

Aim
This activity will be permanent and crosscutting, and will produce annual reports of lessons learned. The Project aims to systematise and share annually at least ten lessons learned, with different actors and stakeholders through various media, such as UNDP, MARN, and ALM web pages.

Implementing Partners and Stakeholders
- Ministry of Environment and Natural Resources (MARN)
- United Nations Development Programme (UNDP).

4.4 *Formulation of technical standards for development and implementation of climate change adaptation proposals*

This output will focus on applying project results to the development of technical standards and guidelines for mainstreaming climate change into planning and programming processes as well as production processes. The Project seeks to provide feedback to existing standards from local experiences during Project implementation.

Activities under output 4.4 will include:
- Design technical standards for the following themes:

- Technical standards and recommendations for integration of climate risks and opportunities into Departmental and Municipal Development Plans.
- Technical standards and recommendations for local participatory vulnerability analyses in Guatemala.
- Technical standards and recommendations for implementation of community based adaptation strategies.
- Technical standards and recommendations for downscaling of climate scenarios based on local data.

Aim

By the last year of implementation, the Project will have developed at least the four standards listed in the Activities section above.

Implementing Partners and Stakeholders

- Ministry of Environment and Natural Resources (MARN)
- United Nations Development Programme (UNDP)

4.5 ***Creation of manuals on new, traditional, and ancestral adaptation practices at the community level***

The Project will support the systematisation of ancestral practices and new practices used to reduce vulnerability to hydrometeorological events through technical guidance manuals targeting communities. These guidance manuals will be created by an expert team involving community participation. They will have a multicultural, multilingual approach and be gender sensitive.

Activities under output 4.5 will include:

- Develop and distribute guidance manuals on resilient production practices, applied to different livelihoods and production landscapes in the target area.
- Develop and distribute guidance manuals on community-based adaptation, stemming from Project experiences in the Sololá and Suchitepéquez departments.
- Develop and distribute guidance manuals on increasing the resilience of ecosystems and ecosystem functions to support climate change adaptation in the target area.
- Publish a magazine as a space for dissemination of key project findings in each of the target communities.

Aim

During the last year of implementation, the Project will develop and disseminate at least the four manuals listed in Activities section above.

Implementing Partners and Stakeholders:

- Ministry of Environment and Natural Resources (MARN)

B. Describe how the project provides economic, social and environmental benefits, with particular reference to the most vulnerable communities.

Guatemala is highly vulnerable to impacts of climate change and variability. One of the expected impacts of climate change is the increased frequency and intensity of tropical storms and hurricanes, which will cause an increase in flooding and landslides. Another expected impact is an increase in the duration of the “canicula” rainy period, as well as periods of drought.

In the target municipalities, poverty levels reach 70%, and chronic malnutrition exceeds 55%. Social networks are weak, with low levels of association, and this translates to delays and conflicts when attempting to reach agreement on planning, on allocation of scarce resources, and on risk management. The adaptive capacity of communities is a key factor for the success of adaptation measures. It is critical to have a strong social network that does not become unstable, even when part of the system is affected. Also important are a wide range of creative and participatory solutions developed in response to the communities’ own circumstances, with organizational, socio-productive,

participatory, and economic local alternatives that are tailored to each particular case,[71] and finally, the tools to improve economic conditions. The Project will strengthen the adaptive capacity of these highly vulnerable communities both economically and socially. With these things in mind, the Project will indirect benefit 174,848 people located in the eleven target municipalities and directly benefit over 152,263 people located in the upper and middle Nahualate river basin, of whom 76,350 are women and of whom more than 39,000 live in extreme poverty. (See Part I, Section B for further details).

To support economic diversification and marketing processes, the proposed Project will explore options for micro-loan and micro-grant mechanisms for production activities that implement adaptation measures. The Project will also study options for practices of production diversification based on recovered ancient and traditional practices, since many such practices in Guatemala involve greater crop diversity, association of crops with trees, and other agro-forestry systems. This includes diversification of the ways in which farm products and natural resources from ecosystems are capitalised upon. It should be noted that most of the adaptive practices that are likely to be applied and that the Project will promote will also positively affect yields, practices such as agro-forestry systems and conservation agriculture, for example. This will have a direct impact in income and food security of families.

Ecosystems in target area provide important provisioning, regulating and cultural services that contribute to communities wellbeing at local scale. The increasing degradation and reducing capacity of ecosystems to provide services are major concerns for sustainable development and the vulnerability of society to climate change, as ecosystem services help reduce exposure or sensitivity and increase adaptive capacity of most sectors of the society. Within adaptive practices implemented, Project will promote ecosystem conservation and restoring. This includes enhancing landscape connectivity through reforestation and forest conservation; protecting and enhancing ecosystem services through restoration of forest patches near communities. It is expected that this actions will maintain and improve the provision of ecosystem services to local communities, and will act as soft infrastructure against extreme events. More specifically, communities located near rivers and more vulnerable to landslides will be largest beneficiaries of ecosystems restoring activities.

In the social arena, the Project will facilitate associative processes for producers, and increase participation of vulnerable groups—including indigenous groups, women and youth—in the management of production landscapes and in the formulation of management policies -this in order to broaden the bases of commitments, decision-making, and processes of evaluation and monitoring, and to strengthen Municipal and Departmental Development Plans.

The sequence of participatory activities of Component 2 will be an important tool for this, strengthening the social network of impoverished rural communities so that they can more effectively confront expected climate changes. Thus, the Project will directly benefit more than 132,737 indigenous people and more than 70,264 children and young people who live in an area of 872 km^2 of the Nahualate river basin in the target area.

The vulnerability of local communities will be further decreased through the resilient production activities and ecosystem-based approaches that the proposed Project will promote. Ancestral and traditional practices will be recovered and combined with or bolstered by new practices and technologies, always favouring the proactive participation of beneficiaries. Other activities will be undertaken in parallel to increase the resilience of the landscape as a whole. These may emphasise production actions (agro-forestry and agro-pastoral activities), or conservation (ecosystem restoration, reforestation, improvement of water infiltration and water retention in the soil). These activities seek to reduce production losses from flooding and drought and improve the provision of and access to key ecosystem services for human welfare (in particular provision and regulation services). They will also contribute to increasing the sensitivity of local authorities to the benefits of adaptation measures and their impact on reducing vulnerability.

At the institutional level, the importance cannot be underestimated of enhancing capacities for

[71] Hopkins, R. (2008) The Transition Manual: From Dependence on Oil to Local Resiliency.

undertaking vulnerability assessments, developing climate change scenarios, and of promoting the flow of timely, adequate information from various levels of analysis. It is critical that relevant national authorities have these capacities, in order to provide local authorities and communities with the best available information for decision making, including the consideration of key issues such as long-term investments and even crop varieties.

We often hear that adaptation measures need to respond to local vulnerability, but in order to define the appropriate measures, information is needed. Therefore, the results of Project activities will be integrated into the information system, which will in turn provide inputs for knowledge management, scenario development, and vulnerability assessments. This will be carried out through a nested set of indicators defined in a participatory manner at each level of decision making and according to specific conditions and the specific interests of the beneficiaries, including national and local authorities. In addition to generating the necessary information for general outreach and awareness strategies targeting diverse stakeholder groups, the system will also enable the sharing of experiences with other territories and other countries, as well as the integration of knowledge about adaptation into monitoring and evaluation systems.

The collection and analysis of data and the dissemination of information on climate change and climate variability, coupled with the implementation of adaptation measures and the strengthening of participatory territorial planning and governance, will reduce investment risks and the vulnerability of communities. This will in turn reduce losses caused by meteorological events, including costs of reconstruction and aid to victims.

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

To date, considerations of climate change and variability, as well as associated impacts on landscape production processes, have been absent from land management approaches in Guatemala. This situation is worsened by the fact that management decisions at all levels are characterized by a vision that is short-term. There is at best, therefore, limited understanding of how inter-relationships within a socio-ecosystem will be impacted by climate change.

Guatemala is a country of great social, cultural, and environmental diversity and richness, but it faces very serious budgetary and structural limitations. Fifty-one percent of the population lives in poverty, a situation that for many communities and families will be worsened by the challenges that climate change poses. The status quo does not provide for ecosystemic, environmental, social, or economic resilience. Moreover, given current high levels of exposure to climatic phenomena, government financial constraints are aggravated by the need to react constantly to short-term demands that stem from droughts, floods, and landslides. Proactive, long-term planning approaches have just not been the norm, and unless external support is brought to bear, the resources do not exist to change this reality.

There certainly exist some options and responses to climate change in Guatemala, but these are fragmented, offering piecemeal responses to a situation that demands comprehensive, integrated solutions. For example, there are ongoing activities in Guatemala, supported by a range of actors including bilateral cooperation, NGOs, and CBOs, that focus on reforestation, soil conservation, or sustainable agricultural practices. Undoubtedly, these efforts will contribute over the long term to enhancing landscape resilience, but they are only a small part of a response to a challenge that is far greater in terms of scope and scale, both geographically and temporally. Other efforts have a thematic focus, such as those that seek the protection and conservation of biodiversity. Again, these efforts may contribute to increasing resilience at some level at a given scale, but they do not provide the overarching and cross-cutting responses that are needed. Other efforts focus on “hard” infrastructural measures (that may in turn cause other specific problems), but although infrastructure may address specific problems, as stand-alone responses, such investments will not enable Guatemalan society to respond to long-term climatic trends effectively. Still other efforts are sectoral in scope and focus, for example, improving rural productivity and food security, but with a notable disregard for the constraints that climate change will impose.

By contrast, this Project addresses not only ecosystems, but also economic, social, and territorial resilience, creating an integrated response that will enable a new development model to be tested and validated. It is underscored, moreover, that the Project will work at both national and local levels, thereby contributing decisively to strengthening capacities at municipal and local levels for implementing options that, among other things, improve governance, support gender integration, and effectively and consistently work to reduce poverty. This initiative is therefore more cost effective, integrated, and wholly different from approaches that have been the norm in Guatemala.

In the case of poor communities that have no climate information and a very limited range of options to begin with, responses to climate change and variability impacts are short-term and reactive. At the departmental and municipal levels, opportunities for effectively mainstreaming climate change considerations into development planning can be lost. Moreover, and as noted above, existing national capacities to generate, manage, and analyze information on climate change hazards and slow-onset changes are limited. The use of climate change scenarios for informing decision making is nonexistent, and capacities for generating them or applying them are limited at best. This is also true for other key tools, such as vulnerability assessments and analyses.

The Proposed Project will therefore operate at the institutional level, building necessary capacities and installing necessary tools and equipment, while also incorporating climate change and variability considerations into development and land use planning. It will also become a platform for enhanced inter-sectoral cooperation and dialogue, which are much needed, given that long-term climate impacts will demand difficult decisions on investments, settlements, and other issues. In the target area, projected adaptation measures will be integrated on several levels. First, ancestral and traditional knowledge related to risk management and production systems will be recovered and adapted to extreme meteorological events. Second, the implementation of production practices and conservation measures that strengthen the resilience of production landscapes will enable communities to increase their coping capacities and therefore limit climatic impacts on socio-economic conditions that are already dire. Given existing poverty and malnutrition rates, there frankly is not much room for adapting to additional engines of climate change. Third, the Project will focus on improving the resilience of local economic and social community structures. This complex web of interrelated responses will enable the Project to test and validate an integrated approach to climate change adaptation with a high replication potential, generating field-tested practices and management tools that will provide effective, long-term responses to climate change impacts.

The strengthening of social resilience in the target communities (including organizational capacity, access to information, and development planning), will mean a reduction in vulnerability and therefore savings with respect to emergency care. It is expected that this increase in social resilience will result in improved diet, quality of life, and welfare for local communities.

The Project's Municipal and Departmental Development Plans will incorporate a set of information, techniques, and methods that will be very helpful in making decisions, reducing vulnerability, managing risk, and adapting to climate change. This learning will have an impact on development planning in other areas of the country and strengthen the process of formulating an appropriate policy and investment framework.

Given that women and indigenous peoples are the most vulnerable groups, the Project will integrate them into the planning processes. From this point of view, the Project will not only aim to increase resilience in production landscapes, but also rescue and integrate traditional practices such as adaptation measures that would otherwise be lost, soliciting the participation of women as managers of their own territories. Additionally, these measures aim to manage the landscape as a whole, incorporating ecosystem relationships in a way that not only addresses the notion of integrated management, but also promotes the importance of an integrated vision for dealing with climate change risks.

The recovery of traditional knowledge and the strengthening of participatory mechanisms and governance in general—and the participation of women and youth in particular—result in the strengthening of participatory structures that change practices and attitudes and improve the social

and environmental resilience.

Work at institutional levels with national and local authorities is also cost effective, since there will be possibilities for applying principles of subsidiarity in order to achieve economies of scale. Some capacities, in terms of both human capital and investments in equipment, are more manageable at national or sub-national levels. There remains a need, however, to develop mechanisms for ensuring that these capacities can be applied at appropriate sub-national and local levels, in order to better respond to decision-making or planning processes at these levels. In this regard, the proposed information system plays a key role, given that it will be structured around existing centres of experience, including academic institutions and sub-national government entities. This will enable the Project to develop activities with multiplying and synergic functions—the training of trainers, for example—broadening the bases for compromise between various actors at different levels and scales.

Providing an integrated and very comprehensive set of adaptation measures that will generate long-term benefits, build new capacities, and orient targeted investment, this Project is indeed cost-effective.

D. Describe how the project is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub- national development plans, poverty reduction strategies, national communications, or national adaptation programmes of action, or other relevant instruments, where they exist.

The proposal fully conforms to the strategic priorities defined by the Government of Guatemala and MARN's Institutional Strategic Plan,[72] which focuses on five areas: 1) climate change adaptation and mitigation, 2) strengthening and expansion of socio-environmental management with up-to-date environmental regulations, 3) strengthening Guatemala's System of Protected Areas (SIGAP), 4) integrated management of watersheds and water resources, and 5) strengthening of a national bioethic based on changes in attitudes and behaviour aimed at the protection and improvement of the environment and natural goods and services, through the participation of the general population.

For its part, the National Climate Change Policy[73] develops the framework for activities that aim to reduce vulnerability from extreme weather events, increase overall resilience, and further opportunities for reducing emissions of greenhouse gases. Among its objectives is the development of national capacities to reduce climate change vulnerability and improve mainstreaming of climate change adaptation measures and considerations. In particular, and for the production sector, the policy underscores the need for adaptive measures that take into account local scenarios, including traditional and ancestral knowledge. The Project will support MARN in the process of implementing the National Climate Change Policy, with special emphasis on territorial development issues in the target area. Upon completion of the Project, MARN will have made an impact, with concrete adaptation activities in municipalities in the target area, applying the guidelines of this policy to planning for development in the departments of Sololá and Suchitepéquez.

In addition, the mandate of the national Sectoral Platform for Environment and Water[74] includes guidance for development aid, strengthening the role of external cooperation, and ensuring the leadership of the state in institutional initiatives for development. It functions as a forum in which donors and institutions from the environmental and water sectors (40 in total) participate. Under its auspices, a Multi-Annual Sectoral Plan[75] has been developed that will serve to harmonize the strategic planning processes and the operational multi-year budget of 21 participating institutions. This plan proposes as one of its strategic objectives to reduce vulnerability from extreme meteorological events in Guatemala, by strengthening the capacity of climate change adaptation through the use of natural resources.

[72] MARN (2008) Institutional Strategic Plan of the Ministry of Environment and Natural Resources, 2008-2011. Resolution n° 052-2008.
[73] MARN (2009) National Policy for Climate Change. Government Agreement No. 329-2009.
[74] Organizational and Procedural Manual for the Sectoral Platform on Environment and Water (2010).
[75] Multi-annual Sectoral Plan for Environment and Water 2011 -2013 (2010).

The Project contributes to achieving the strategic objectives of the Strategic Plan for Food Security and Nutrition 2009-2012 (PESAN), particularly Strategic Objective No. 1, which states "Encourage the availability of food with emphasis on basic grain production to help the country's food self-sufficiency." The strategy has a cross-cutting climate change axis, and aims to "address the specific vulnerability of peasants with reforestation projects, application techniques, and crops suitable to the vocation of the land, with the rescue and conservation of natural water sources, and with the implementation of projects on wastewater infrastructure, collection, and storage, and the processing of solid waste."[76]

Moreover, the Project is well within the development action framework of the United Nations Development Assistance Framework (UNDAF) for Guatemala, specifically with regards to the following Action Areas: 1 - Environment, Disaster Risk Reduction, Energy, and Water, which seeks to achieve improved environmental management and sustainable use of natural resources as well as risk management and reduction of vulnerability at national and sub-national levels, with active participation by community-based organizations and the private sector; and 2 - Health, Education, and Economic Opportunities, with the objective of transcending subsistence economies to achieve production and commercial development with a human rights and gender focus.

E. Describe how the project meets relevant national technical standards, where applicable.

The project will guarantee respect and consistent application of national standards. Given that this is a government-designed, government-led initiative, relevant authorities will ensure full consistency of Project activities with all relevant regulations and guidelines. These include the "Regulation for assessment, control and environmental monitoring" and its reforms[77], and the "Exhaustive list of projects, works, industry or activity"[78]. For all adaptive measures, MARN will ensure the completion of required "Initial Environmental Assessment"[79].In the case of the participatory planning of adaptation measures that include small-scale construction, the only such endeavours undertaken through the Project will be those that possess environmental permits issued by local or national authorities, but do not required environmental impact assessments.

All UNDP supported donor funded projects are required to follow the requirements outlined in the UNDP Programme and Operational Policies and Procedures (UNDP POPP). This includes a requirement saying that all UNDP development solutions must reflect local circumstances and aspirations and draw upon national actors and capabilities.

In addition, all UNDP supported donor funded projects are appraised before approval. During the appraisal, appropriate UNDP representatives and stakeholders ensure that the project has been designed with a clear focus on agreed results. The appraisal is conducted through a formal meeting of the Project Appraisal Committee (PAC) established by the UNDP Resident Representative. The PAC representatives are independent in that they cannot have participated in the formulation of the project and cannot have a vested interest in the approval of the project. Appraisal is based on a detailed quality programming checklist, which ensures, among other things, that necessary safeguards have been addressed and incorporated into the project design.

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

At present Guatemala is not receiving any significant finance for concrete adaptation initiatives from any of the existing sources. The existing interventions lay the basis for integrating climate change and variability considerations into development trajectories. Several initiatives are ongoing in the target

[76] "Healthy and Productive Guatemala" Strategy for Institutional Integration and Coordination of the National System for Food and Nutritional Security

[77] Government Agreement N° 431-2007 and Government Agreement 173-2010.

[78] Government Agreement N° 134- 2005.

[79] Regulation for assessment, control and environmental monitoring Government Agreement N° 431 – 2007 Article 15.

area that are relevant to the proposed Project's objectives, and these are shown in Table 9. These projects, plans, and initiatives are fully complementary to the proposed Project, and constitute the development baseline upon which this Project will be built.

Table 9. Projects implemented in the target area linked to the proposed Project[80]

Project title	Donor	Focus	Value AF Project Adds	Period
Institutional Strengthening of Women in Guatemala	Spanish Agency for International Development (AECID)	The project supports the institutionalization and implementation of a National Policy of Promotion and Development of Guatemalan Women, strengthening capacities at the three levels of government and civil society.	The AF Project will complement this project through the specific experiences of women's participation in the target area, especially those actions that have to do with the recovery of ancestral knowledge, in which DEMI will be participating.	2008 2011
Trust Fund for Local Development in Guatemala FDLG Phase 2	Swedish International Development Cooperation (ASDI)	The project aims to: improve access for poor groups to financial services for housing and infrastructure improvements and small loans for income generation. The target population for the programme in Phase 2 is defined as households with an income per family US$400 (definition of poverty). In addition, it is expected that 60% of the target population are households with incomes of US$200 or less (definition of extreme poverty).	The actions can be coordinated in the municipalities where the two projects overlap, so that the implementation process of small loans for income generation is complementary to the mechanisms developed under Component 3.	2005 2011
Programme of Natural Resources and Biodiversity	United States Agency for International Development (USAID)	This programme is linked to sustainable growth in forestry, agriculture, and tourism as a crosscutting issue. It supports the diversification of rural incomes, including the production of high value timber and non-timber forest products, ecosystem services for the agricultural sector, efforts on carbon sequestration, and maintenance of stable populations of endangered species.	This project will have been completed by the time of AF implementation, but lessons learned from the process and the organizations that participated in the municipalities of Sololá will be critical to the implementation of adaptation measures for the improvement of ecosystem services in Component 2.	2004 2010
Comprehensive project to combat poverty and improve living conditions of the Mayan people in the department of Sololá.	European Union (EU)	The Mayan Peoples Federation (FEDEPMA) is an organization of producer associations, uniting approximately 350 families. Family finances are strictly based on the cultivation and harvesting of coffee, honey, crafts, sale of labour and tourism. The project is based on developing training, technical assistance and micro-lending partners that contribute to strengthening and promotion of new production activities, especially among micro and small producers.	This project will have been completed by the time of AF implementation, but the lessons learned from it will enrich the mechanisms developed in Component 3, in Sololá communities where both projects coincide.	2004-2010

[80] SEGEPLAN (2011) DAD Database, Guatemala. At: http://dad.segeplan.gob.gt

Project title	Donor	Focus	Value AF Project Adds	Period
Enabling Environment for Trade and Investment	United States Agency for International Development (USAID)	USAID's programme aims to strengthen the competitiveness of Guatemala and promote trade and investment through efforts to improve and/or establish laws, regulations, and policies related to competitiveness and to strengthen public institutions in order to improve competitiveness. It supports the efforts of the Ministry of Agriculture (MAGA) in expanding the role of the Programme for Agriculture and Environmental Protection to ensure that exports meet international sanitary and phytosanitary measures.	This project will have been completed by the time of AF implementation, but the lessons learned from this project will enrich the mechanisms developed in Component 3.	2003 - 2010
Strengthening capacities in the Mam people for economic governance in water and sanitation	United Nations System Joint Programme	The programme aims to 1) promote sectoral policies and regulations for water use (drinking and irrigation) and sanitation, 2) improve the capacities of municipal governments and civil society, especially the Mam people, enabling effective and sustainable management of water and sanitation services and 3) compile experiences and lessons learned from public, private and public/private administration of water and sanitation, transferring knowledge that will permit its replication, as well as enriching public policy.	The actions can be coordinated in the municipalities where the projects overlap, as water management and sanitation are key issues in implementing adaptation measures. Processes of capacity improvement can be upgraded.	2009 2012
Generation of Technical/Scientific Information for Disaster Risk Reduction in Municipal Planning Processes.	World Bank	This project has generated technical information for risk reduction and for land use planning and disaster risk management in the Nahualate, Coyolate, Madre Vieja, and Suchiate Basins.	This project has generated diagnostic studies of these basins and will prepare land use plans. However it has not mainstreamed climate change considerations into the risk analysis. The assessments undertaken to date, however, provide a very solid basis for the AF Project to work with.	2008
Strengthening, Expanding and Upgrading Networks and Geophysical Hydrometeorological Monitoring	Government of Guatemala through INSIVUMEH	The objective here is to contribute to the prevention of natural disasters in the country. The project will install 30 new hydrological and 31 new meteorological stations. Some of the stations are located in the target area (in the Nahualate, Coyolate and Madre Vieja basins)	The information generated by these stations, analyzed with the support of the centres for sub-national Geographic Information Systems, will be used by decision-makers at all levels, including communities, to plan their crops and infrastructure investments.	2010
Strategic Plan for Food and Nutritional Security	Government of Guatemala through SESAN	Aims to improve food security through enhancing availability, access, consumption and biological utilization of food. However, especially in the components of availability and access, barriers have been identified given that the Programme has not considered the effects of climate variability on livelihoods.	Project will work to ensure that livelihoods are more resistant to climatic variables. The project will work with SESAN as it promotes the participation of women and peasants to improve their marketing skills.	2009 2012

Project title	Donor	Focus	Value AF Project Adds	Period
Community based adaptation initiative in the Suchiate and Naranjo basins	UNDP/GEF through SGP	Developement of a community based adaptation initiative in the Suchiate and Naranjo basins in southwest Guatemala, with a priority focus on agriculture and water.	Experiences and best practices from this project contribute to the final design of the proposed project in order to be uptaken and replicated.	2008 2013

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

The Project aims to generate learning based on experience, on ancestral and traditional knowledge, and on the implementation and adjustment of adaptation measures. The Project will incorporate elements of recursive learning and adaptive management that will allow learning from experience and incorporate the learning into the process itself, in response to a changing context. It will also promote the development of adaptive management capacity and monitoring and evaluation of actions undertaken. In this way, lessons will be recorded at each stage. A monitoring and evaluation system will be established that will systematize from the outset the activities, results, achievements, difficulties, and challenges of the Project.

Under Component 4, lessons learned and best practices developed or recovered for increasing communities' resilience to climatic trends and events will be documented and systematised through the information system that, as mentioned above, is composed of various institutions. Through this system and the activities under this Component, information on adaptation measures will be captured that can be replicated in other areas of the country as well as in other countries in Central America that face very similar climate change threats.

The Project will publish and disseminate materials and knowledge about ancestral, traditional, and new adaptation measures that have been applied in production landscapes impacted by hydrometeorological events, as well as tools and mechanisms for improving the resilience of social networks and economic processes. The system will also provide data to asses and incorporate the potential costs of adaptation to climate change into municipal, departmental, and national budgets as well as planning processes such as the Municipal Development plans.

The Project will foster dialogue and exchanges of experiences at multiple levels, incorporating cross-cutting themes that encourage dialogue between stakeholders and government representatives at the national, departmental, and municipal levels.

The systematised lessons learned will be shared in the Adaptation Learning Mechanism (ALM) to ensure wide dissemination.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation.

The consultative process had two main phases. The first was during the preparatory process, when consultations with key stakeholder groups in the Project area were conducted through an extensive survey by the Ministry of Environment and Natural Resources (MARN). (See Table 9)

The second phase was during the preparation of the complete document, when two main activities were undertaken. (See Table 9 for participation details)

1. A consultation workshop with key national authorities. This workshop aimed to make the initial arrangements for the preparation of the complete Project document. It consisted of the following activities:
    a. Establishment of general agreements on project initiation and design, and construction of the Project logical framework.
    b. Review of reporting requirements, taking into particular account Adaptation Fund recommendations.
    c. Agreement on the establishment of a review team responsible for monitoring the process.
2. A consultation workshop with local actors in the target area. This workshop aimed to strengthen, expand, and validate the Project proposal. It consisted of the following activities:
    a. Analysis of issues of each component, in which participants worked in groups to assess whether the Project proposal adequately meets main problems related to climate change in the target area.
    b. Analysis of the chain of results of each component. Participants assessed whether or not the chain of results proposed addresses the problem comprehensively, whether or not there is duplication between products, and what the main amendments to be made in the Project are.
    c. Additional information for the Project. Participants at the workshop identified the priority intervention area, direct beneficiaries, and stakeholders and allies for Project implementation.

Table 9. Entities and individuals consulted

Consultative Phase	Entity or Person Consulted	Entity Type	Issues Addressed	Component Discussed
Concept Development	**Guatemalan Inter-institutional Indigenous Commission,** which includes: National Forestry Institute, National Fund for Peace, PREVDA, Ministry of Agriculture, Livestock and Food, Ministry of Public Health and Welfare, Greening Guatemala Programme, Council for the Defence of Indigenous Women, and the Development Fund	Government Institutions	Survey on the objectives and scope of the Project concept	Objective and Scope
	Management Group (Grupo Gestor) of Mazatenango	NGOs		
	Multidisciplinary Studies and Socio-environmental Advisory Group (EMASA)			
	Ecological Volunteer Group of Suchitepéquez			
	Association of Friends of the Ixtacapa River			
	International Alliance for Reforestation (AIRES)			
	Secretariat for Food Safety (SESAN)	Government Institutions		Objective and Scope
	National Planning Authority (SEGEPLAN)			
	Ministry of Foreign Affairs Department of the Environment Department of Indigenous Affairs			
	Ministry of Public Finance Social, Environmental Unit Climate Change Unit			
	Local delegations from the Ministry of the Environment and Natural Resources	Local Government		
	Governor of Suchitepéquez			
	Governor of Sololá			
Initial Workshop with National Entities	**Ministry of the Environment and Natural Resources (MARN)** Ministerial Office General Directorate of Training, Organization, and Social Participation Climate Change National Programme Environmental Information System	National Government Institutions	Initial agreements, logical framework of the Project, and evaluating	1 2 3 4

Consultative Phase	Entity or Person Consulted	Entity Type	Issues Addressed	Component Discussed
	International Relations and Cooperation Unit		committee for development of the complete document	
	National Forestry Institute (INAB)			
	National Commission of Protected Areas(CONAP)			
	Secretariat of Planning and Programming (SEGEPLAN)			
	Ministry of Agriculture, Livestock and Food (MAGA)			
Consultation Workshop with Local Authorities	**Ministry of the Environment and Natural Resources (MARN)** Suchitepéquez Sololá	Local Delegations of National Institutions	Evaluation of chain of results, and modifications required for the Project to fit local needs	1 2 3 4
	National Commission of Protected Areas (CONAP) Sololá RUMCPLA			
	Ministry of Agriculture, Livestock and Food (MAGA) Sololá			
	National Planning Authority (SEGEPLAN) Suchitepéquez Sololá			
	Santiago Atitlán Municipality	Local Government		
	San Pedro La Laguna Municipality			
	Santa Bárbara Municipality			
	San Juan Bautista COCODE	Communities		
	Santa Bárbara COCODE			
	Vivamos mejor	NGO		
	National Coordination for Disaster Reduction (CONRED)	Government Institutions		
	Ministry of Environment and Natural Resources (MARN) General Directorate of Training, Organization, and Social Participation National Programme on Climate Change International Relations and Cooperation Unit Mesoamerican Biological Corridor Desertification Unit			

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

Component 1: Development of Capacities and Tools That Enhance National and Local Capabilities for Climate Change Adaptation

Baseline (without AF Resources)

In recent years, the government of Guatemala has endeavoured to establish the bases for land use and risk management in the country. Between 2005 and 2010, the National Institute of Seismology, Volcanology, Meteorology, and Hydrology (INSIVUMEH) and the Ministry of the Environment and Natural Resources (MARN) made maps of highly vulnerable areas as well as of hydrometeorological events. Similarly, the Ministry of Agriculture, Livestock, and Food (MAGA) has been mapping current and projected land use, forest cover, and production capacity throughout Guatemala. However, these studies do not include climate variability or climate change considerations. Within the framework of the Second National Communication, advances have been made regarding the identification and

estimation of GHGs at both sectoral and national levels. Vulnerability and adaptation issues will focus on coastal and marine climate change impacts for the Pacific and Caribbean coasts. Therefore, there is an acute need for external support to enable the development of vulnerability assessments and maps, at both national and sub-national levels, as well as for the elaboration of climate change scenarios. These are essential in order to identify and prioritise options for adaptation response measures.

It is also necessary to increase access to information at various levels in a way that is useful in making planning decisions in the context of Municipal Development Plans and Departmental Development Plans. Currently, these include only certain risk reduction aspects and still do not include the themes of long-term climate change or climate variability.

Finally, government authorities are assessing different means of climate change adaptation financing and this work is a priority. However, to date, funding mechanisms are insufficient to meet projected needs. This is why it is necessary to create and strengthen mechanisms for the financing of adaptation processes in Guatemala.

Additional (with AF Resources)

Through the Project, the government will generate the necessary capacities and acquire the equipment and software necessary to apply the tools and methodologies for climate change risk assessments, realize downscaling, and perform assessments of the threats and opportunities associated with climate change.

The government will have the capacities and relevant information necessary to formulate well informed policies on several levels of territorial planning. This effort will prove decisive for the development of Municipal and Departmental Development Plans. Similarly, the Project will see that the private sector is better informed on climate scenarios and thereby ensure public and private investments.

Municipalities are obligated to develop their Development Plans. As these will be the basis for long-term planning on land-use, investments, and allocation of resources, the implications are significant in terms of both potential maladaptation[81] and simply missed opportunities. Without the Project, a key opportunity to ensure that these plans are “climate-proofed” will be lost.

Additionally, the Project will test methods and participatory planning techniques that incorporate assessment of traditional ecological knowledge, traditional and ancestral practices, and climate change adaptation into development planning processes in Guatemala. The participatory planning process will include the UDTs of local governments; the COCODEs, COMUDEs, and CODEDEs, which include stakeholders from private and public sectors; and representatives of all resource user groups, including women and youth. Through this process, the Project will provide training so that communities and local authorities can understand the implications of climate change scenarios, learn to identify options, and participate in an informed manner in the difficult decision and planning processes that climate change will cause to become the norm over the coming decades.

Finally, the Project will support the creation of the National Fund for Adaptation to Climate Change to be financed by a variety of mechanisms, many of them designed and tested during Project implementation. Without this Fund, it could will not be possible support and implement adaptation strategies that are needed immediately in Guatemala.

[81] Maladaptation is defined as business-as-usual development which, by overlooking climate change impacts, inadvertently increases exposure and/or vulnerability to climate change. Maladaptation could also include actions undertaken to adapt to climate impacts that do not succeed in reducing vulnerability but increase it instead (OECD, 2009).

Component 2: Recovery and Development of Climate Change Resilient Practices That Reduce the Vulnerability of Communities

Baseline (without AF Resources)

In a country as exposed as Guatemala is to climatic phenomena and trends, the current situation is leading to increasing vulnerability to climate risks, with crops being lost to either floods or droughts, community structures fragmenting as men migrate to find subsistence work elsewhere, and an exacerbation of poverty cycles. There is an urgent need to implement strategies for resilient production landscapes that integrate traditional and ancestral practices while developing, validating, or adjusting others, so that rural communities—a large majority of which are comprised of indigenous peoples—can increase their coping ranges.

In Guatemala, MAGA, MARN, and various projects have advanced sustainable development processes related to watershed management, reforestation practices, and sustainable land management. These include the "Greening Guatemala Programme," a government-led initiative which aims to create conditions to develop Guatemala's forestry potential. However, the programme only provides support and materials to communities for nurseries for reforestation; it does not provide any technical assistance for determining those areas that are suitable for forestry projects, that require reforestation to reduce vulnerability to climate change impacts, or on the more suitable species to grow under present and future climatic conditions. Overall, efforts through these initiatives have been largely ad hoc and fragmented, and have not taken into account the need to address climate change vulnerability issues.

Moreover, Guatemala has not developed participatory planning processes that integrate all sectors of a specific area for the joint planning of production landscapes, and which include climate change considerations. Farm families and communities have not yet realized the need to minimize climate change risks associated with their production processes.

On the other hand, efforts have already been undertaken in Guatemala to collect and systematise ancestral and traditional practices. However, these have not been assessed through a climate change lens, in order to identify and therefore replicate those that provide cost-effective response measures, and those that can be adjusted to do so. Some practices, however, may promote maladaptation under long-term climatic trends, and these too need to be identified. The First National Communication on Climate Change produced maps that evidence loss of productivity of the principal crops due to climate change impacts. Through the Project, it will finally be possible to develop adequate and appropriate response measures.

Additional (with AF Resources)

The adaptation approach of the Project will be community-based and participatory, building on the priorities, ancestral and actual knowledge, and capacities of local people. The Project will therefore empower local people to plan for and cope with the impacts of climate change in ways that are relevant and practical. The Project will promote ecosystemic approaches to adaptation, including enhanced landscape connectivity through the implementation of agro-forestry and silvo-pastoral and reforestation activities.

Similarly, the Project will strengthen local capacities to record and analyze information in order to assess vulnerability to climate change and climate variability and to develop risk management plans and development plans that include the climate theme, at both community and municipal levels.

Overall, the Project will link relevant ancestral and traditional practices with new practices to improve resilience in production landscapes. The sequenced activities in this component will be developed through a territorial participatory planning process, in which all actors involved in increasing landscape resilience may agree upon and implement necessary adaptation strategies in order to achieve the resilience objectives defined for the target area.

Some of the activities to implement in order to strengthen production system resilience under emerging

long-term climate conditions include: conservation agriculture with soil conservation and improved water management, conservation and use of plant genetic resources for food and agriculture, diversification of agricultural landscapes and production systems, and improved storage and processing of agricultural products. All these activities, applied together by the project, will have a synergistic impact that is a key to the overall landscape resilience.

Component 3: Improvement of Food Security and Livelihood Options in the Target Municipalities

Baseline (without AF Resources)

Guatemala is implementing a Strategic Plan for Food Security and Nutrition (PESAN).[82] However, the plan does not directly address issues related to developing and improving sustainable livelihoods. It therefore is unable to establish investments and activities that enable communities to increase their socio-economic resilience.

Communities receive short term assistance but face time and again the devastation that climatic events wreak on their crops and livelihoods, with decreasing social, natural, and financial capital to invest in recovery. Local communities have no storage facilities or differentiated marketing for their products. This has prevented them from addressing pertinent impacts of climate change.

On the other hand, weak organization and lack of market information make marketing of traditional products difficult and reduce the possibilities for innovation in production processes and alternative marketing. This weak organization prevents building strong social networks to cope with new changing conditions through improved adaptive capacities. Through this component, the Project will aim to increase social and economic resilience in order to ensure the synergistic impact of the activities under Component 2.

Additional (with AF Resources)

The Project proposes to address precisely the longer-term investment and capacity building required to enable communities to better manage their resources and options in a context of increasingly frequent and intense storm events, more prolonged droughts, and difficult long-term climate scenarios.

Through the design and establishment of agricultural service warehouses, the Project will strengthen the necessary infrastructure and capacities for long-term planning and marketing of crops and other outputs. The Project will implement tangible activities that enable communities to manage their crop surpluses in good years and create food buffers, to increase the value of their crops through processing (e.g. drying), and to shorten the value chain, thereby limiting the reach of intermediaries.

Through the support and strengthening of social networks, the Project will provide training and specialized technical assistance in production, management, and marketing, as well as legal assistance in forming cooperatives, associations, and other social networks. In these efforts, the role of women will be critical, so the Project proposes to work with Defence of Indigenous Women (DEMI), an institution that seeks to reinforce the role of indigenous women in development activities. The Project will strengthen the actions of DEMI as a social coordinating body against the negative effects of climate change in the target municipalities. In addition to targeted work in the proposed municipalities, the Project will coordinate actions with SESAN and VISAN, in order to include these and other local options in food and nutritional security planning. These new options will be related to and contribute to the process of strengthening local adaptive capacities, strengthening in turn the ongoing development efforts of the country.

Finally, through the establishment of local micro-financing, the Project will consolidate the process of strengthening social and cooperative networks in order to support the adaptation strategies

[82] Implemented by the Ministry of Food and Nutritional Security (SESAN) and the Vice Ministry of Food and Nutritional Security (VISAN).

implemented in production landscapes resilient to climate change.

Component 4: Informed Decision-making and Awareness-raising, Supported by Decentralized Information Systems

Baseline (without AF Resources)

Various projects and initiatives on vulnerability assessments have generated general background information. The First National Communication on Climate Change (2001) assessed climate change impacts in key sectors and prioritised these: human health, agriculture (especially production of basic grains), water resources, and forestry resources. Subsequently, the regional project *Capacity Building for Stage II Adaptation to Climate Change in Central America*, *Mexico and Cuba* (2007) studied the Naranjo River basin, analyzing flooding issues. However, no concrete measures were proposed or implemented. These studies include research on current and future vulnerability, as well as an analysis of climate effects on agriculture, water resources, and biodiversity. They recommended that production landscapes be planned taking climate change adaptation measures into account. A subsequent diagnostic identified and quantified future climate change impacts at the national level. Finally, through a project on climate change studies with an emphasis on adaptation supported by NCAP and with technical assistance from the Stockholm Environment Institute, the WEAP model (Water Evaluation and Planning System) was applied to the Naranjo and San José River basins in order to evaluate flooding and drought issues.

These studies have not resulted in practical implementation of on-the-ground response measures, however, or in changes to the regulatory and legal framework that might bring about changes in sectoral practices and behaviour. These efforts do nevertheless constitute a very sound basis of information on which the proposed Project will build through the decentralized information system.

Local and national stakeholders have also accumulated experience in issues related to risk management, prevention, immediate response, damage mitigation, rehabilitation, and others, upon which the Project will build via the process of advancing capacity building for climate change adaptation.

Additional (with AF Resources)

As noted above, the Project proposes to establish a decentralized information system that will build upon the expertise and capacities of existing centres. These various centres, which include specialized government agencies, academic institutions, and universities, do not have experience working with climate change issues.

The Project therefore proposes to create the information and analysis platforms necessary to assist decision making and awareness raising, working in cooperation with these centres. Led by SEGEPLAN, these centres will process the information generated by local observation networks, as well as the new network of hydrometeorological stations being set up to assist local decision-making and planning processes. Without the Project, these would not have the capacity to begin to incorporate climate change considerations into their regular programmes of work. The Project will improve the integration of climate variability and climate change issues into the compilation, analysis, and synthesis of information related to management and development options.

Furthermore, the government of Guatemala is seeking to further an initiative to establish an integrated inter-sectoral environmental statistics system that would incorporate the dispersed information that exists on resource use, land use, vegetative cover, and other basic indicators. The Project proposes to build upon this system in order to incorporate information generated on climate change trends and issues, thus ensuring that the climate theme is mainstreamed into information management at a national level.

Through the design and implementation of the Awareness Programme, Manuals, Standards, and Lessons Learned, climate change adaptation issues and target experiences on community- based and ecosystem-based adaptation will be disseminated to a wide audience. This will strengthen the levels of

awareness and open spaces for the implementation of adaptation strategies in other parts of the country.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project implementation.

The Government of Guatemala will execute this four year programme with UNDP support under the National Implementation Modality (NIM). The Ministry of the Environment and Natural Resources (MARN), as the regulatory and normative entity responsible for implementation of the country's environmental policy, will be the executing agency. MARN will be responsible for the delivery of programme outcomes and outputs under the rules and procedures detailed in the UNDP NIM Manual for programme execution. It will be responsible for ensuring that the stated programme objective and outcomes are delivered, and that resources are allocated and disbursed as indicated in the programme Document. Similarly, MARN will be responsible for ensuring effective coordination between this programme and other relevant programmes in Guatemala.

UNDP will provide support to the Director and the Coordinator of the programme to maximize its reach and impact as well as the quality of its products. Moreover, it will be responsible for administering resources in accordance with the specific objectives defined in the Programme Document, and in keeping with its key principles of transparency, competitiveness, efficiency and economy. The financial management and accountability for the resources allocated, as well as other activities related to the execution of Programme activities, will be undertaken under the supervision of the UNDP Country Office. UNDP will undertake the internal monitoring of the Programme and of evaluation activities, taking into account from the outset local capacities for administering the programme, capacity limitations and requirements, as well as the effectiveness and efficiency of communications between ministries and other institutions that are relevant to the programme.

As a Multilateral Implementing Entity, UNDP is responsible for providing a number of key general management and specialized technical support services. These services are provided through UNDP's global network of country, regional and headquarters offices and units and include assistance in: programme formulation and appraisal; determination of execution modality and local capacity assessment; briefing and de-briefing of programme staff and consultants; general oversight and monitoring, including participation in programme reviews; receipt, allocation and reporting to the donor of financial resources; thematic and technical backstopping; provision of systems, IT infrastructure, branding, and knowledge transfer; research and development; participation in policy negotiations; policy advisory services; programme identification and development; identifying, accessing, combining and sequencing financing; troubleshooting; identification and consolidation of learning; and training and capacity building.

As outlined in UNDP's application to the Adaptation Fund Board for accreditation as a Multilateral Implementing Entity, UNDP employs a number of programme execution modalities determined on country demand, the specificities of an intervention, and country context. Under the national execution modality proposed to be used for this programme, UNDP selects a government entity as the Executing Entity based on relevant capacity assessments performed by UNDP. Please note that UNDP uses slightly different terminology to that used by the operational policies and guidelines of the Adaptation Fund: In UNDP terminology, the "executing entity" is referred to as the "Implementing Partner" in countries which have adopted harmonized operational modalities and the "Executing Entity" in countries which have not yet done so. The Executing Entity is the institutional entity entrusted with and fully accountable to UNDP for successfully managing and delivering programme outputs. It is responsible to UNDP for activities including: the preparation and implementation of programme work plans and annual audit plans; preparation and operation of programme budgets and budget revisions; disbursement and administration of funds; recruitment of national and international consultants and programme personnel; financial and progress reporting; and monitoring and evaluation. As stated above, however, UNDP retains ultimate accountability for the effective implementation of the programme.

MARN will prepare an annual Work Plan that incorporates programme activities and results to be delivered

through it. The Plan will define the execution time frame for each activity and the parties responsible for its implementation. The first Work Plan will be finalized and incorporated into the programme Document within 30 days of its signature. The participation of programme counterparts will be essential for the success of the planning phase, during which the Annual Work Plan will be prepared. Once the programme is approved and an annual operational work plan has been prepared, the UNDP office in Guatemala may in specific cases agreed with the programme partners charge the programme directly for its Execution Support Services, based on transactions and using a universal price list.

The programme will be coordinated through a Programme Steering Committee (PSC), which will provide support for the operational management. The PSC will be chaired by the Minister of MARN or a delegate, and include a representative of UNDP-Guatemala, a representative of MAGA, as the governing body of the Agriculture Sector, and two representatives selected jointly by the Departmental Development Councils of Sololá and Suchitepéquez. The PSC will be assisted by an Inter-institutional support committee (ISC) composed of key institutions such as the MAGA, CONRED, SEGEPLAN, INAB, CONAP, INSIVUMEH, MIVI, MARN and participating NGO's will be installed to oversee coordination and follow up on Programme Execution.

The PSC will meet jointly with the ISC at an inception workshop and three months afterward in order to verify the mechanisms established for programme implementation, as well as to confirm the commitments of each of the participating institutions within the scope of their areas of competence. The PSC will meet at least once a year, and the ISC twice yearly or as established during the inception workshop.

To strengthen national arrangements to address climate change in Guatemala, strategic information and lessons learned from this Programme will be reported to the high level Inter-institutional Committee of Climate Change (ICCC) [83], which responds to the President of the Republic and is lead by the Vice-President. Also, constant feedback of the progress and constraints to implement the Programme, as well as climate-proofing and mainstreaming development plans will be coordinated through the corresponding level[84] of the System of Development Councils[85] of Guatemala.

The programme execution team will consist of a National Programme Director (NPD) and a Programme Coordinator (PC) supported by a technical and administrative team. The NPD will be named by the Minister of environment and natural resources and will act as the administrative en executive manager of the activities described in the Programme Document. The PC will responsible of the supervision programme team and the timely and effective execution of the activities, under the rules and procedures detailed in the UNDP NIM Manual for programme execution.

The PC will be based in the Programme Area, within the MARN Regional Delegation, and will be supported by a technical team. The technical team will consist of two outreach workers and an administrator. The profile required for the PC, must be that of an interdisciplinary professional that understands and has had experience in risk-management and reduction of vulnerability, that is familiar with the Guatemalan institutional and social context, and that has accompanied processes of social organization and strengthening. The PC will be contracted for all the project duration based on yearly performance evaluations, while the outreach workers will be contracted for 30 months.

The technical team will be supported during the execution of the project by specific consultancies, according to the following specialties: a) vulnerability-climate change (ideally a civil engineer that will also provide technical specifications for adaptation infrastructure or goods acquisitions), b) a social anthropologist (with expertise in gender and ethnic diversity), and c) an agriculture expert with knowledge and hands on experience in financial mechanisms.

[83] The ICCC was created under Governmental Agreement 253-2009, its main objective is to propose any policy, strategy or concrete action to contribute to adaptation and mitigation of climate change.

[84] According to Congress Decree 11-2002 Law for Development Counsils (http://sistemas.segeplan.gob.gt/discode/sche$portal/documentos/ley_concejos_desarrollo_guatemala.pdf) there are five distinct levels: communitary, municipal, departamental, regional and national

[85] The System of Development Councils of Guatemala is the mean through which tha maya, xinca, garifuna and non-indigenous population of the Country participate in public management and contribute to the national planning process.

Stakeholder analysis for the area of intervention showed that there are on the ground local, national and international NGO's and associations that have addressed independently (not cross-sectoral) the issues addressed by this Programme, such as good agricultural practices and conservation measures, certification for commodities, as well as micro-finances scoping and payment/compensation for environmental schemes. Some of these organizations, such as Asociacion amigos de Ixtacapa (PSA), Vivamos Mejor, Atitala, TNC, and Rainforest Alliance have worked with municipalities and communities aligned under municipal or territorial plans. To build up from these experiences and under the rules and procedures for NIM execution, MARN will identify through competitive processes, some of these organizations that may assist in executing key products on the ground.

MARN has also identified the Small Grants Programme[86] as a cost-effective mechanism in the target area of the project through which communities may access directly to funding meanwhile strengthening their own organizational and management capacities. These interventions have proved to be aligned to national priorities, respond to local needs[87] as well as addressing gender inequalities. Also, SGP Guatemala is one of the pilot countries implementing the UNDP/GEF Community Based Adaptation Project. Experiences and good practices from this project contribute to the final design of the proposed project to be uptaken and replicated.[88].

The SGP mechanism will be used for the implementation of US$800,000.00 in grants for local communities initiatives building on experience generated through its community based adaptation projects and practices. Selection criteria for community-based adaptation projects will be determined by the vulnerability assessment performed in the initial phase of the project. The respective municipal development council will be involved in the selection process. The SGP Coordinator in Guatemala will act as a facilitator of the selection process in close collaboration with the Project Coordinator, and upon screening and recommendation of viable project concepts by the SGP National Steering Committee, in accordance with established practices.

B. Describe the measures for financial and project risk management.

Risk		Response Measure
National elections and a change in administration lessen support for the project	L	This risk has been identified early on and response mechanisms will be incorporated into the proposed Project design. Specific outreach and information packages will be prepared under Component 4 to inform potential candidates in a timely manner about the Project. Additionally, the Project proposes to generate significant levels of ownership by local communities and organizations in the target municipalities that will be able to position the Project with the new government. Finally, the Project also proposes to develop strategic partnerships with key

[86] The Small Grants Programme (SGP) a Global Environment Facility's initiative that was implemented worldwide following the Rio Earth Summit in 1992, under the implementation of UNDP.. In Guatemala it began to work from 1997, financing environmental projects in the framework of the GEF focal areas in the south-west of the country, the project intervention area. Since 2004 SGP has focused on working directly with community-based organizations (CBO's) developing for this purpose a methodology called "almanario" which allows communities to think, develop and implement their own projects. From working in community and environmental projects, SGP has contributed to Millennium Development Goals on issues such as environment, gender, education, food security, and health and community development. Mid-term review of SGP Guatemala highlighted the adoption of good practices for projects through the creation of the methodology of "almanario", and gender mainstreaming.

[87] This statement was also noted at the GEF's Joint Evaluation of the Small Grants Programme world-wide.

[88]. The UNDP-GEF Community Based Adaptation Project (CBA) is a five-year (2008-2013) GEF Full Size project. The project is a pilot initiative financed by the Strategic Priority on Adaptation (SPA) Fund to implement community-based projects in ten participating countries (Bangladesh, Bolivia, Guatemala, Jamaica, Kazakhstan, Morocco, Namibia, Niger, Samoa and Viet Nam).This initiative, implemented through SGP, has the key objective to enhance the capacity of communities in the pilot countries to adapt to climate change, including variability.

Risk		Response Measure
		academic and research institutions, such as those that will underpin the information system, and these will also provide for continuity and sustainability of Project objectives.
Local authorities and communities in the target municipalities will not fully engage with the proposed Project activities, in particular those related to social networks	L	Communities in rural areas of Guatemala are already having to contend with the severe impacts of climatic variability and trends. Their situation is dire given that very high poverty levels compounded by limited livelihood options and significant food insecurity translate to very limited coping ranges. The Project will work with local leaders and researchers to define, through highly participatory consultative processes, the best modalities for strengthening social networks and interactions. In addition, the Project proposes to focus strongly on women as key linchpins of communities' social networks and production processes, and it is expected that they will be drivers of change. Finally as the Project will also focus on recovery of ancestral and traditional knowledge, it is expected that this will serve to further validate the Project objective with local communities which include large percentages of indigenous groups.
Resource use groups and other producers do not understand the need to respond to and plan for climate change risks.	L	Producers are already suffering from permanent impacts of climate change and variability. If climatic information is translated so that it becomes understandable, as the Project proposes to do through participatory development of vulnerability assessments, the result should be a high degree of ownership of the process on the part of local communities. As noted above, the fact that the Project will emphasize the importance of ancestral and traditional practices will also serve to strengthen the sense of ownership and the possibility of developing effective, long-term responses that will increase coping ranges.

C. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

Project monitoring and evaluation (M&E) will be in accordance with established UNDP procedures and will be carried out by the Project team under the oversight of the UNDP Country Office. The Results Framework defines execution indicators for project implementation as well as the respective means of verification. The monitoring and evaluating system for the Project will be established based on these indicators and means of verification.

Type of M&E Activity	Responsible Parties	Budget US$* *(does not include staff time)*	Time Frame
Inception Workshop	Project Coordinator UNDP-CO	$1,000	Within first two months of Project start up
Inception Report	Project team UNDP-CO	None	Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	Project Coordinator	None	Start, middle, and end of Project
Monthly Reports	Project team	None	At the end of each month
Annual reports	Project team MARN UNDP-CO	None	At the end of each year
Meetings of the Project Coordination Committee	Project Coordinator UNDP-CO	None	After the inception workshop and thereafter at least once a year.
Technical reports	Project Team External Consultants	None	To be determined by Project team & UNDP CO
Mid-term External Evaluation	Project Team UNDP-CO External Consultants	Indicative cost: $30,000	At the mid-point of Project implementation.
Final External Evaluation	Project Team UNDP-CO External Consultants	Indicative cost: $30,000	At the end of Project implementation.
Final Report	Project Team UNDP-CO	None	At least one month before the end of the Project
Publication of Lessons Learned	Project Team	$20,000	Yearly

Type of M&E Activity	Responsible Parties	Budget US$* *(does not include staff time)*	Time Frame
Audit	UNDP-CO Project Team	$6,000	Audits on the project will follow UNDP finance regulations and rules and applicable audit policies.
Visits to Field Sites (UNDP staff travel costs to be charged to IA fees)	MARN UNDP-CO	$11,800	At all stages of project implementation
TOTAL INDICATIVE COST		**$ 98,800**	

D. Include a results framework for the project proposal, including milestones, targets and indicators.

	Indicator	Baseline	Target (end of the Project)	Means of Verification	Risks and Assumptions
Project Objective: to increase climate resilience in production landscapes and socio-economic systems in target municipalities, threatened by climate change and climatic variability impacts, in particular hydrometeorological events that are increasing in frequency and intensity.	O.1. Number of production organisations and organisations for risk management that incorporate climate change adaptation measures for reducing vulnerability.	High levels of poverty (70% in target municipalities) and the lack of production planning and marketing alternatives, combined with high exposure to hydrometeorological hazards increase vulnerability and reduce opportunities for families to access a greater amount of food , thus affecting their quality of life dramatically.	By year three, eight organisations drive adaptation strategies.	Organisation established in the target area.	Change of government limits the operational possibilities of the Project.
	O.2. Funding mechanism developed to support national processes of adaptation.	Government authorities assess means of climate change adaptation financing. This work is a priority, however to date; funding mechanisms are insufficient to meet projected needs.	By the end of the project, a National Fund for Climate Change Adaptation designed.	Technical document of the design processes of the National Fund.	Change of government limits the capabilities of agreements on financing mechanisms for climate change adaptation.
	O.3. Percentage of increase in yields.	Currently it Is an urgent need to increase yields for poor families affected by climate change impacts in target area. Currently there are no adaptation strategies implemented in target area.	By the end of the project, 50% of farm family between 0.5 and 2 hectares experience increased in yields by 20%.	Reduction in crop losses, increase in availability of food and products for marketing.	Community leaders and local authorities have no interest in innovation adaptation. Neither the community nor the producers and are interested in implementing adaptation measures on the grounds that they represent an additional cost.

	Indicator	Baseline	Target (end of the Project)	Means of Verification	Risks and Assumptions
Outcome 1: Local and national capacities and tools enable decision makers and communities to reduce vulnerabilities and strengthen adaptive responses.	1.1. Number of targeted national institutions and Municipal Planning Units with increased capacity to exercise downscaling of climate scenarios from the data collected by observation networks.	Currently, national capacities to manage and analyse information about climate hazards and risks are weak and essentially limited to extrapolations of regional models. Only INSIVUMEH has trained experts for downscaling and will be a Project ally in the process of training.	By the end of the project Four National Institutions, the Sololá and Suchitepéquez UTDs, and four Planning Units of target area municipalities are involved in creation of local information networks and conducting downscaling exercises.	List of attendance of training workshops. Downscaling exercises conducted for target area. Briefing papers on local climate scenarios. Descriptive documents of the tools and guidelines for downscaling of climate scenarios in Guatemala.	Territorial exercises do not provide data in time and with the quality needed for the implementation of the downscaling exercises in priority areas.
	1.2. Number of strategies and development plans adopted and implemented, incorporating information on climate change risks and adaptation measures.	Guatemala has established a Territorial Planning System (SINPET) which allows integration of sectoral policies and strengthens development processes. In this context, the country has developed plans, which have not yet mainstreamed climate change risks, nor incorporated adaptation measures.	By the end of the project, Sololá and Suchitepéquez Development Plans, and four Municipal Development Plans mainstream climate change risks and opportunities, and incorporate adaptation measures.	Departmental and Municipal Development Plans. Reports from territorial planning workshops.	Departmental and municipal authorities are not actively involved in planning and other Project activities. Planning processes are not developed within Project time frames. There is no adequate information at local level.
	1.3. Number and type of financing mechanisms designed and operating.	There are no public-private partnerships to support adaptation processes, or mechanisms for national or local funding.	By the end of the project, at least one public /private partnership to finance adaptation processes established.	Technical document of the Project. Agreements between private and public sector.	Change of government limits the capabilities of agreements on financing mechanisms for climate change adaptation.

	Indicator	Baseline	Target (end of the Project)	Means of Verification	Risks and Assumptions
	2.1. Number of joint regional planning processes undertaken, including climate change adaptation measures, vulnerability mapping, and implementation of adaptation measures.	There have been no land uses planning processes that consider climate change.	By the second year of the project, two joint territorial planning processes realized including adaptation measures.	Territorial planning workshops reports. Number of families participating in the implementation of plans. Territorial Planning Documents.	Municipal authorities are not actively involved in regional planning or other Project activities. There is no adequate information to the local level.
Outcome 2: Production landscape resilience increased through application of traditional and ancestral practices and other production activities, as well as targeted investments.	2.2. Number of ancestral and traditional practices recovered and evaluated for increased resilience of production landscapes.	Ancestral practices are recovered that are centred on the use of biological diversity (CONAP), but not in relation to production practices.	By the end of the Project, at least two traditional or ancestral practices for each ethnic group in target area and related to increasing the production landscapes resilience are recovered, systematised, evaluated, and prioritised.	Project Papers. Consultation workshops, meetings, and interviews with community leaders.	There is no interest on the part of community leaders to rescue their traditional practices.
	2.3. Percentage of targeted households adopting adaptation strategies in target area.	There are no adaptation strategies implemented.	By the third year of the Project, 50% of households implement adaptive strategies defined from resilience objectives in a participatory manner in target area. These strategies should include ecosystem-based adaptation.	Project technical report. Reduction in crop losses, increase in availability of food and products for marketing in target municipalities.	Community leaders and local authorities have no interest in innovation adaptation. Neither the community nor the producers and are interested in implementing adaptation measures on the grounds that they represent an additional cost.

	Indicator	Baseline	Target (end of the Project)	Means of Verification	Risks and Assumptions
Outcome 3: Socio-economic adaptive capacity of communities improved.	3.1. Households and communities have more secure access to livelihood assets (disaggregated by gender).	Local communities have no storage facilities or differentiated marketing strategies for products.	By end of third year of the Project, 50% of target households have improve diversified yields in 20% and sell crops in differentiated markets.	Survey Project documents for the agricultural service warehouse, and mechanism of differentiated market access.	There is resistance from organizations and communities to implement innovative measures for storage and marketing.
	3.2. Number and type of social networks for production in the target area (indicating gender composition).	To be confirmed at the start of the Project.	By the third year of the Project, two social networks (associations/production cooperatives/marketing associations formed or strengthen and operating.	Project team technical report. Minutes and working arrangements.	There is resistance from producers and marketing organizations to mainstream climate change adaptation measures.
	3.3. Number of micro-finance entities operating.	Weak organization and lack of market information make marketing of traditional products difficult and reduce the possibilities for innovating production processes and alternative marketing.	By the third year of the Project, two local micro-finance entities operating for the implementation of locally operated micro-lending .	Inscription micro-finance entities.	Weak social organization, extreme poverty, and resistance to work in production organizations hinder production and marketing arrangements needed to promote alternative products or new ways of marketing.
Outcome 4: Effective knowledge management results in informed decision-making at all levels through an integrated information system.	4.1. Inter- institutional information system of climate change designed and operating in a coordinated manner at multiple levels, running.	Currently no information centres work in coordination and there are no initiatives that link multi-level issues of climate change. Climate change information is not available for decision making at all levels.	From the first year of the Project, an inter-institutional information system for adaptation to climate change operating in a coordinated manner.	Agreement for operating information system on climate change signed. Protocols of information, analysis, and dissemination defined. Working scales established. Products of the information system from data of target municipalities produced.	Centres of excellence are not linked to the project and/or do not have the time to be part of the information system.

	Indicator	Baseline	Target (end of the Project)	Means of Verification	Risks and Assumptions
	4.2. Percentage of targeted population affirming awareness of predicted adverse impacts of climate change and appropriate response.	There are no awareness programmes focused on climate change issues today.	By the end of the project, at least 90% of households in the target area are aware of predicted adverse impacts of climate change and appropriate response.	Report of Design Awareness Programme.	The local media are not interested in promoting knowledge and information on climate change and adaptation.
	4.3. Number of lessons learned and best production practices included in Project dissemination strategies and shared on UNDP, MARN, and ALM websites.	There is no public information with a multicultural approach on vulnerability and climate change adaptation practices. Climate change information is on a large scale and does not offer the precision required for decision making at the local level.	During the Project implementation there will be: ten lessons learned systematised and published annually, four technical standards developed, and four manuals designed and published.	Annual reports on systematisation of experiences and lessons learned. Lessons learned published on ALM. Manuals published and shared on UNDP, MARN, and ALM web sites. Reports of participatory workshop on evaluation and monitoring. Technical standards published. Manuals published and shared on ALM. Testimonies. Posters and information materials	The departmental authorities are not actively involved in land planning and other Project activities.

E. Total budget and gantt chart

Award ID:	00075911	Project ID(s):	Proposal 00060326 Project 00075911
Award Title:	PIMS 4386 Climate change resilient productive landscapes and socio-economic networks advanced in Guatemala		
Business Unit:	GTM10		
Project Title:	Climate change resilient productive landscapes and socio-economic networks advanced in Guatemala		
PIMS No.:	4386		
Implementing partner (executing agency)	Ministry of Environment and Natural Resources		

Outcome/ Atlas Activity	Responsible Party/ Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)
Outcome 1: Local and national capacities and tools enable decision makers and communities to reduce vulnerabilities and strengthen adaptive responses.	002440	62040	AF	71200	International consultant	8.000,00				8.000,00
				71300	Local consultant	8.600,00				8.600,00
				71600	Travel	10.200,00	3.000,00	2.000,00	2.000,00	17.200,00
				72200	Equipment and furniture		24.000,00			24.000,00
				72500	Supplies	4.000,00				4.000,00
				72800	Information technology equipment	24.000,00	31.500,00			55.500,00
				74500	Miscellaneous Expenses		1.700,00			1.700,00
				75700	Training	64.200,00	66.800,00	38.000,00	12.000,00	181.000,00
					Total Outcome 1	**119.000,00**	**127.000,00**	**40.000,00**	**14.000,00**	**300.000,00**
Outcome 2: Production landscape resilience increased	002440	62040	AF	71200	International consultant	4.000,00				4.000,00
				71300	Local consultant	124.200,00	110.000,00	110.000,00	35.000,00	379.200,00
				71600	Travel					

Outcome/ Atlas Activity	Responsible Party/ Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)
through application of traditional and ancestral practices and other production activities, as well as targeted investments.						18.800,00	9.000,00	6.000,00	3.000,00	36.800,00
				72200	Equipment and furniture	136.000,00				136.000,00
				72400	Communication and audiovisual equipment	10.000,00				10.000,00
				72500	Supplies	3.000,00	2.000,00	1.000,00		6.000,00
				72600	Grants	285.000,00	780.000,00	570.000,00	195.000,00	1.830.000,00
				72800	Information technology equipment	37.000,00				37.000,00
				74200	Audio visual & printing production costs		5.000,00			5.000,00
				74500	Miscellaneous Expenses					-
				75700	Training	62.000,00	50.000,00	22.000,00	22.000,00	156.000,00
					Total Outcome 2	**680.000,00**	**956.000,00**	**709.000,00**	**255.000,00**	**2.600.000,00**
Outcome 3: Socio-economic adaptive capacity of communities improved.	002440	62040	AF	71300	Local consultant	9.000,00	9.000,00			18.000,00
				71600	Travel	4.000,00	5.000,00	3.000,00	2.000,00	14.000,00
				72100	Contractual services (companies)		335.000,00	600.000,00		935.000,00
				72200	Equipment and furniture		40.000,00			40.000,00
				72600	Grants	20.000,00	150.000,00	125.000,00	5.000,00	300.000,00
				75700	Training	32.000,00	50.000,00	40.000,00	16.000,00	138.000,00
					Total Outcome 3	**65.000,00**	**589.000,00**	**768.000,00**	**23.000,00**	**1.445.000,00**
Outcome 4: Effective knowledge management	002440	62040	AF	71300	Local consultant	6.000,00	2.800,00	10.000,00		18.800,00
				71600	Travel	2.000,00	3.000,00			5.000,00

Outcome/ Atlas Activity	Responsible Party/ Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)
results in informed decision-making at all levels through an integrated information system.				72100	Contractual services (companies)		25.000,00			25.000,00
				74200	Audio visual & printing production costs		5.000,00	26.000,00	7.000,00	38.000,00
				75700	Training	40.000,00	28.000,00	12.000,00	12.000,00	92.000,00
				74500	Miscellaneous Expenses		1.200,00			1.200,00
					Total Outcome 4	**48.000,00**	**65.000,00**	**48.000,00**	**19.000,00**	**180.000,00**
Project management unit	**002440**	**62040**	**AF**	71200	International consultant		6.000,00		6.000,00	12.000,00
				71300	Local consultant	30.000,00	33.000,00	30.000,00	33.000,00	126.000,00
				71400	Contractual services (individual)	79.800,00	79.800,00	79.800,00	79.800,00	319.200,00
				71600	Travel	2.700,00	3.700,00	2.700,00	2.700,00	11.800,00
				74100	Profesional services	1.500,00	1.500,00	1.500,00	1.500,00	6.000,00
				74500	Miscellaneous Expenses					-
					Total management	**114.000,00**	**124.000,00**	**114.000,00**	**123.000,00**	**475.000,00**
					Project TOTAL	**1.026.000,00**	**1.861.000,00**	**1.679.000,00**	**434.000,00**	**5.000.000,00**

Summary of Funds:

	Amount year 1	Amount year 2	Amount year 3	Amount year 4	Total
AF	**1,026,000.00**	**1,861,000.00**	**1,679,000.00**	**434,000.00**	**5,000,000.00**
TOTAL	**1,026,000.00**	**1,861,000.00**	**1,679,000.00**	**434,000.00**	**5,000,000.00**

Budget Notes

Note	Atlas Number	Category	4 year total	Description of Expenditures (to be finalized at project inception phase)
Component 1: Development of capacities and tools to enhance national and local capabilities for climate change adaptation **Total: $300,000.00**				
1.	71200	International consultants	$8,000	International consultant team support to MARN and INSIVUMEH for the development and downscaling of climate scenarios. Support MARN in the design of a National Climate Change Fund.
2.	71300	Local consultants	$8,600	National consultant team support for climate change scenario downscaling. Support certification of local produce/ commodities value chains.
3.	71600	Travel	$17,200	International and local travel to support component effort.
4.	72200	Equipment and furniture	$24,000	Equipment and furniture for MARN and INSIVUMEH related to climate change scenarios.
5.	72500	Supplies	$4,000	Office supplies for programme coordination to support component effort.
6.	72800	Information technology equipment	$55,500	IT equipments for MARN and INSIVUMEH for downscaling climate change scenarios.
7.	74500	Miscellaneous	$1,700	Ad hoc expenses for component 1
8.	75700	Training	$181,000	Training for MARN, INSIVUMEH staff in climate change scenario downscaling. Training, workshops and awareness for local and municipal stakeholders on use of climate information. Workshops for MARN and stakeholders in design and scope of National Climate Change Fund.
Component 2: Recovery and Development of Climate Change Resilient Practices That Reduce the Vulnerability of Communities **Total: $2,600,000**				
9.	71200	International consultants	$4,000	International consultant team support for ecosystem service valuation and design support of PES systems.
10.	71300	Local consultants	$379,200	Climate change and vulnerability expert. Social expert. Agriculture/ rural economics expert.
11.	71600	Travel	$36,800	Travel requirements for local and international consultants, programme coordinator to support component effort.,
12.	72200	Equipment and furniture	$136,000	Equipment and furniture support for municipal planning/ environmental offices and department offices of MARN to build-up their capacity for climate-proof planning and assistance to communities.

13.	72400	Communication and audiovisual equipment	$10,000	Necessary communication equipment under MOSS. Audiovisual equipment for documentation of processes and activities.
14.	72500	Supplies	$6,000	Office supplies for programme coordination to support component effort.
15.	72600	Grants	$1,830,000	Implementation of climate-proof agricultural practices including terracing, erosion barriers, silviculture, reforestation and conservation measures for forest remnants.
16.	72800	Information technology equipment	$37,000	Equipment (computers, software and others) for municipal offices, department offices of MARN and MAGA.
17.	74200	Audio visual & printing production costs	$5,000	Edition and publication of vulnerability maps and related materials.
18.	75700	Training	$156,000	Training and workshops for municipalities, development councils and other relevant stakeholders on climate change impacts on ecosystems and livelihoods, vulnerability and risk management, ecosystem services, payment for ecosystem services, best adaptation practices. It will include learning tours.
Component 3: Improvement of Food Security and Livelihood Options in the Target Municipalities **Total: 1,445,000**				
19.	71300	Local consultant	18,000	Support design of agricultural service warehouses. Support design of markets mechanisms including certification and PES.
20.	71600	Travel	14,000	Travel costs for consultants, experts and programme coordinator.
21.	72100	Contractual services (companies)	935,000	Support municipal and council investments for adaptation according to climate-proof development plans.
22.	72200	Equipment and furniture	40,000	Hydrological monitoring equipment, Meteorological equipment and other equipment to feed information on environmental indicators for climate-proof planning and evaluation of ecosystem services.
23.	72600	Grants	300,000	Through MoA with relevant organizations, develop a collateral guarantee, develop micro-financing mechanisms, establish and strengthen associations, cooperatives, strengthen organizational capacities for land management, support mechanisms for social organizations.
24.	75700	Training	138,000	Training and workshops and learning tours on community-based financing, market chains, certification, community organization, hydro meteorological monitoring and others.
Component 4: ***Establishment of an information system based on existing sub-national and national centres of expertise, to support more robust science-based decision-making*** **Total: $180,000**				

25.	71300	Local consultant	$18,800	National team of consultant to support the design of awareness and advocacy programme, compilation of lessons learned in each component and design of technical standards for integration of climate risks and opportunities into Departmental and Municipal Development Plans, local participatory vulnerability analyses, community based adaptation strategies and downscaling of climate scenarios based on local data.
26.	71600	Travel	$5,000	Travel for consultants.
27.	72100	Contractual services (companies)	$25,000	Implement communication and advocacy programme.
28.	74200	Audio visual & printing production costs	$38,000	Develop and distribute guidance manuals.
29.	75700	Training	$92,000	Workshops with relevant municipal, community and national stakeholders to consolidate lessons learned, technical standards and others.
30.	74500	Miscellaneous Expenses	$1,200	Un-foreseen expenses for component 4.
Project Management **Total: $475,000**				
31.	71200	International consultant	$12,000	International consultant, as necessary, to support monitoring and evaluation activities.
32.	71300	Local consultant	$126,000	Consultant support for external mid-term evaluation, terminal evaluation, specialized analytical/technical reports as required.
33.	71400	Contractual services (individual)	$319,000	Four year salary for PMU staff, including programme coordinator, administrative assistant.
34.	71600	Travel	$11,800	Financial support for domestic travel and international (as necessary) to conduct project M&E.
35.	74100	Professional services	$6,000	Audit.

Gannt chart

	Outcomes / outputs	Yr-1				Yr-2				Yr -3				Yr-4				Total budget (US$)
		QR-1	QR-2	QR-3	QR-4	QR-1	QR-2	QR-3	QR-4	QR-1	QR-2	QR-3	QR-4	QR-1	QR-2	QR-3	QR-4	
Outcome 1: Local and national capacities and tools enable decision makers and communities to reduce vulnerabilities and strengthen adaptive responses.																		
1.1	Strengthened capacities and tools at local and national levels for development of downscaled climate change scenarios.	37,400				47,.600				8,000				2,000				95,000
1.2	Increased capacity by local authorities and communities to mainstream climate change and variability issues into municipal and departmental development plans and other development planning instruments.		56,600				64,400				17,000				2,000			140,000
1.3	Development of new and innovative financial mechanisms that work to support adaptation processes and initiatives at national and local levels		25,000				15,000				15,000				10,000			65,000
	SUBTOTAL	**119,000**				**127,000**				**40,000**				**14,000**				**300,000**
Outcome 2: Production landscape resilience increased through application of traditional and ancestral practices and other production activities, as well as targeted investments.																		
2.1	Undertaking of vulnerability analyses of production practices and land uses in target municipalities, to identify options for enhancing resilience.	283,000				101,000				64,000				22,000				470,000

	Outcomes / outputs	Yr-1				Yr-2				Yr -3				Yr-4				Total budget (US$)
		QR-1	QR-2	QR-3	QR-4	QR-1	QR-2	QR-3	QR-4	QR-1	QR-2	QR-3	QR-4	QR-1	QR-2	QR-3	QR-4	
2.2	Recovery and systematization of ancestral and traditional practices and knowledge for production systems and hydrometeorological risk management.		68,000				36,000				36,000							140,000
2.3	Adoption/advancement of climate-change resilient production practices and investments in target municipalities.			329,000			819,000				609,000				230,000			1,990,000
	SUBTOTAL		**680,000**				**956,000**				**709,000**				**255,000**			**2,600,000**
	Outcome 3: Socio-economic adaptive capacity of communities improved.																	
3.1	Incorporation of climate change themes into marketing of community products in order to reduce socio-economic vulnerability.			16,000			347,000				608,000							971,000
3.2	Strengthening of community social networks in order to build more resilient social environments.		44,000				74,000				33,000		5,000					156,000
3.3	Development of micro-financing schemes, for the most vulnerable populations (indigenous and women).			5,000			168,000				127,000				18,000			318,000
	SUBTOTAL	**65.000,00**					**589.000,00**				**768.000,00**				**23.000,00**			**1,445,000**
	Outcome 4: Effective knowledge management results in informed decision-making at all levels through an integrated information system.																	
4.1	Establishment of an																	

	Outcomes / outputs	Yr-1				Yr-2				Yr -3				Yr-4				Total budget (US$)
		QR-1	QR-2	QR-3	QR-4	QR-1	QR-2	QR-3	QR-4	QR-1	QR-2	QR-3	QR-4	QR-1	QR-2	QR-3	QR-4	
	information system, based on existing sub-national and national centres of expertise, to support more robust science-based decision-making.		40,000				12,000				12,000				12,000			76,000
4.2	Development of an awareness and advocacy programme on climate change for a range of target audiences.			8,000			33,000											41,000
4.3	Systematization and documentation of lessons learned and best practices derived from efforts to develop more resilient production systems, including ancestral and traditional practices.						20,000				5,000				5,000			30,000
4.4	Formulation of technical standards for development and implementation of climate change adaptation proposals.										20,000							20,000
4.5	Creation of manuals on new, traditional, and ancestral adaptation practices at the community level.										11,000				2,000			13,000
	SUBTOTAL		**48,000**				**65,000**				**48,000**				**19,000**			**180,000**
																		4,525,000
EXECUTION COSTS		**114,000**				**124,000**				**114,000**				**123,000**				**475,000**
GRAND TOTAL		**1,026,000**				**1,861,000**				**1,679,000**				**434,000**				**5,000,000**

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

A. *RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT*

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:

Minister Luis Alberto Ferraté, Ministry of Environment and Natural Resources of Guatemala

Date*: 4 April 2011*

B. *IMPLEMENTING ENTITY CERTIFICATION*

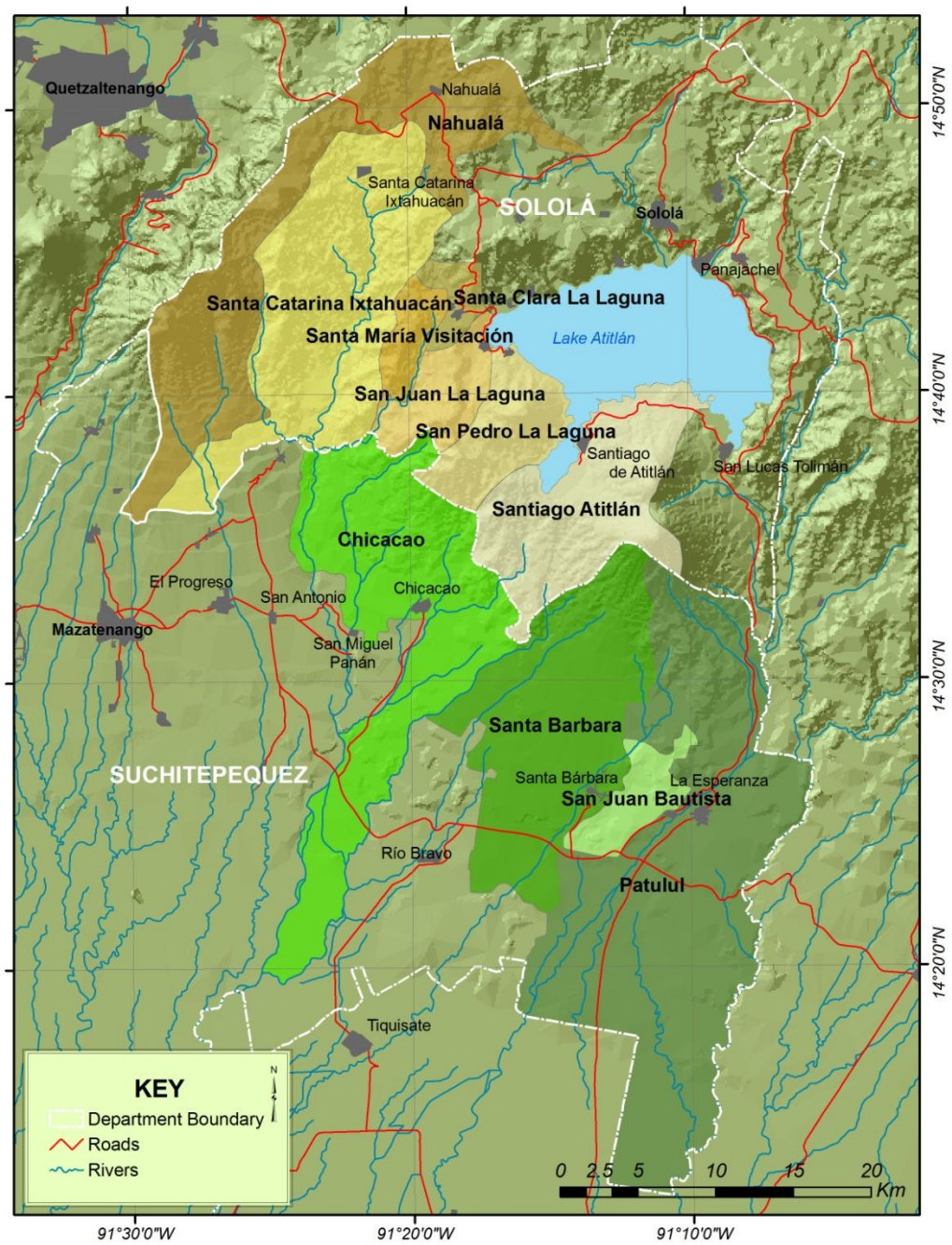
Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person"s name, telephone number and email address

<table>
<tr><td colspan="2">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 and subject to the approval by the Adaptation Fund Board, understands that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.</td></tr>
<tr><td colspan="2"> 
Yannick Glemarec
Director
Environmental Finance
UNDP
Implementing Entity Coordinator</td></tr>
<tr><td>Date: 18 April 2011</td><td>Tel. and email: +1-212-906-6843, yannick.glemarec@undp.org</td></tr>
<tr><td colspan="2">Project Contact Person: Diana Salvemini, Regional Technical Advisor a.i , UNDP;
Pradeep Kurukulasuriya</td></tr>
<tr><td colspan="2">Tel. And Email: + 1-212-906-6843 pradeep.kurukulasuriya@undp.org</td></tr>
</table>

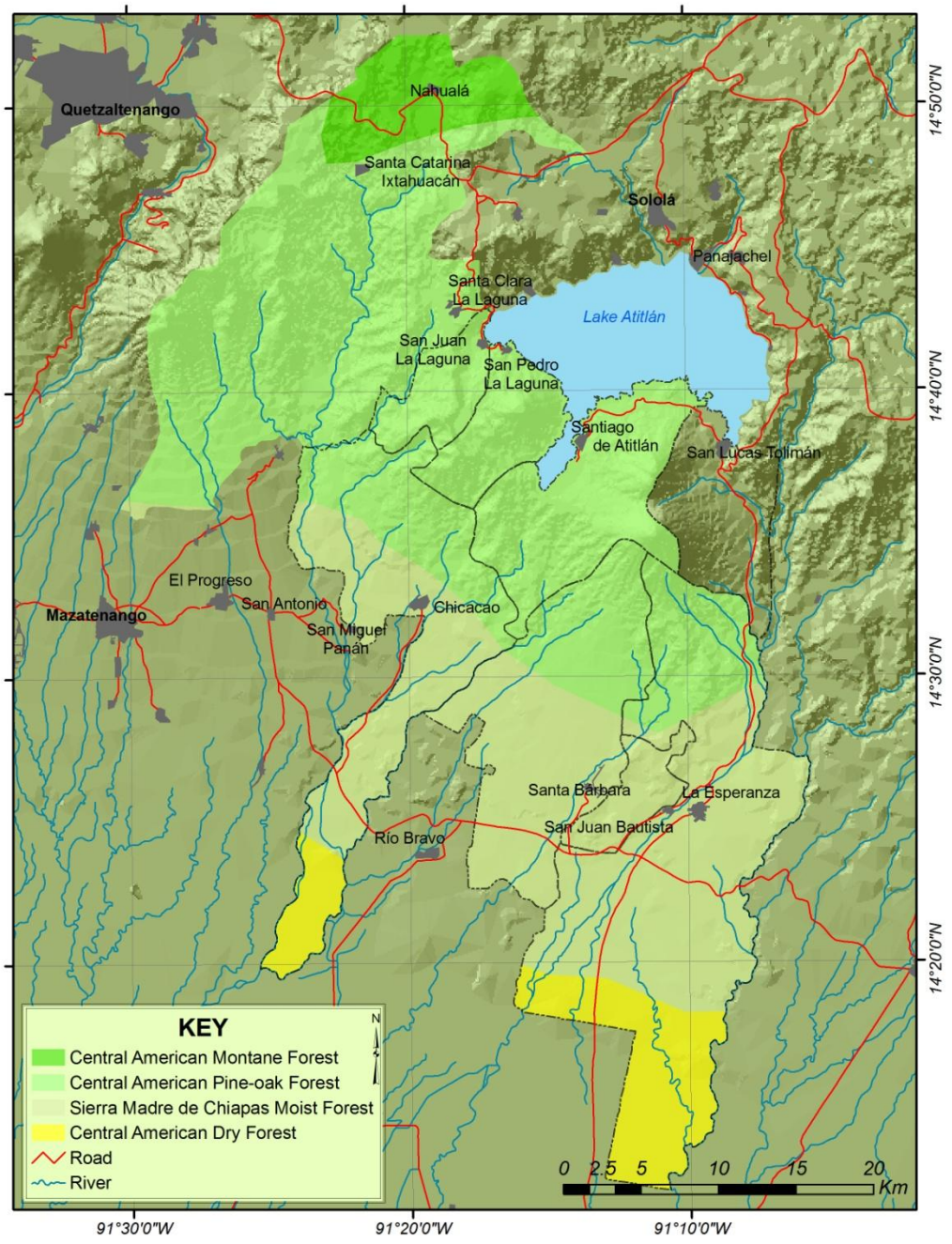
1. Each Party shall designate and communicate to the Secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

Appendix 1.

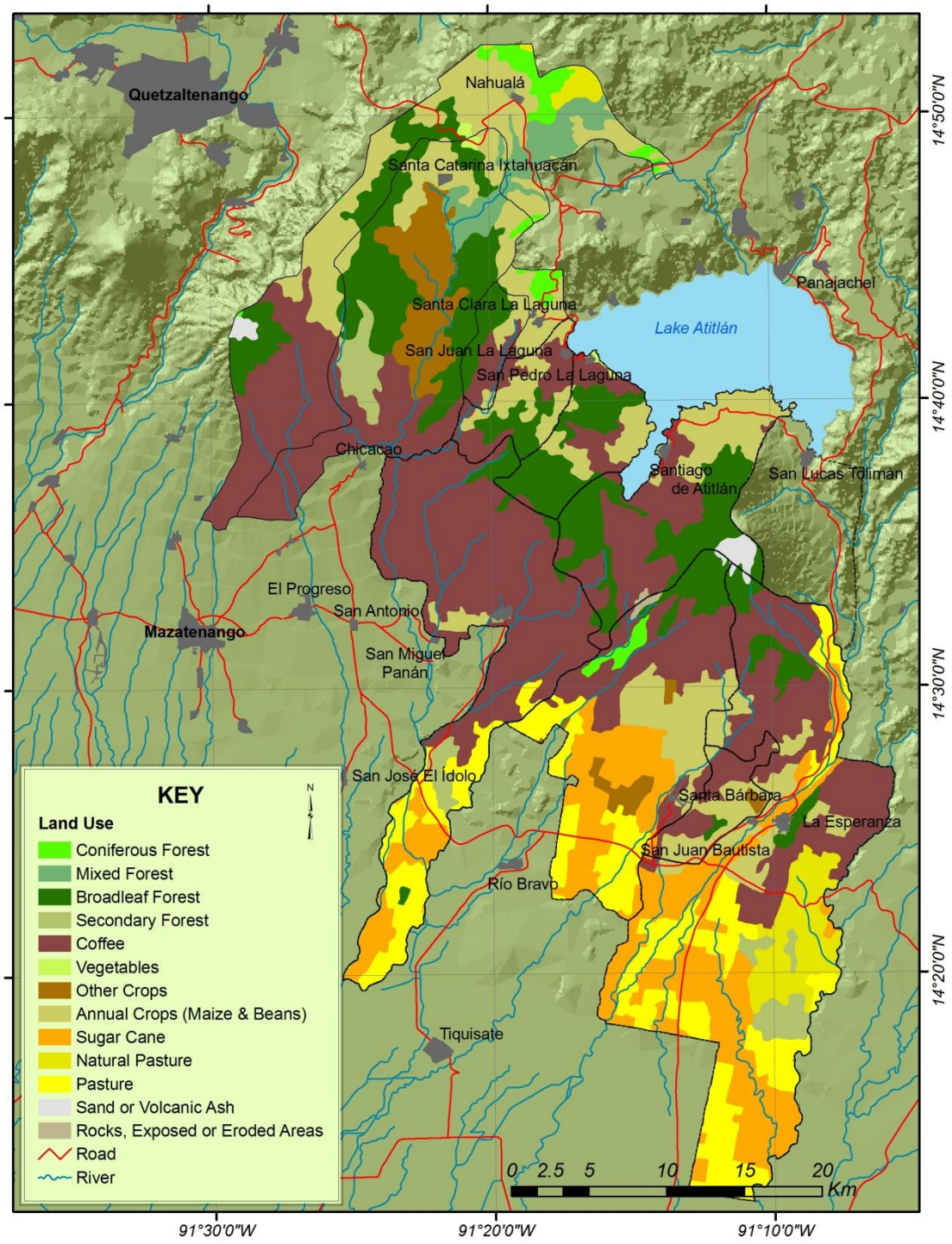
Project location



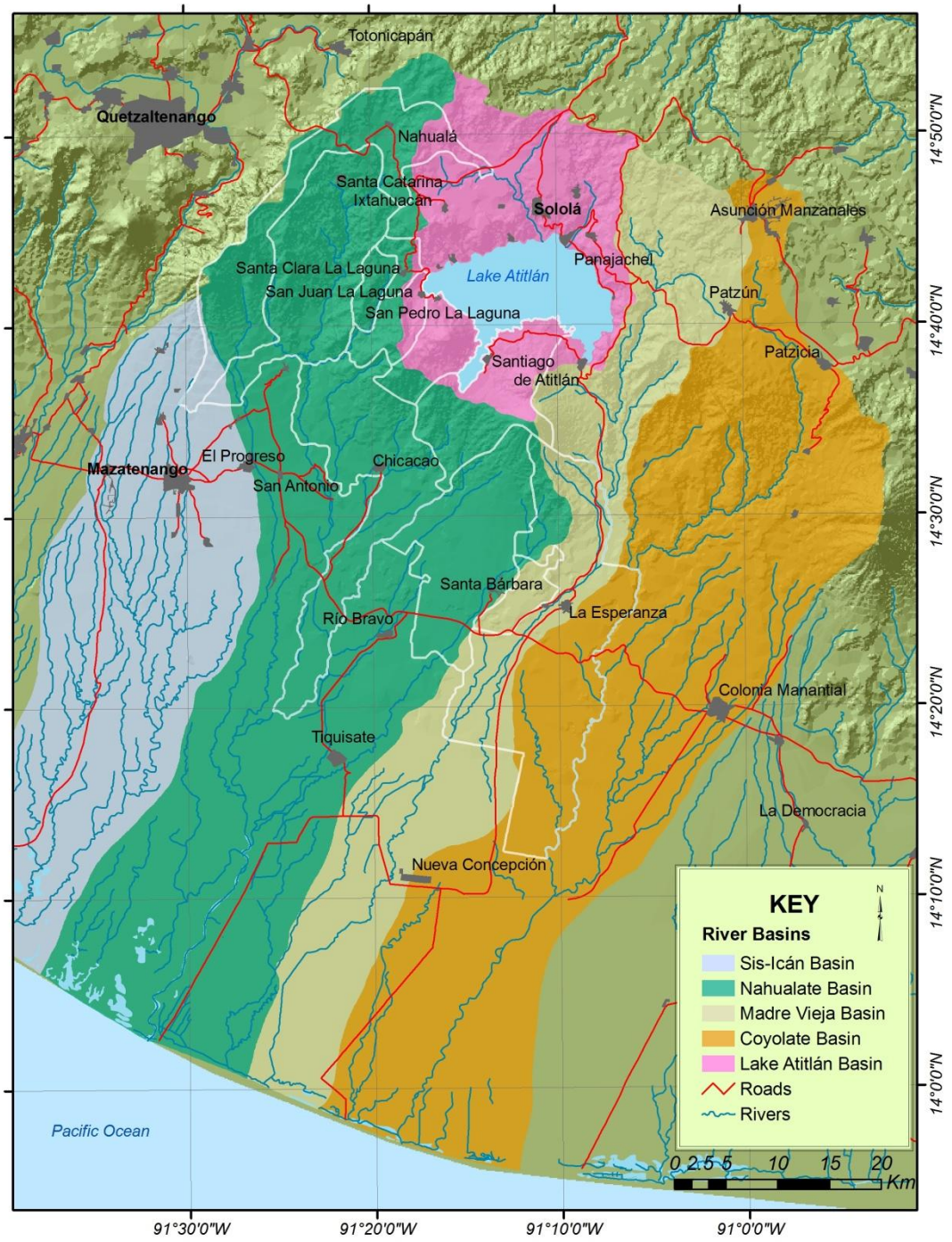
Ecoregions in target area



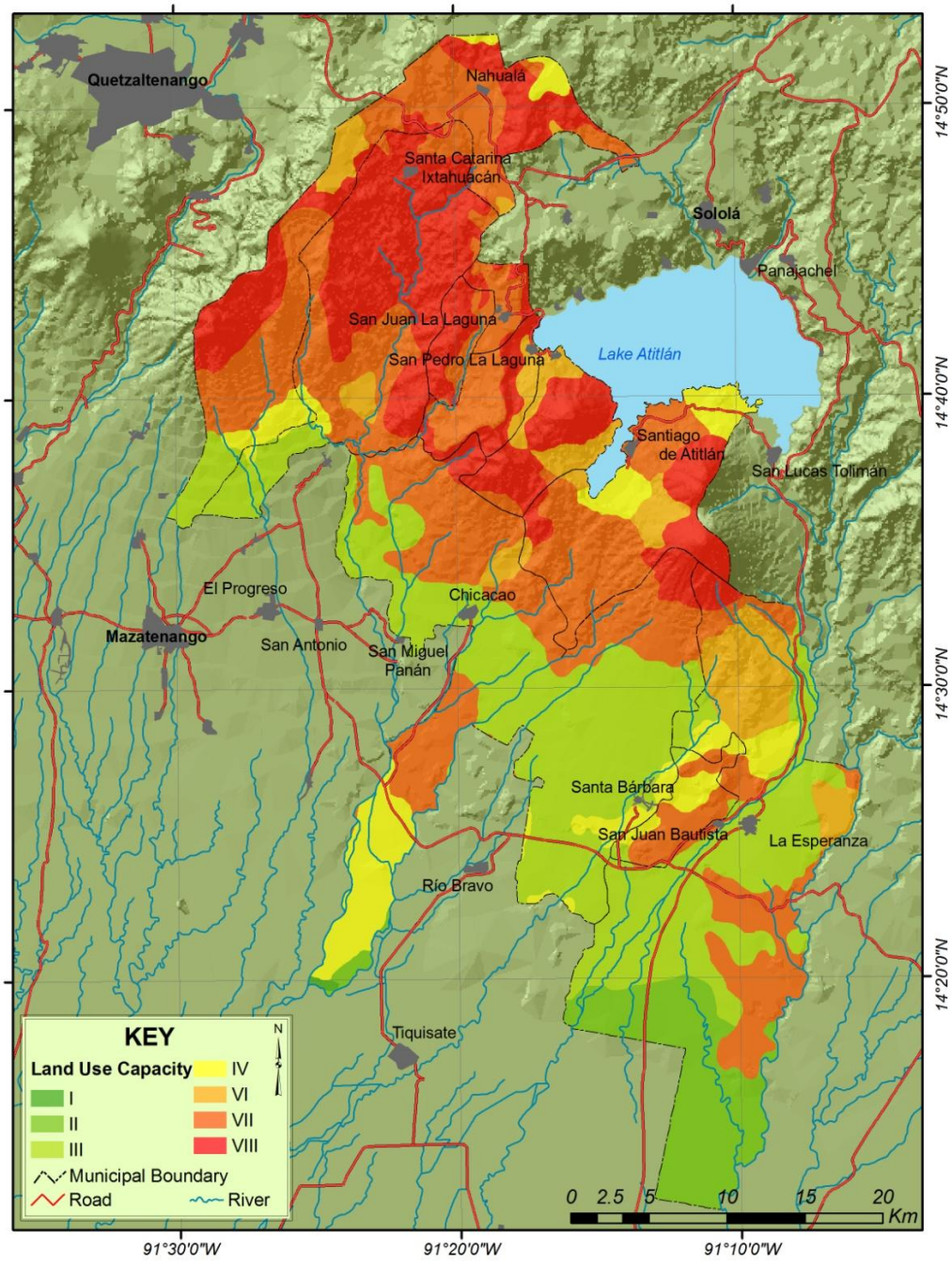
Ecosystems and production systems in target area



Target area basins



Land use capacity in target area



Appendix 2

Target municipalities

Department	Municipality	Area (km²)[a]	Total population[b]	Population of women[b]	Population of women (%)	Rural population[b]	Rural population (%)	Indigenous population[b]	Indigenous population (%)	Population of children (0 - 14 years old)[b]	Extreme poverty (%)[d]	Poverty (%)[c]	Chronic malnutrition[c]	Literacy (%)[d]
Sololá	Nahualá	186	51778	25981	50.18	35876	69.29	51762	99.97	23383	38	85.76	82.66	61.81
	San Juan La Laguna	37	8149	4068	49.92	3970	48.72	8121	99.66	3617	38.07	76.41	64.56	90.48
	San Pedro La Laguna	51	10248	5136	50.12	1214	11.85	10090	98.46	3715	6.37	47.76	47.77	81.65
	Santa Catarina Ixtahuacán	190	40653	20263	49.84	29750	73.18	40615	99.91	19108	44.7	90.01	83.69	58.62
	Santa Clara La Laguna	15	8259	4141	50.14	2117	25.63	8195	99.23	3654	21.28	74.1	75.23	83.78
	Santa María Visitación	20	554	286	51.62	554	100.00	551	99.46	294	7.99	48.71	57.14	90.27
	Santiago Atitlán	116	30503	15385	50.44	1838	6.03	29976	98.27	11834	26.26	79.79	65.35	52.25
Subtotal		**615**	**150144**	**75260**	**50.13**	**75319**	**50.16**	**149310**	**99.44**	**65605**	**26.10**	**71.79**	**68.06**	**74.79**
Suchitepequez	Chicacao	211	45069	22664	50.29	28915	64.16	36417	80.80	21489	30.03	83.94	54.82	64.05
	Patulul	344	40218	19792	49.21	26719	66.44	15749	39.16	17374	12.3	62.31	47.74	75.89
	San Juan Bautista	29	2840	1395	49.12	2840	100.00	883	31.09	1391	15.53	59.47	34.1	62.96
	Santa Bárbara	177	17062	8500	49.82	7738	45.35	6270	36.75	7671	10.05	69.13	48.08	77.01
Subtotal		**762**	**105189**	**52351**	**49.77**	**66212**	**62.95**	**59319**	**56.39**	**47925**	**16.98**	**68.71**	**46.19**	**69.97**
Total		***1376***	***255333***	***127611***	***49.95***	***141531***	***56.56***	***208629***	***77.92***	***113530***	***21.54***	***70.25***	***57.12***	***72.38***

Sources

(a) National Statistics Institute, INE

(b) National Statistics Institute, INE, Population Census (2002)

(c) National Statistics Institute, INE, MDG National Poll on Human Development (2002 - 2008)

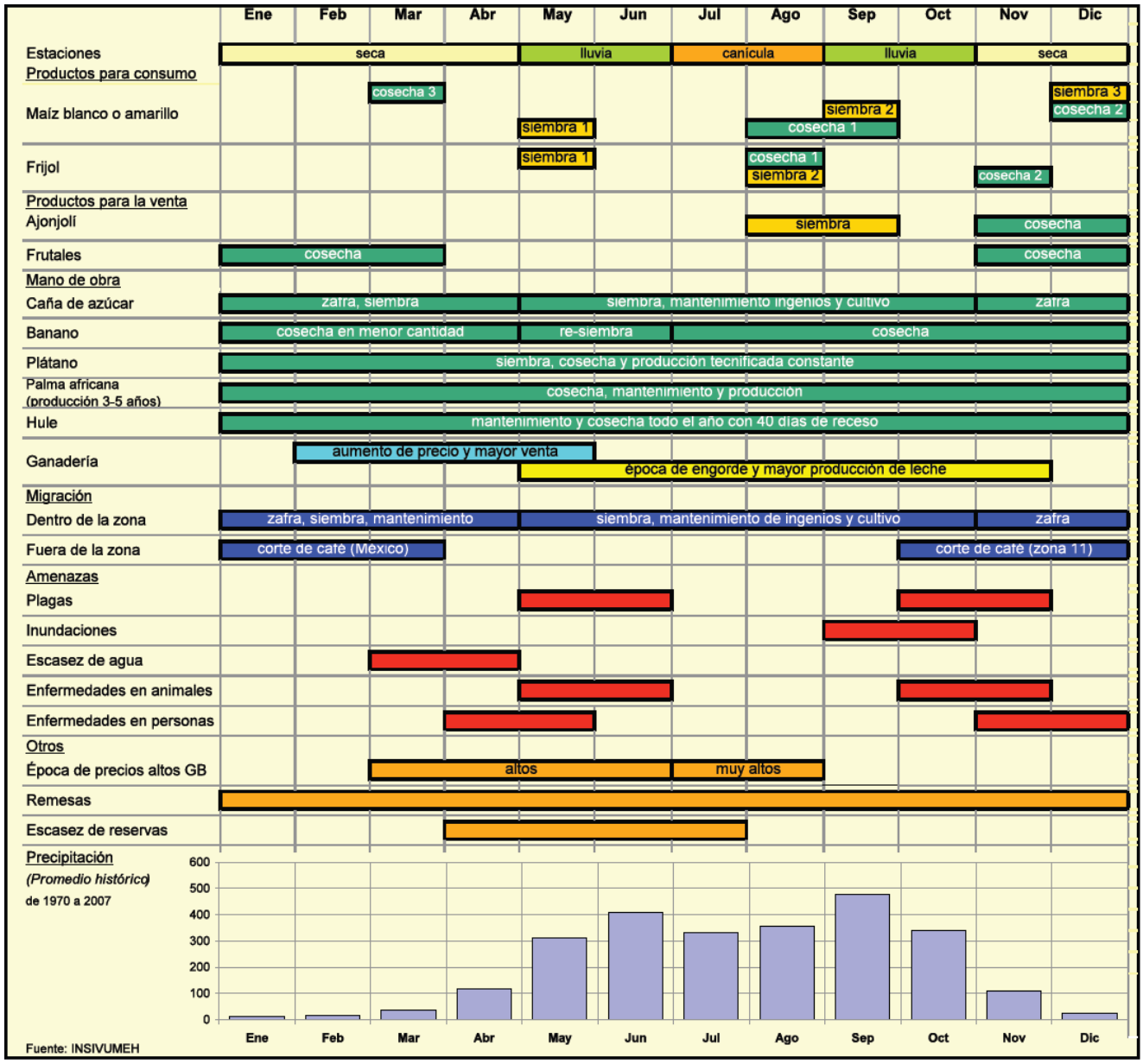
(d) Conalfa (2009)

Appendix 3

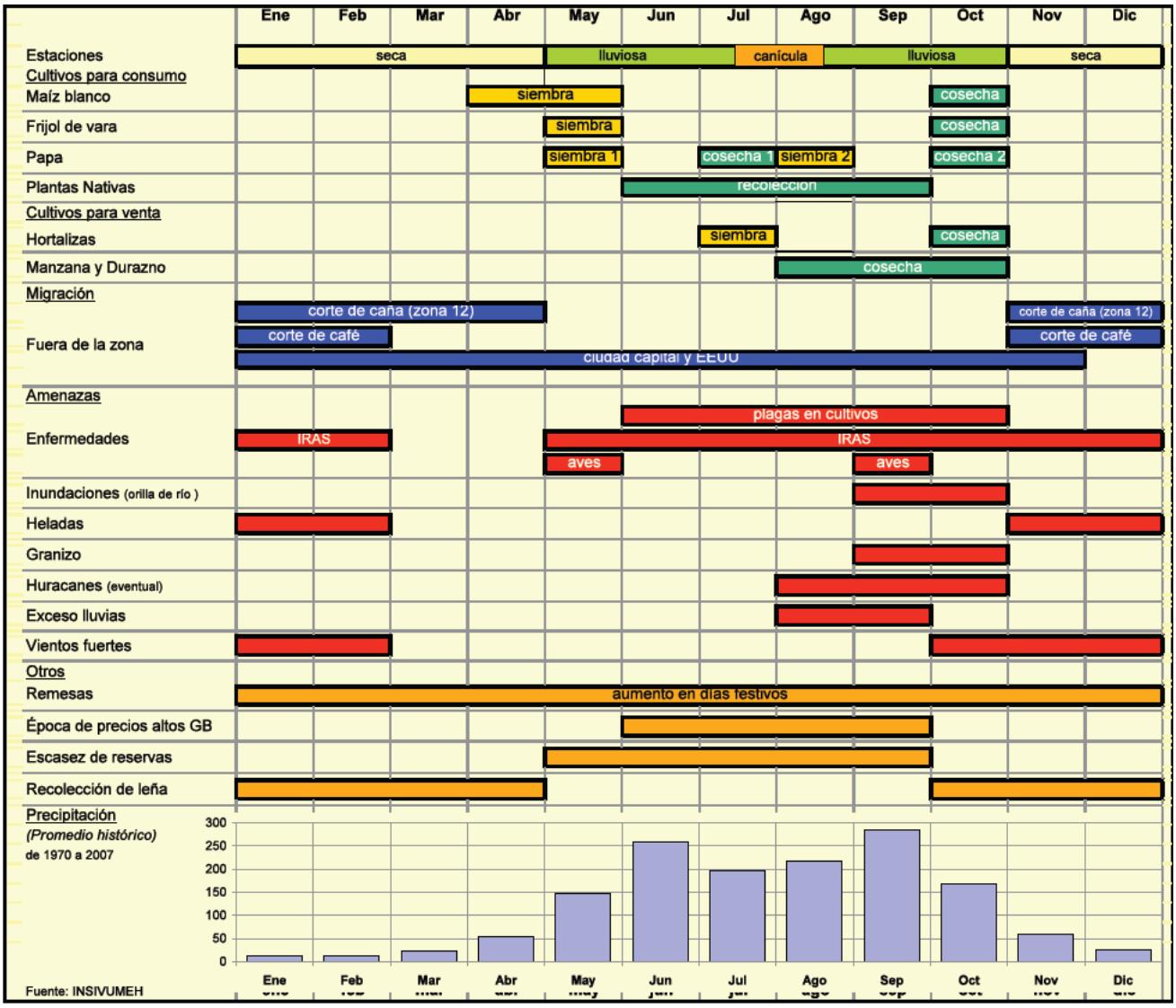
Livelihoods

Below is the seasonal calendar basis for each of livelihoods zones in target municipalities. Data source: MFEWS (2007) Central American Early Warning System for Food Security. Profiles and Livelihoods. Guatemala.

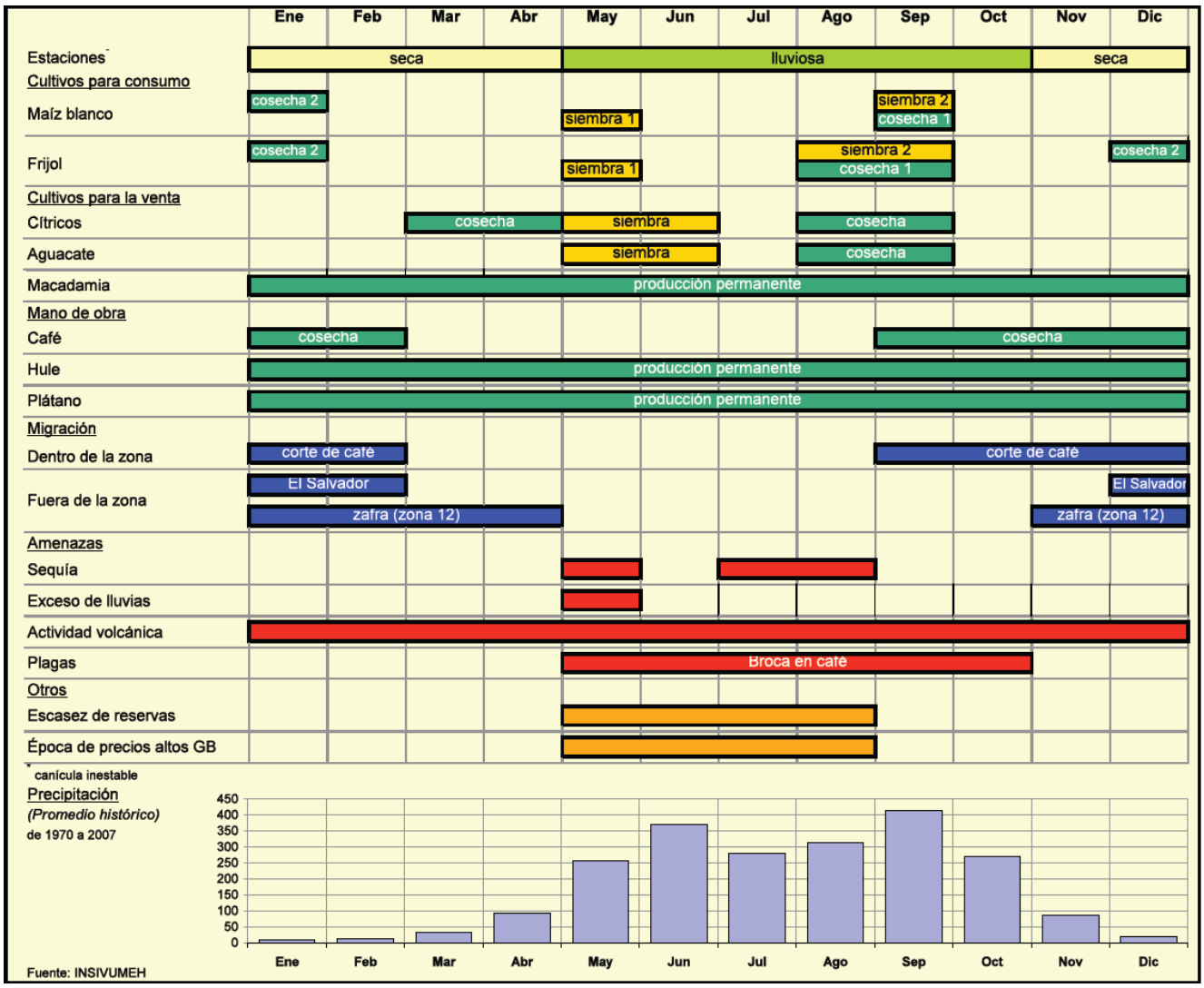
Agro industry for export and basic grains zone



Highlands subsistence agriculture zone



Coffee zone


Ene
Feb
Mar
Abr
May
Jun
Jul
Ago
Sep
Oct
Nov
Dic
Estaciones*
seca
lluviosa
seca
Cultivos para consumo
Maíz blanco
cosecha 2
siembra 1
siembra 2
cosecha 1
Frijol
cosecha 2
siembra 1
siembra 2
cosecha 1
cosecha 2
Cultivos para la venta
Cítricos
cosecha
siembra
cosecha
Aguacate
siembra
cosecha
Macadamia
producción permanente
Mano de obra
Café
cosecha
cosecha
Hule
producción permanente
Plátano
producción permanente
Migración
Dentro de la zona
corte de café
corte de café
Fuera de la zona
El Salvador
El Salvador
zafra (zona 12)
zafra (zona 12)
Amenazas
Sequía
Exceso de lluvias
Actividad volcánica
Plagas
Broca en café
Otros
Escasez de reservas
Época de precios altos GB
* canícula inestable
Precipitación
(Promedio histórico)
de 1970 a 2007
450
400
350
300
250
200
150
100
50
0
Ene
Feb
Mar
Abr
May
Jun
Jul
Ago
Sep
Oct
Nov
Dic
Fuente: INSIVUMEH

Appendix 4

UNDP Fees for Support to Adaptation Fund Project 4386: Climate change resilient productive landscapes and socio-economic networks advanced in Guatemala

The implementing entity fee will be utilized by UNDP to cover its indirect costs in the provision of general management support and specialized technical support services. The table below provides an indicative breakdown of the estimated costs of providing these services. If the national entity carrying out the project requests additional Implementation Support Services (ISS), an additional fee will apply in accordance with UNDP fee policy regarding ISS and would be charged directly to the project budget.

Category	Indicative Services[89] Provided by UNDP[90]	Estimated Cost of Providing Services[91]
Identification, Sourcing and Screening of Ideas	Provide information on substantive issues in adaptation associated with the purpose of the Adaptation Fund (AF). Engage in upstream policy dialogue related to a potential application to the AF. Verify soundness and potential eligibility of identified idea for AF.	*US$ 21,250*
Feasibility Assessment / Due Diligence Review	Provide up-front guidance on converting general idea into a feasible project/programme. Source technical expertise in line with the scope of the project/programme. Verify technical reports and project conceptualization. Provide detailed screening against technical, financial, social and risk criteria and provide statement of likely eligibility against AF requirements. Determination of execution modality and local capacity assessment of the national executing entity. Assist in identifying technical partners. Validate partner technical abilities. Obtain clearances from AF.	*US$ 63,750*
Development & Preparation	Provide technical support, backstopping and troubleshooting to convert the idea into a technically feasible and operationally viable project/programme. Source technical expertise in line with the scope of the project/programme needs. Verify technical reports and project conceptualization. Verify technical soundness, quality of preparation, and match with AF expectations. Negotiate and obtain clearances by AF. Respond to information requests, arrange revisions etc.	*US$ 85,000*
Implementation	Technical support in preparing TORs and verifying expertise for technical positions.	*US$191,250*

[89] This is an indicative list only. Actual services provided may vary and may include additional services not listed here. The level and volume of services provided varies according to need.

[90] Services are delivered through UNDP's global architecture and 3 tier quality control, oversight and technical support system: local country offices; regional technical staff; and headquarters specialists.

[91] The breakdown of estimated costs is indicative only.

Category	Indicative Services[89] Provided by UNDP[90]	Estimated Cost of Providing Services[91]
	Provide technical and operational guidance project teams. Verification of technical validity / match with AF expectations of inception report. Provide technical information as needed to facilitate implementation of the project activities. Provide advisory services as required. Provide technical support, participation as necessary during project activities. Provide troubleshooting support if needed. Provide support and oversight missions as necessary. Provide technical monitoring, progress monitoring, validation and quality assurance throughout. Allocate and monitor Annual Spending Limits based on agreed work plans. Receipt, allocation and reporting to the AFB of financial resources. Oversight and monitoring of AF funds. Return unspent funds to AF.	
Evaluation and Reporting	Provide technical support in preparing TOR and verify expertise for technical positions involving evaluation and reporting. Participate in briefing / debriefing. Verify technical validity / match with AF expectations of all evaluation and other reports Undertake technical analysis, validate results, compile lessons. Disseminate technical findings	*US$ 63,750*
Total		***US$ 425,000***

Appendix 5: Disbursement schedule

The disbursement schedule to use for the AF funds is as follows: AF Trustee transfers the funds to UNDP in 4 tranches based on the following time-bound milestones. All figures in US Dollars.

Cash transfer schedule	Upon MOU Signed Jun. 2011	Jun. 2011	Oct. 2011	Oct. 2012	Oct. 2013	Oct. 2014	Total
Project Funds		1,026,000.00	1,861,000.00	1,679,000.00	434,000.00	0.00	5,000,000.00
IA Fee	170,000.00	52,326.00	94,911.00	85,629.00	22,134.00	0.00	425,000.00
Total	170,000.00	1,078,326.00	1,955,911.00	1,764,629.00	456,134.00	0.00	5,425,000.00
	Transferred by Trustee in a single tranche		Transferred by Trustee in 3 tranches				