ADAPTATION FUND

DATE OF RECEIPT:
ADAPTATION FUND
PROJECT/PROGRAMME ID:
(For Adaptation Fund Board Secretariat Use Only)

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)
SECTOR/S	Disaster Risk Reduction
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 USD

PROJECT/PROGRAMME BACKGROUND AND CONTEXT

A. *Climate Background*

Current Situation and Climate Trends

1. 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.

2. 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]

[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.

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

4. 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). 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]

5. The climate change scenarios for Guatemala were constructed using Global Circulation Models (CGN) and downscaling models using 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 Annex A.)

Effects on Water Resources and Water Availability

6. 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 drought. 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.

[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.

7. 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 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]

8. An increase in the intensity of rainfall will produce an increase in the frequency and intensity of floods. Flow rate studies in three basins of Guatemala´s Pacific slope (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]

9. 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

10. 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.

11. 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]

12. 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]

13. 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. Recent studies project a reduction in

[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 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.

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.

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.

14. 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, regulation of the hydrological cycle, food provisioning, wood fuel, and products derived from biodiversity and agro diversity[25].

15. 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.[26]

16. 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.[27] 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

[23] MARN CONAP (2011) Preliminary assessment of Climate Change potential impacts on Biodiversity and Forests of Guatemala; recommendations for mitigation and adaptation. Draft version.
[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] FAO (2008) Climate Change.
[27] Locatelli et al (2008) Facing an Uncertain Future: How Forests and People Can Adapt to Climate Change.

disease vectors and pests, due to changes in temperature (regulating services).[28] 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 recommendation has been emphasized for Highlands zone[29].

Effects on Agriculture

17. The agricultural sector is one of those most affected by climate change. This is documented in the 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 will need to invest about US$203 million to ensure food security in the country.[30]

18. A significant impact of climate change on small farm production is the loss of organic matter in soils due to increased temperatures of soils. Higher temperatures can accelerate the decomposition of organic matter in soils and increase rates 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.[31]

19. Most climate change models predict that damages will be most sorely felt by small farmers, particularly rain-fed farmers.[32] 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.

20. 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.[33] (See Figure 1.)

21. 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

[28] Pereita et al (2005) Condition and Trends of Ecosystem Services and Biodiversity.

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

[30] MAGA (2010) Guatemala.

[31] Altieri and Nicholls (2009) Climate Change and Peasant Agriculture: Impacts and Adaptive Responses.

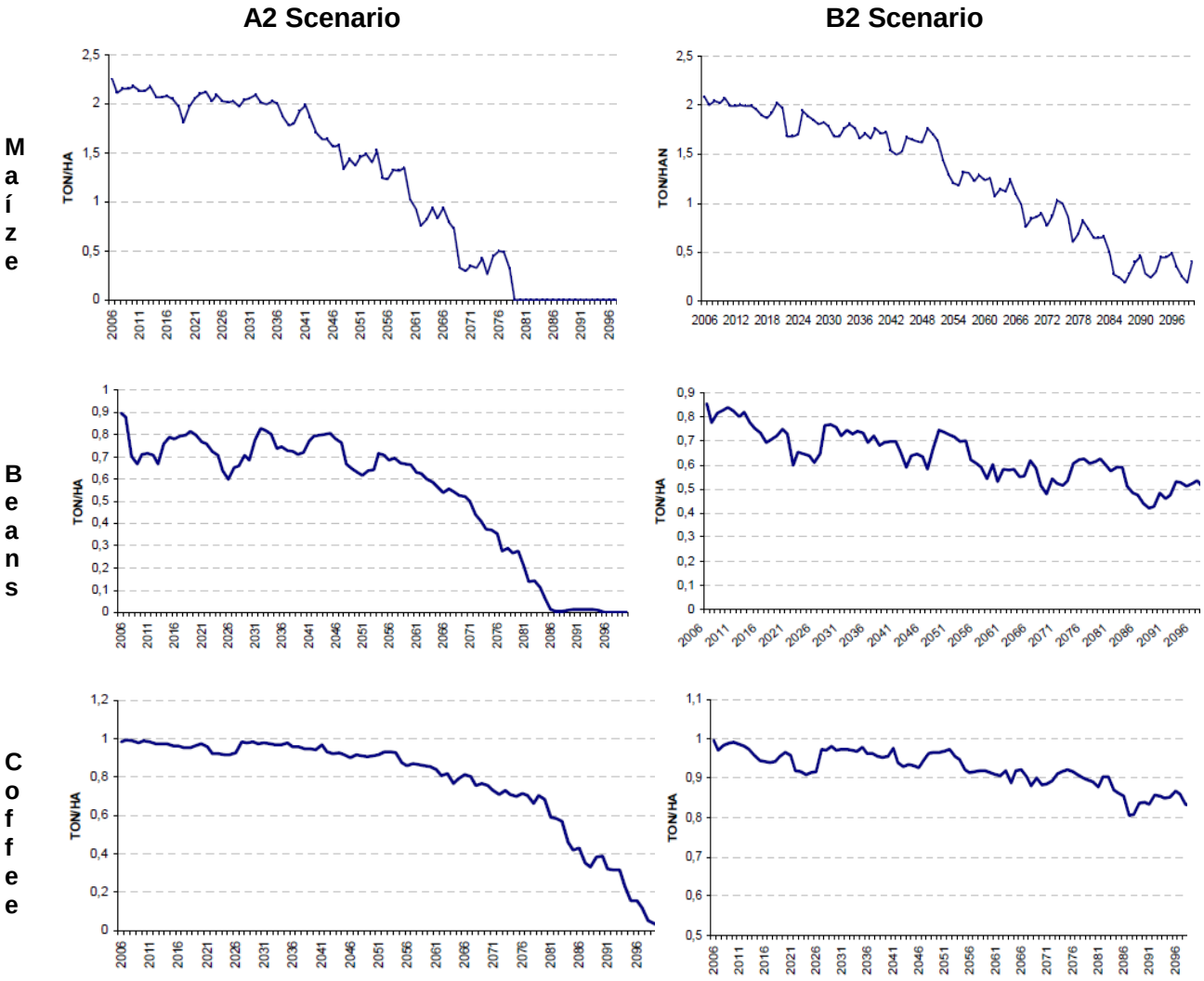
[32] Altieri and Koohafkan (2008) Enduring Farms: Climate Change, Smallholders and Traditional Farming Communities.

[33] CEPAL (2010) Effects of Climate Change on Agriculture in Guatemala.

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.

22. 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 entire agricultural sector will increase rapidly, reaching 7% of GDP by 2100 in the B2 scenario.[34]

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



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

Gender and Climate Change

23. Risks associated with climate change threaten to reinforce gender inequalities. Poor women's limited access to resources, restricted rights, limited mobility and voice in community and household decision-making can make them much more vulnerable than men to the effects of climate change[35] (UNDP; 2010). In Guatemala increasing temperatures and frequency of storms and floods would cause significant decrease in productivity or the complete destruction of rural livelihoods and hence put food security and life itself in danger. As in other food security crisis in Guatemala, this will lead to an increase in the work burden of women and would very likely cause a host of other knock-on impacts (e.g. male migration to urban centers, etc).

24. Although access to education, employment and financial services is slowly improving in rural Guatemala, it still shows a pronounced gender bias. The illiteracy rate is lower for the male population (18.3%) than the female population (32.1%). The average years of study for rural population between 15 to 24 years in 2002 were 4.9 years for men and 4.2 years for women (6 and 11 years are required to complete primary and secondary education respectively).
Linked to their limited access to education, participation of women in the workforce and hence access to independent income and control over household expenditures is scarce. By 2002, 56% of rural women in Guatemala were exclusively engaged in unpaid domestic work that includes not only reproductive work but also in agricultural and livestock activities such as care of livestock, poultry, post-harvest, collection and selection grains, among others.[36]

B. *Target Area of the Project*

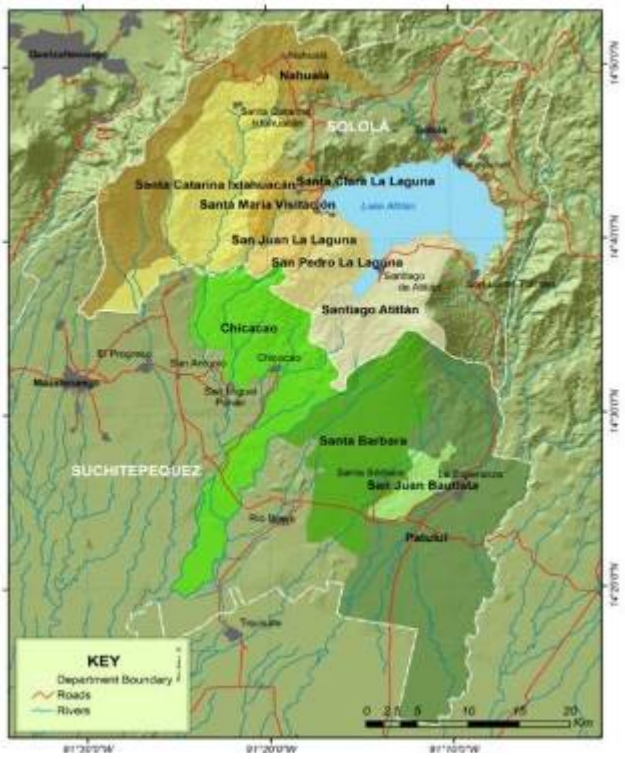
25. The government of Guatemala selected eleven municipalities as a target area in the Departments of Suchitepéquez and Sololá (see Figure 1 and Annex A and B). This selection was made based on the following criteria: quality of life index, frequency of extreme hydrometeorological events (floods and 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 variety will enhance the project results, since it means diverse production landscapes and livelihoods for which climate change risks will be addressed, expanding project impacts in both geographical and thematic terms. It also facilitates the logistics and operations of the project.

26. The target municipalities cover 1,376 km^2 and comprise 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 municipalities' area respectively). Investments for the proposed adaptation measures will take place in the upper Nahualate river basin.

[35] UNDP, 2010. Gender, Climate Change and Community-Based Adaptation

[36] Espinosa, I.G. Las Metas del Milenio y la Igualdad de Género. El caso de Guatemala, CEPAL, 2005.

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



27. The municipalities of the target area of the project have a total population of 301,763. Of this total, 78% are indigenous, 151,810 (50%) are women and 125,520 (41.5%) are children (0-14 years); who make up the most vulnerable population sectors.[37] (See Table 2 and Figure 3.)

28. The population of the Sololá municipalities is mostly indigenous (99%), the majority being of the Mayan Kaqchiquel, K'iche' and Tz'utujil ethnic groups. Only 7% 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%.[38] In most of the target municipalities, chronic malnutrition exceeds 50%. (See Annex 2.)

29. As in other areas of rural Guatemala, women are double burdened by productive and reproductive responsibilities. Table 2 shows the difference in literacy (men, 81%, women 70%) - command of Spanish - possessed by only half the female population of the target municipalities of Sololá (against 37% of Mayan monolingual male population) and their limited access to paid employment outside agriculture (33% of the employed population). The proposed project will help reduce these inequalities by promoting women empowerment through training programs targeted to women and encouraging women leadership.

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

[38] INE (2006) National Statistics Institute, National Poll on Human Development.

Figure 3. Demographic data and development indicators of target area municipalities [39]

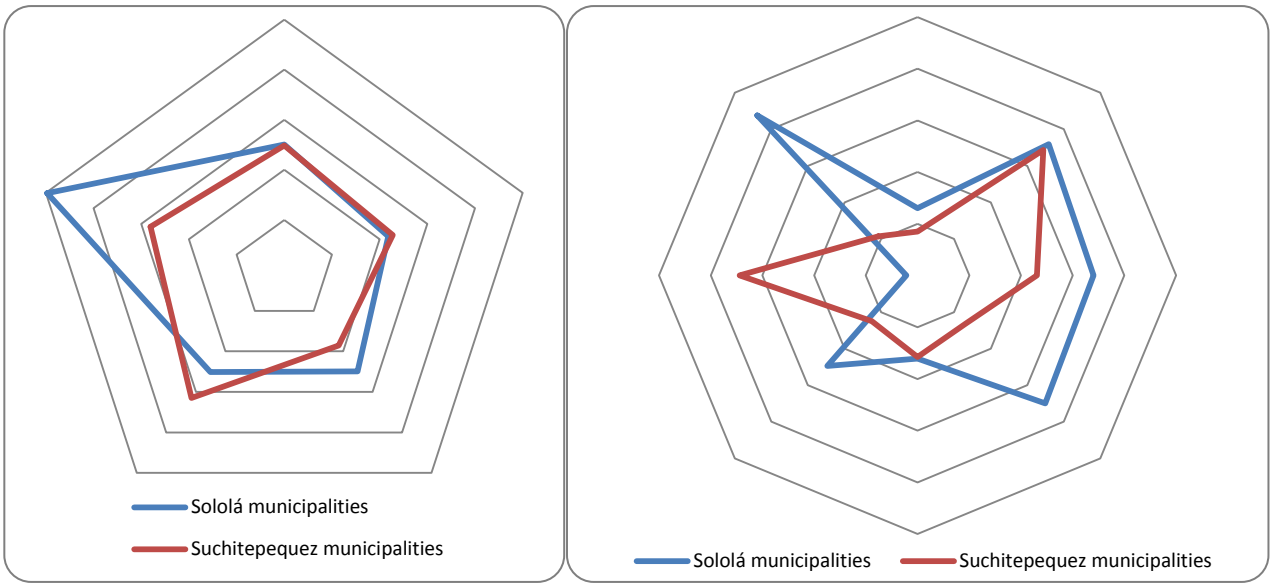


Table 2. Characteristics of target area population[40]

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	108,401	121,362	301,763
Population of women (%)	60	40	49.95
Population of children 0-14 years old (%)	43	40	42
Extreme poverty (%)	27	17	23
Poverty (%)	72	69	71
Chronic malnutrition (%)	68.	46	57
Child mortality rate	69	26	48
Literacy	81	72	77
Literacy in women	75	66	70
Literacy in men	84	78	81
Rural population (%)	50	62	57
% of women monolingual (mayan language)	49%	3%	28%
% agricultural workforce	56%	67%	55%
% of men monolingual (mayan language)	37	3%	21%
% of women in workforce (in sectors other than agriculture) sector	35	33	33
Self-employed or in family business (%)	49	25	37
Indigenous population (%)	99	56	78
Spanish-speaking population (%)	7	75	41.14
Indigenous language-speaking population (%)	87	21	54

30. The Project will work at both national and local levels, involving government agencies as well as producer organizations (cooperatives, associations, and others) and local communities,

[39] INE (2002) National Statistics Institute and CONALFA (2009).
[40] INE (2002) National Statistics Institute and CONALFA (2009).

providing an efficient and effective way of building their capacities for adaptation. The project will support communities and producers associations and organizations of the target municipalities within the Nahualate River basin to enhance the resilience of their livelihoods (see section B, part II).

31. Direct beneficiaries of specific actions of the proposed project would be community organizations of a subset of 19 micro basins selected based on their vulnerability. The target basins are: Alto Nahualate (58.12 km2), Ugualxucube (22.35 km2), Tzojomá (45.67 km2), Paximbal (19.27 km2), Igualcox (105 km2), Masá (51.01 km2), Ixtacapa (134.1 km2), Yatzá (58.92 km2), Panán (54.39 km2), Mixpiyá (23.28 km2), Nicá (57.93 km2), Mocá (91.93 km2), Paquiácamiyá (3.4 km2) Tarro (26.39 km2), Bravo (24.48 km2), San Franciso (45.43 km2), Chunajá (24.97 km2) Siguacán (64.93 km2) and Coralito (12.63 km2). (Target basins map, Annex A)

32. The total population of these prioritized microbasins is 139,545 of which 85,341 (61%) are rural, and 69,918 (50%) are women (see table in Annex B). At least twenty five community organizations and no less than 42,000 inhabitants will benefit directly from this project.

C. *Ecosystems in target area municipalities*

33. 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.[41]

34. Natural forest covers 20.47% of the target area and is composed of broad-leaf, coniferous, mixed, and secondary forest.[42] These ecosystems cover a total of 282 km^2, and of them, mountain broadleaf forests are the largest remnants preserved. (Figure 4)

35. An analysis of how these ecosystems fare within the context of ecoregions worldwide shows that the Central American dry forest has relatively few 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 in 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 area of 15 km^2.

[41] WWF Ecoregions of the World.

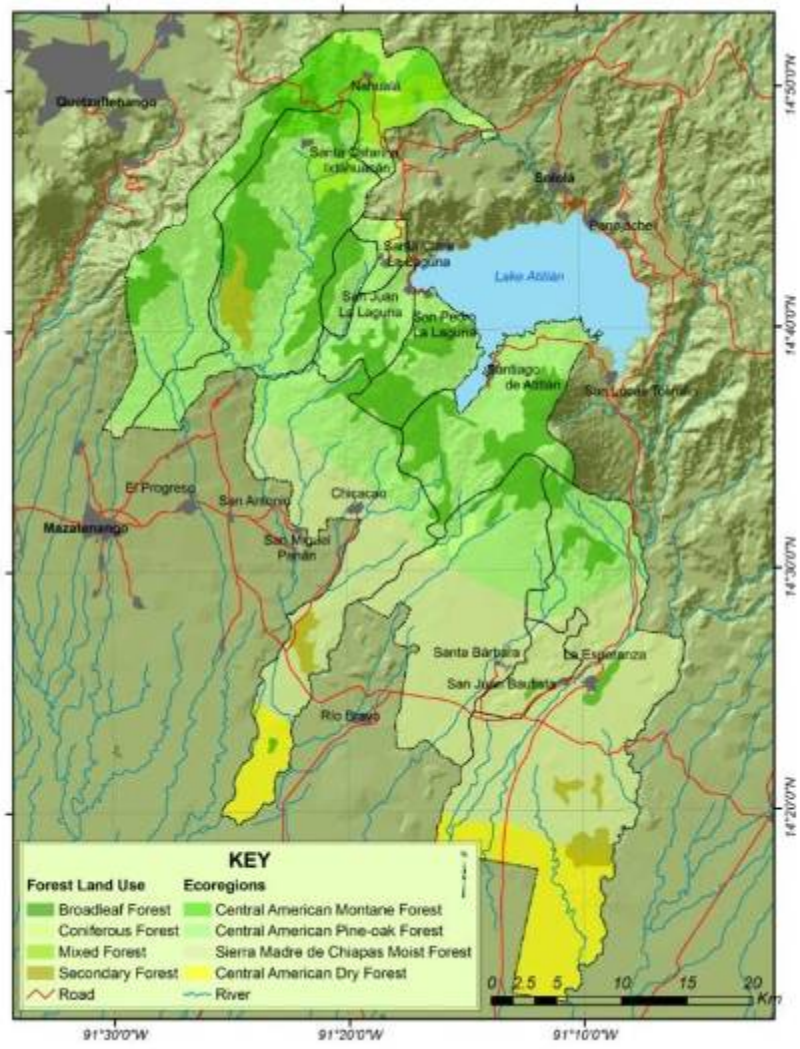
[42] MAGA (2006) Vegetative Cover and Land Use Map.

Table 3. Agro-ecosystems and natural ecosystem remnants in each of the ecoregions of the target area[43]

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***	

[43] 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*

36. The target area is mountainous, with volcanic soils, of which 60% (821 km^2) are unsuitable for agricultural use (Class VII and VIII)[44]. The remaining 40% (556 km^2) of the lands are suitable for agricultural use (Class I, II, III, and IV).

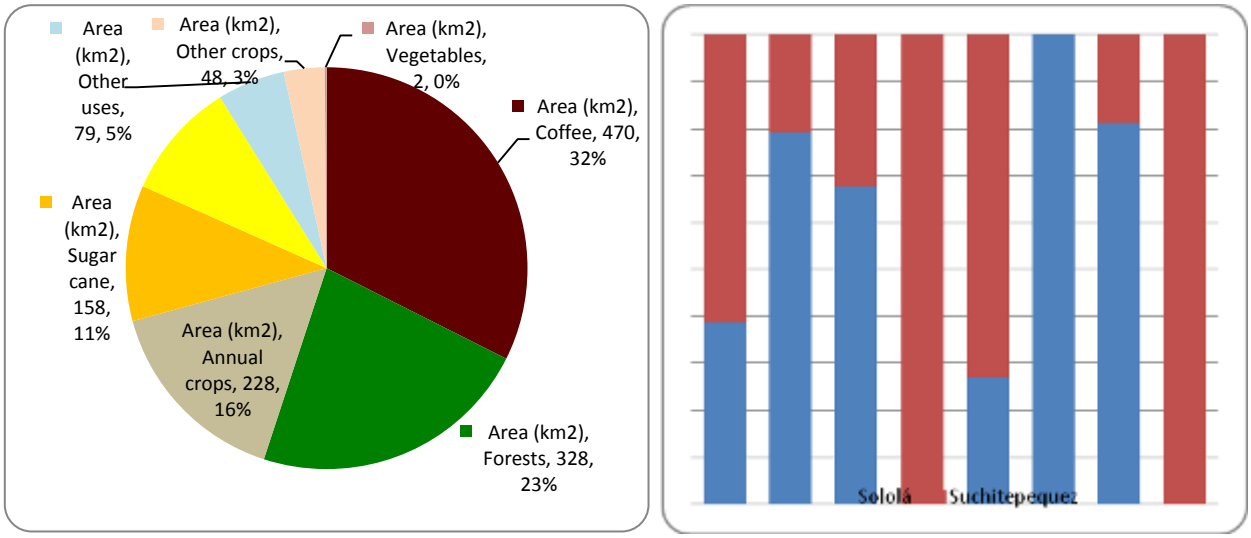
37. In order of importance, the production systems present are: coffee (34%), annual crops (16%), sugar cane (11%), and pasture for livestock (10%).[45] Livelihoods on which the poorest populations depend are annual crops (maize, beans). These cover 228 km^2 of the target area. It is important to note that Guatemala has a high genetic 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.[46] 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.

[44] Data from the Physiographic – Morphological Map of the Republic of Guatemala.

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

[46] MAGA FAO (2008) The State of Phytogenetic Resources in Guatemala. Second National Report.

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) [47]



38. 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.

39. A study of livelihoods in Guatemala by MFEWS[48] 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 Annex A and C.)

40. 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.

41. Table 4 shows clearly that the majority of the population (81%) belong to the extreme poverty and poor groups. These people lack the certainty of land ownership and therefore have no access to credit, irrigation, or grain storage facilities. This high percentage of the population depends on other socio-economic groups for their livelihoods. Members of the middle and affluent groups are landowners and have irrigation systems and post-harvest storage but represent only 23% of the population in the target area.

42. 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.

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

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

Figure 6. Livelihood profiles in the target area

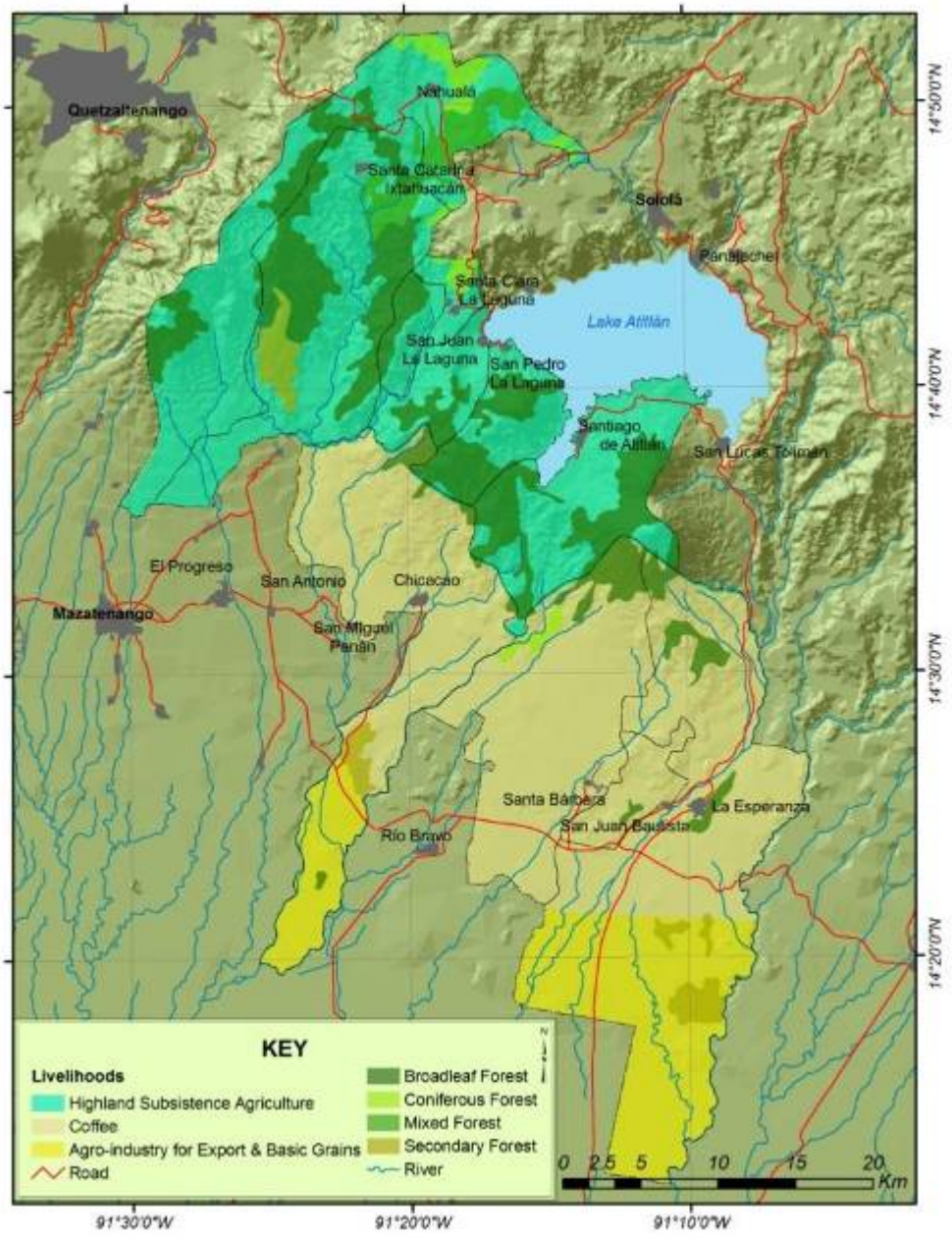


Table 4. Socio-economic characteristics of the livelihood zones[49]

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

[49] 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
	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
	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

43. 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 own 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.

44. 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.

45. The main climate hazards in this zone are:

- Flooding, primarily at the end of the rainy season, affects 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[50]

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
	Request charity, or food assistance,	Request for charity, or food assistance,
Middle and affluent groups	Request 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

46. The land in this zone is suitable for forestry, but out of necessity, people use it for cultivating basic grains, despite the low yields. The plains are the best places for cultivation, 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.

47. 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.

48. The four socio-economic groups present, and their percentages within the total population, are: extreme poverty (33%), poverty (45%), middle income (18%) and affluent (5%).

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

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.

49. Differences such as land ownership, access to production assets, and access to credit are the determinants 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.

50. The major climate hazards in this area are:

- Floods and landslides - these occur in the rainy season during heavy 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 lack 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.

51. 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[51]

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	

Coffee Zone

52. 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 in coffee production

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

for specific markets. 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.

53. The four socio-economic groups present, and their percentages within the total population, are: extreme poverty (45%), poverty (30%), middle income (20%) and affluent (5%). For the extreme poverty group, the most common 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.

54. 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.

55. The main climate hazards in this zone are:[52]

- 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 production will be harmed. Drought in the early stages of plant development affects the growth of seeds and, therefore, final quality and volume at selling time.

56. 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.

Relevant issues related to livelihoods in target area

57. 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. 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

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

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.[53]

- 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

58. The proposed Project aims to increase climate resilience of 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 achievement of 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

59. The Project will have four components:

1. Institutional and policy capacity strengthened for mainstreaming climate change risks into national, departmental, municipal planning, public investment, budgeting and decision-making.
2. Development and implementation of climate change resilient ecosystem management and production practices that reduce the vulnerability of communities.
3. Increased capacity of community-based associations to reduce risks associated with climate-induced socioeconomic and ecosystemic losses in the target municipalities
4. Documentation, dissemination and uptake of lessons learned.

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

PROJECT COMPONENTS	EXPECTED CONCRETE OUTPUTS (US$)	EXPECTED OUTCOMES	AMOUNT (US$)
1. Institutional and policy capacity strengthened for mainstreaming climate change risks into national, departmental, municipal planning, public investment, budgeting and decision-making.	1.1 Nine new meteorological stations installed and operating and climate change scenarios downscaled in the target municipalities. (100,000). 1.2 Eleven municipalities in the Department of Suchitepequez and Solola mainstream climate change and variability adaptation measures in their municipal and departmental development plans and related planning instruments. (145,000) 1.3 Technical, legal, and financial assessments to support the design of new and innovative financial mechanisms that support adaptation processes and initiatives at the national and local levels. (72,125).	1. Local and national capacities and tools enable decision makers and communities to reduce vulnerabilities and strengthen adaptive responses.	317,125
2. Development and implementation of climate change resilient ecosystem management and production practices that reduce the vulnerability of communities.	2.1 At least 25 community-based organizations in the 19 prioritized microbasins integrate climate-resilient agro-silvopastoral practices. (470,000) 2.2 Ancestral and traditional productions systems and hydrometereological risk practices implemented by community-based organizations (140,000). 2.3 Investments toward climate-resilient productions practices developed by community-based organizations in target municipalities. (1,990,000).	2. Production landscape resilience increased through application of traditional, ancestral and integrated practices and other production activities, as well as targeted investments.	2,600,000

PROJECT COMPONENTS	EXPECTED CONCRETE OUTPUTS (US$)	EXPECTED OUTCOMES	AMOUNT (US$)
3. Increased capacity of community based associations to reduce risks associated with climate-induced socioeconomic and ecosystemic losses in the target municipalities	3.1 Mechanisms to improve conservation, storage, and handling of produce from climate resilient production systems are strengthen in Solola and Suchitepequez. (971,000) 3.2 Institutional and social networks strengthened to build more climate resilient social environments (174,000). 3.3 Technical assistance to determine the feasibility of existing microfinance mechanisms to provide financing for climate resilient activities and provide recommendations for design and implementation (318,000).	3 Socio-economic adaptive capacity of communities improved.	1,463,000
4. Documentation, dissemination and uptake of lessons learned.	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 and implementation of an awareness and advocacy programme on climate change for a range of target audiences (41,000). 4.3 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 four technical standards for mainstreaming climate change into planning and programming processes (20,000). 4.5 Creation of four manuals on new, traditional, and ancestral adaptation practices at the community level (23,000).	4. Effective knowledge management results in informed decision-making at all levels through an integrated information system.	190,000
5. Project Execution Cost			429,875
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	March, 2013
Mid-term Review (if planned)	March, 2015
Project Closing	June, 2016
Terminal Evaluation	November, 2016

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.*

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

61. Through Component 1, the Project will strengthen capacities at local and national levels for downscaling climate information to make it more useful to the specific production planning processes 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.

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

63. 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. Individual strategies will be implemented by the families identified as direct beneficiaries with technical support from the Project.

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

65. Component 4 is designed so that results and lessons learned from the implementation of adaptation strategies are fed back into the process of capacity strengthening 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.

66. Improvement of the adaptation capacity of communities in the target area necessarily needs to integrally tackle the issues of gender and food security. Involvement and leadership of women is critical, because women are especially vulnerable to climate events because of their social and economic exclusion. In many cases women are heads of households, as the male population has emigrated in search of economic income. They are also responsible for household work and support family livelihood as they are the providers of energy (firewood), water and food (services that are scarce in the target area). To ensure that gender inclusion is integrated correctly into the project's implementation, the MARN project team will consult and collaborate closely with the Indigenous Women Advocacy Council (DEMI[54]). Given the incidence of malnutrition, 57%, in the target area (see Table 2), another institutional partner vital for the successful implementation of this component is the Executive Secretariat for Food Security (SESAN) which is responsible for the implementation of the national Plan for Food Security (PESAN).

[54] Defensoria de la Mujer Indigena

Component 1: Institutional and policy capacity strengthened for mainstreaming climate change risks into national, departmental, municipal planning, public investment budgeting and decision making.

67. 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 Environment 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.

68. 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[55] 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." [56]

69. 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.

70. To strengthen multi-sectoral processes and agendas on the climate change issue, the AF financed initiative 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).

71. Component 1 will encompass the following outputs and activities:

1.1 Nine new meteorological stations installed and operating and climate change scenarios downscaled in the target municipalities.

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 global models. Also, there is an insufficient number of meteorological stations necessary to monitor climate variables, such as precipitation and temperature, and very few in the Project area. Local knowledge on indicator species and biological processes that can complement meteorological records is being progressively lost and remains uncollected. 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 projections (including impact scenarios, costing scenarios, etc.) as a tool for informed decision-making at all levels.

72. Activities under Output 1.1 will include:

- The Government of Guatemala will use AF resources to develop capacities at the municipal level to record climate variables, such as precipitation, temperature and wind by

[55] 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).

56 Executive Body - Government Accord N° 253- 2009.

setting up new meteorological stations in all municipalities and by developing an inventory of local biological indicators such as flowering periods and occurrence of locally known indicator species. Recording of data will be responsibility of each municipality through their environmental unit or planning office, which will designate focal points to gather local indicators. Information on local indicator species and biological processes will be made available on-line through the municipal environmental indicator system (MARN-SIA webpage http://www.sia.marn.gob.gt/ and the INSIVUMEH webpage).

- AF financing will be used to train an inter-institutional team from INSIVUMEH, MARN (Climate Change Unit, SIA) and SIG-MAGA to develop projections of precipitation and surface temperature projections based on GCM models such as hadCM3 and SRES scenarios, such as A1F, A2 and B2. The method used will depend on the availability of historical climate data. MARN will ensure coordination with the work currently taking place under the national communications
- MARN-Climate Change Unit, INSIVUMEH and SIG-MAGA will develop national and local climate projections (downscaled) for future conditions (2020-2050-2080), of water availability, mean annual temperature and precipitation levels; expansion of the "canicula" period, and other weather conditions affecting livelihoods of the poverty and extreme poverty groups.

1.2 Eleven municipalities in the Department of Suchitepequez and Solola mainstream climate change and variability adaptation measures in their municipal and departmental development plans and related planning instruments.

73. The COCODEs, COMUDEs, and CODEDEs[57] 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.

74. Through this Output Project, local authorities and development council 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 at the Municipal and Departmental levels.

75. Activities under output 1.2 will include:

- Using AF resources, MARN will train relevant local representatives from COCODEs, COMUDEs, and CODEDEs as well as members of community organizations, in the incorporation of local scenarios and climate projections into their planning and investment decisions. By training local stakeholders involved in planning processes, this activity will provide them with the skills and tools needed to make informed decisions to manage climate change risks, with the potential to reduce vulnerability and avoid maladaptation.
- Government of Guatemala will use AF resources to mainstream climate change[58] in Departmental and Municipal Development Plans[59]. Climate change mainstreaming will follow UNDP's Quality Standards and/or other recognized instruments and tools such as CRiSTAL reviewing plans in order to assess their vulnerability to climate risks and identify possible interventions and opportunities for climate change adaptation. Meeting the

[57] COCODE: Community Development Council, COMUNDE: Municipal Development Council, CODEDE: Departmental Development Council.

[58] Climate Change Mainstreaming: The Integration of Prioritised Measures into Projects, Programmes, and Strategies Aimed at Reducing Potential Climate Change Risks. UNDP (2009).

[59] National System of Territorial Planning
http://www.segeplan.gob.gt/2.0/index.php?option=com_content&view=category&layout=blog&id=13&Itemid=72

standards consists of four steps:[60]
  - 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.
- The Government of Guatemala will use AF resources to promote exchange of successful experiences related to climate change adaptation and resilience of production landscapes so that municipalities in other parts of the country have the information and awareness to integrate climate change considerations into development planning policies instruments.

1.3 Technical, legal, and financial assessments to support the design of new and innovative financial mechanisms that support adaptation processes and initiatives at the national and local levels.

76. 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 means of financing, and this work is a priority. However, to date, funding mechanisms are insufficient to meet projected needs. Vertical funds such as the Adaptation Fund, Global Environment Facility, which are useful for delivering seed finance, do not have the means to finance the large sums of funding that are necessary. Moreover, limited national and local budgets are also a barrier to replication or building on the foreseen results of this project. Therefore, the Project will identify possible sources (both national and market-driven) to support financial sustainability of adaptation measures.

77. AF funds will support MARN together with other Ministries and relevant stakeholders to assess tools, mechanisms and schemes to channel additional resources to address impacts of climate change in Guatemala. Currently, a Bill that would pave the way for channelling funds sub-nationally is under discussion in Congress[61] and if passed, Guatemala will be working towards establishing an appropriate instrument. The AF resources will enable Guatemala to undertake the necessary analysis and stakeholder discussions and make informed decisions about the most appropriate financing mechanisms for adaptation within the country independently from the final political decision of the Bill.

78. Activities under output 1.3 will include:

- MARN will commission an institutional mapping and capacity assessment of national/sub-national funding mechanisms related to climate change in Guatemala. The study will include current implementation capacities of existing financial institutions at national and sub-national level, workflows, overlap and bottlenecks based on the national climate change agenda, signed climate-related agreements and results to date. As the AF project will support sustainable agriculture practices at community level, workshops will emphasize in assessing both certifications schemes (i.e. Rainforest alliance, Utz Certified Organic, Fair-trade) and public-private partnerships. Findings and recommendations will be used for trainings and workshops for further discussions among Ministries and relevant stakeholders.

- MARN representatives, together with other Ministries, NGOs, civil society, private sector and international cooperation agencies will discuss, assess and review current tools and mechanisms (national and market-driven) to channel climate finance towards national and sub-national activities. Stakeholder feedback and recommendations will be compiled and shared with Congress and relevant Ministries as a contributing element to policy decisions.

[60] UNDP. (2009). UNDP's Quality Standards for the Integration of Adaptation to Climate Change into Development Programming.

[61] National Climate Change Fund :Article 23 of the attached bill: http://www.congreso.gob.gt/archivos/iniciativas/registro4139.pdf According to the 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.

79. **Component 2: Development and implementation of climate change resilient ecosystem management and production practices that reduce the vulnerability of communities.**

80. Adaptation is a continuous process of analysis and innovation. It should be implemented using a learning-by-doing approach, and therefore requires continual adjustments in a process of adaptive management. This process should cover the cycle of adaptation from the generation of scenarios through the identification and implementation of measures, evaluation of their effectiveness, and adjustment or fine tuning of measures in light of performance, lessons learned and new information.

81. Outputs under this component are the most important in the Project, since they will lead to and include development and implementation of adaptation strategies in selected municipalities. These outputs will influence decision-making concerning climate-resilient land management in the target municipalities. These outputs, described below, will receive 52% of Project funds.

82. Component 2 was structured for communities and local government to implement adaptation strategies in the target area based in a participatory consultation process. The proposed interventions aim at reducing climate-related vulnerability and enhancing resilience, as well as to recover traditional and new adaptation measures.

83. To reduce the increasing vulnerability of the indigenous population, a mix of traditional and innovative agricultural and livestock production practices must be implemented to contribute to food security and income generation. Traditional production practices that are proven to be the most resilient to the effects of climate change must be encouraged. To achieve this, the project will support the development of a variety of adaptive production practices that will enable the diversification of food sources.

84. Implementation of this project component will be the responsibility of MARN, and DEMI will provide technical support to integrate the gender perspective. These regional agencies have extensive experience in providing technical assistance and implementing sustainable environmental-production projects. In addition, they will be supported by institutions that have local presence, technical capability, and are well known by the communities in the project area.

85. The process of implementing adaptation strategies and measures will be carried out MARN with support of the communities ensuring a grounded, community-based adaptation approach. Community-based adaptation to climate change is a community-led process, based on communities' priorities, needs, knowledge, and capacities, which empowers them to plan for and cope with the impacts of climate change.

86. 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 of trends and changes experienced by communities and the strategies these communities have used in the past to cope with similar extreme events or gradual climatic changes.[62] For this reason, this component includes the characterization of present and past livelihoods in the target municipalities, the systematisation of ancestral practices, the evaluation of changes in climate suitability for different livelihoods, the identification of adaptation measures and climatic projections, and the implementation of development plans based on these participatory analyses.. It also involves an on-going process of systematisation of lessons learned (component 4).

87. Component 2 will encompass the following outputs and activities:

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

2.1 At least 25 community-based organizations in the 19 prioritized microbasins integrate climate-resilient agro-silvopastoral practices .

88. Among the foreseen impacts of climate change and climate variability in the target municipalities are an increase in the frequency and severity of meteorological 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, vegetables and other crops), and 14% forest (broadleaf, coniferous, and mixed),[63] constituting an ecosystem that is very vulnerable to the hazards described above (see Annex A). 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.

89. Ecosystems can enhance resiliency to climate change by maintaining and improving the provision of ecosystem services to local communities and by acting as soft infrastructure against extreme events. The project will promote improvement of ecosystem resilience by implementing agro-forestry/silvo-pastoral practices.

90. The project will implement measures in agriculture to minimize mechanical soil disturbance, to maintain carbon-rich organic matter to cover and nourish the soil and to implement crop rotations and associations, including trees and legumes. Silvo-pastoral practices 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.

91. The adaptive agro-silvopastoral practices supported by AF funds will promote the incorporation of native trees and shrubs in agricultural systems. Silvo-pastoral 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 sequestering 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.

92. In addition, the project will be used to also implement climate resilient forest restoration activities that are more suited to high risk areas – berms, bunds, terraces, gully plugs, etc. - 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.

93. Activities under output 2.1 will include:

- MAGA and MARN representatives, together with community leaders and local NGO's with risk assessment experience will jointly conduct analyses of micro basin hydrogeology and exposure of agro-ecosystems and human settlements, to establish vulnerability maps and to define exact areas to implement silvo-pastoral practices. The orthophotos and maps produced by the Ministry of Agriculture will be used as a starting point for this analysis. The vulnerability assessment will include analysis of the exposure of agro-ecosystems and other production systems, ecosystems, human settlements, and infrastructure to extreme hydrometeorological events.

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

- MAGA, MARN representatives, community leaders and local NGO's will evaluate ecosystem services (such as soil retention, flood mitigation, water provision, etc.) and issues of land ownership and land access. Ecosystem services will be evaluated using the contingent valuation method and this, along with land ownership, will provide the basis for the replication of a payment for ecosystem services scheme described in Output 1.3.
- MAGA, MARN, community leaders and local NGO's will analyse the requirements of current livelihoods, future climate suitability for them, and alternative livelihoods that would be feasible in future climate scenarios. Alternative livelihoods, for example, might be based on an evaluation of the adaptive capacity of different cultivars (beans, maize, vegetables, fruit).
- Through the local development councils and with the participation of community representatives from the prioritized micro basins, the MARN will establish 200 ha of silvo - pastoral systems which will include Maize-beans-squash combined with shrubs, trees, and fruits, including plums, mangos, nances, guavas, in combination or association with semi-permanent and permanent crops and/or cattle.
- MARN will monitor and evaluate the effectiveness of the agro-silvopastoral models as an adaptation strategy providing socioeconomic benefits to local communities (improved productivity and income generation) and environmental benefits (improved soil quality, increased biodiversity, and increased in standing carbon stocks).

2.2 *Ancestral and traditional productions systems and hydrometereological risk practices implemented by community-based organizations.*

94. 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.[64] 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,[65] which includes a variety of cultural practices relevant to climate change adaptation. These are examples of traditional practices that may be recovered during implementation of this initiative, expanding the list to include specific sites and climate risks.

95. A high percentage of the population (73%; approximately 126,862 people) living in these areas is indigenous. The proposed project recognizes that the recovery of ancestral and traditional knowledge is important to inform adaptive strategies and to ensure the continuity of this knowledge 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 should be imposed or prescribed in advance (although from the perspective of a donor it is easy to see why this might be preferred) but rather identified, defined and agreed upon by the community, using a community-based approach.

Table 7. List of potential adaptation measures and their links to traditional practices potentially applicable to production systems in Guatemala[66]

Adaptation Measures	Best Practices/Low Input	Traditional Practice Recovered		Linguistic Communities
Conservation Agriculture, Soil Conservation, and	Conservation tillage. Zero tillage. Minimum soil	Land selection and preparation	When clearing plots, felling of broadleaf trees of greater height and diameter and of ample foliage is	achi', kaqchikel, mam, and

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

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

[66] 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
Improved Water Management (maintain and enhance soil carbon, improve water and soil management)	disturbance. Direct seeding or planting. Live or residue mulching.		avoided; tree age is respected.	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 Agricultural Products	Efficient harvesting. Prompt processing of agricultural produce. Using co-products and by-products. Improved storage.	Storage	Cobs are stored on raised beds separated from the soil to repel mould and rodents. Branches of *Croton ciliatoglanduliferus* are used to repel insects.	All

96. The availability of nitrogen and other nutrients is essential to increase yields, especially in the target area were extreme poverty is prevalent. Composting manure and crop residues, matching of nutrients with plant needs and controlled release promote natural nitrogen fixation. Using methods and practices that increase organic nutrient inputs, retention and use are therefore fundamental and reduces the need of synthetic fertilizers which, due to cost and access, are often unavailable to smallholders and, through their production and transport, contribute to generate GHG emissions.

97. In addition, farmers save and breed their own seeds from productive crops varieties which may then be interplanted with other favoured varieties in the field to encourage cross-breeding. In Guatemala, the ICTA Lijero bean variety which is very early-maturing and is resistant to the Golden Mosaic Virus, allow farmers to have two harvests of beans before the starting of the hot season.

98. AF finance will support the recovery and systematisation of ancestral and traditional knowledge related to flooding and drought management, in order to increase resilience of production systems in the target municipalities in anticipation of expected climate variability. Based on the consultative process carried out among community members from Sololá and Suchitepéquez, soil and nutrient

management practices and seed selection will be implemented using AF resources, which fully support the establishment of 200 ha of silvo-pastoral systems.

99. Activities under output 2.2 will include:

- MARN, in coordination with MAGA and CONAP, will assist communities to establish 20 improved barns to collect manure (10 in the Department of Sololá and 10 in the Department of Suchitepéquez) to obtain material for organic composting.
- Community-based organizations in the target area will manage the barns and use organic compost to be used in established agro-silvopastoral systems.
- MARN and community leaders, in coordination with MAGA and CONAP, will develop a criterion for seed selection focusing in food security while promoting the use of varieties resistant to drought or flooding. This might include organizing local seed and genetic diversity fairs, alternative labelling systems such as quality declared seed or farmer-based labelling schemes.

2.3 Investments toward climate-resilient productions practices developed by community-based organizations in target municipalities.)

100. Agriculture that is more productive and more climate resilient requires changes in natural resource 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. 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.[67]

101. This component aims to support poor and vulnerable communities in Sololá and Suchitepéquez to increase their adaptive capacity by focusing and promoting sustainable production practices and optimization of ecosystem services related to water, biodiversity, land management and forestry.

102. A small-scale adaptation measures catalogue was developed based on the participatory consultative process among national, sub-national, NGOs and local communities in Sololá and Suchitepéquez (See Table 8). The set of adaptation measures included in this table was developed in close coordination with national and regional governments, aligned to Municipal Development Plans and Departmental Development Plans and validated by community-based organizations.

Table 8: Adaptation measures catalogue

Measure	Prospective Municipality	Required Investment	Description
Protection of river banks with bioengineering techniques	Santa Catarina Ixtahuacán, Nahualá, Chicacao, Santa Bárbara.	Range: $30,000 - $50,000 by stretch of approx. 500 meters, depending on the design (Source: Action Against Hunger, DIPECHO Project VII).	Construction of small-scale structures to protect critical sections in the river channels combining bioengineering techniques based from hydraulic analyzes in coordination with INSIVUMEH. The small-scale structures [breakwaters, embankment or rock lining] will combine bioengineering techniques (planting of bamboo, using reeds, grass and other species on the structures). In addition, the small-scale structures will integrate recycling materials for construction works

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

			and the reuse of highly pollutant materials (tires)
Establishment of riparian forests for the protection of watercourses	Santa Catarina Ixtahuacán, Nahualá, Chicacao, Santa Bárbara.	About $1,500 / ha (Source: PINFOR / INAB)	Reforestation and forest protection found on the banks of rivers, which form a barrier to reduce the impact (speed and volume) of surface runoff. Among the species to be used are: Alder, Pine and White Sauce, and native fruit trees to maintain local genetic material.
Establishment of community nurseries with native species	Not applicable (recommended 1 nursery for each community)	Between $150 - $200 per thousand plants (1 h requires about 1 thousand)	Planting and forest species reproduction to meet the demand for reforestation activities (community forests, gallery forests, agroforestry) in the upper half of the basin. Priority will be given to native species, including fruit species. White pine, cypress, alder will be planted in the upper part basin.
Planting and management of energy forests	Santa Catarina Ixtahuacán, Nahualá, Chicacao, Santa Bárbara.	$1,500 / ha established (Source: PINFOR / INAB)	Sustainable managed forest to provide firewood for local use
Reforestation with endemic species to increase forest environmental services	Nahualá, Santa Catarina Ixtahuacán, Santa Clara La Laguna, Santa María Visitación, Patulul, Santa Bárbara	$1,500 / ha established (Source: PINFOR / INAB)	Reforestation of community forests, especially Cerro Panan and Cerro Pecul (which include species such as white pine, cypress, fir) at higher zones, and reforestation with species of high commercial value (Cedro, Palo Blanco) at middle level of the basin.
Conservation and protection of water sources	Nahualá, Santa Catarina Ixtahuacán, Santa Clara La Laguna, San Juan La Laguna, Chicacao, Patulul, Santa Bárbara	Range: $3,000 to $8,000, depending on the engineering work required to protect the water intakes of landslides	Small-scale civil engineering works to protect water sources (including soil conservation), in combination with reforestation around the fountain with chichicaste species, willow, bamboo, reeds, sajok, cartridges, hydrangeas and vetiver.
Training and equipping of forest fire brigades	Nahualá, Santa Catarina Ixtahuacán, Santa Clara La Laguna, San Juan La Laguna, Santa María Visitación	$20,000 per crew of 10 people	As a measure of prevention and control of forest fires is proposed to train volunteer firefighters and volunteer brigades on fire control techniques, as well as providing them with equipment to control fires. Activities will be planned in coordination with SIPECIF And CONRED.
Reinforcement of anti-slide structures on rural roads	Nahualá, Santa Catarina Ixtahuacán, Santa Clara La Laguna, San Juan La Laguna, Santa María Visitación	Range: $30,000 - $50,000, by stretch of approx. 200 meters, depending on the design of works (Source: ALDES)	Cobblestone, slope stabilization with berms on the banks of the roads and construction of gabions on rural roads. In addition, small-scale structures will integrate recycling materials collected locally for building works (plastic bottles) and reuse of

			highly pollutant materials (tires).
Improve sustainable drainage systems in selected roads and municipalities	Nahualá, Santa Catarina Ixtahuacán, Santa Clara La Laguna, San Juan La Laguna, Santa María Visitación	Range: $30,000 - $50,000 each tranch to intervene, depending on the design of works (Source: ALDES)	Strengthen structures (infiltration galleries for fruit production, small reservoirs and small-scale diversion dams) for water infiltration to reduce surface runoff and groundwater supply based on a hydrology study coordinated by INSIVUMEH. . In addition, small-scale structures will integrate recycling materials collected locally for building works (plastic bottles) and reuse of highly pollutant materials (tires).
Small-scale water storage facilities for irrigation	Nahualá, Santa Catarina Ixtahuacán, Santa Clara La Laguna, San Juan La Laguna, Santa María Visitación	$ 1,500 for an irrigable area of 500 m2 per community	Rainwater storage and collection of surface flows for irrigation for growing vegetables, promoting drip irrigation.
Technical assistance for adaptation of permanent crops (coffee, lemon, cocoa and orange)	Nahualá, Santa Catarina Ixtahuacán, San Juan La Laguna, Chicacao, Santa Bárbara	Around $100, 000 for technical assistance to 20 community-based organizations	Sustainable production techniques of coffee, lemon, cocoa and orange crops: from selection of seed, chemical/organic fertilizer packages, integrated pest management and harvesting. It will promote the fertilization of soil from manure and vermicompost.
Technical assistance for the adaptation of basic grains (maize and beans)	Nahualá, Santa Catarina Ixtahuacán, Santa Clara La Laguna, San Juan La Laguna, Santa María Visitación	Around $100, 000 for technical assistance to 20 community-based organizations	Sustainable production techniques of maize and beans crops: from selection of seed, chemical/organic fertilizer packages, integrated pest management and harvesting.
Plot of transfer: Diversification of agricultural crops to reduce the risk of losses from floods and droughts	Nahualá, Santa Catarina Ixtahuacán, Chicacao, Patulul, Santa Bárbara	Range: from $2,000 (fruit crops) up to $10,000 (flowers).	Implementation of transfer plots for the introduction of new crops, improved varieties or diversification purposes. Associate corn + beans, beans, squash, chile, black nightshade (and other species rich in protein and vitamins). Vegetables and backyard planting crops shall be selected according to the type of soils and livelihoods.
Diversification of forest products: beekeeping	Nahualá, Santa Catarina Ixtahuacán, Santa Clara La Laguna, San Juan La Laguna, Santa María Visitación	Range: $1,000 for 1 apiary of 5 hives per group	Beekeeping is a profitable activity currently carried out by some farmers. This activity aim to expand the number of farmers engaged in the production of organic honey and other products for the purpose of increasing sources of income and reduces pressure on forests.
Agroforestry: introduction of wood	Nahualá, Santa Catarina Ixtahuacán,	Around $200/ha the	Association of Aliso tree with peas, vegetables, fruit (apple and plum on the top

trees and fruit trees in agricultural areas	Santa Clara La Laguna, San Juan La Laguna, Santa María Visitación	introduction of trees.	and peach in the middle). In addition, recovery of native fruit trees (milk pear and quince).
Selection of maize for adaptation to drought	Nahualá, Santa Catarina Ixtahuacán, Santa Clara La Laguna, Santa María Visitación	Range: from $1,000 to $1,500 / ha (1 ha per CBO).	Selection and breeding of maize with increased resistance to drought and / or with shorter production cycles in coordination with ICTA. The process will include post-harvest of basic grains with organized groups of farmers and community seed banks.
Construction of ditches on slopes	Nahualá, Santa Catarina Ixtahuacán	Around $ 450/ha	Construction of drainage at farm level to reduce runoff damage to crops (infiltration galleries or French drain)

103. The catalogue was developed and tailored by the communitites and MARN based in current needs to address climate change impacts, focusing in promoting widest participation of communities, including small and large producers and landowners. Currently, seasonal agricultural employment is the largest source of employment and income for poor families in the target area. If seasonal agricultural employment is affected by droughts and floods it will have a major impact on livelihoods. By including landowners and large producers, the project expects to have an impact on larger territories and local economies, thus improving the supply and demand for farm labour.

104. Based on AF project objectives, eleven municipal administrations and at least 25 communities-based organizations will implement measures whose results will enhance ecosystem resilience of the production landscapes as well as resilience of their production systems in the nineteen microbasins of the target area. The pre-define set of adaptation measures aim to increase organic matter in the soil leading to greater water holding capacities and thus increased resilience to drought; greater soil coverage through increased forest cover, agroforestry and other cover crops leading to decreased soil erosion and flood control and greater percolation of water into the aquifer; higher and more sustained yields from increased soil fertility, tilth and water holding capacity; conservation of plant genetic diversity through sustainable use and participatory plant breeding; and increased incomes from the sale of larger yields and a greater variety of products.

Activities under output 2.3:

105. Community-based organization will develop and tailor proposals based exclusively on the adaptation measures catalogue (Table 8) according to community participatory consensus and local needs. These proposals will be selected and implemented based on the experiences and best practices generated by the Guatemala Small Grants Programme[68] (SGP).The AF project will create a National Steering Committee (NSC) comprised by MARN and UNDP and other key institutions such as MAGA, CONRED, SEGEPLAN, INAB, CONAP, INSIVUMEH, MIVI and NGO's. The NSC is responsible for the review, selection and approval of small-scale projects and for ensuring their technical and substantive quality. The AF project will build upon existing Guatemala SGP scheme to funnel grants to approved community projects. AF grants will be channelled directly to community-based organizations and non-governmental organizations and the maximum grant amount per project will be US$50,000. To assess eligibility of CBOs and NGOs (grantees) proposals, the National Steering Committee will based its decisions on SGP´s Eligibility Criteria for Grantees and Projects (Annex H).MARN, along with the National Steering Committee, will lead this process and will provide financial oversight on grants allocation. In addition, NSC will promote community proposals to enhance ecosystem resilience for the sustainability, productivity and resilience of public goods and services that

[68] The Guatemala Small Grants Programme is supported by UNDP and financed through the GEF Trust Fund.

no single community member could afford to carry out or might be motivated to carry out given the disparity between private costs and public benefits.

106. These pre-defined small-scale projects in principle will not require an Environmental Impact Assessment (EIA) based on the nature, purpose and possible effects on the environment. The National Steering Committee will assess if a proposal would require carrying out an EIA, to showcase if the environmental and community benefits outweigh the negative effects, to be subsequently approved or rejected. As previously stated, the AF project includes technical and budget provisions in compliance with UNDP requirements, including adherence to all national and local standards on environmental and social impacts, to request and carry out EIAs if any of the activities would require.(More information on EIAs in Section E)

107. In addition, MARN with the guidance of the Steering Committee, will ensure that each community is assisted by qualified technical personnel from *government extension agencies* and/or *NGOs* to ensure that all environmental, social and technical issues that may arise are squarely addressed. This will be important to guarantee that project activities are in full compliance with AF requirements, do not lead to maladaptation or other undesirable consequences, i.e. that activities aggravate inequality, cause negative environmental impacts or create dependency on technical solutions requiring resources and capacities beyond the reach of community participants. In its review of community proposals, the Steering Committee will determine the necessity of further design or development of specific risk mitigation measures to avoid maladaptive outcomes. On the Steering Committee UNDP will ensure that due diligence is observed.

108. The AF Project Coordinator will work closely with the communities to identify viable projects for funding, provide assistance in project design, monitor project implementation, lead participatory evaluation of the projects and help synthesize lessons learned and other knowledge for policy inputs. The *National Steering Committee* will oversee the development of the portfolio of community-based projects, ensuring its alignment with AF requirements and that lessons learned are discussed and evaluated. Information collected from project M&E will be centralized in a database and shared with communities, organizations and government institutions for policy and program discussions.

109. Selection of Beneficiaries:
The Ministry of Environment and Natural Resources of Guatemala (MARN), in consultation with other government entities and local stakeholders and NGOs (See Table 11 and Annex E) has identified a criterion to be used to identify and prioritize community beneficiaries for the development of proposed activities. The criteria are consistent with the rationale of the AF project which aims to increase not only ecosystem resilience but also economic, social and territorial climate-related resilience within targeted municipalities.

110. The main beneficiaries of the project will be the rural and indigenous communities in the Department of Sololá and Department of Suchitepéquez located in19 micro basins selected based on their climate-related vulnerability. (see Project location, Annex A).
These two Departments are constituted in 78% by indigenous groups, where high poverty (70%) and chronic malnutrition (57%) rates are prevalent. (see Target Municipalities, Annex B).

111. The target basins are: Alto Nahualate, Ugualxucube, Tzojomá, Paximbal, Igualcox, Masá, Ixtacapa, Yatzá, Panán, Mixpiyá, Nicá, Mocá, Paquiácamiyá ,Tarro ,Bravo ,San Franciso, Chunajá, Siguacán, and Coralito (Target basins map, Annex A). The total population of these prioritized microbasins is 139,545 of which 85,341 (61%) are rural, and 69,918 (50%) are women (see Table 2 in Annex B). At least twenty five community-based organizations and no less than 42,000 inhabitants will benefit directly from this project.

112. The feasibility of the proposed adaptation measures was assessed with local and regional stakeholders and beneficiaries (rural and indigenous communities) as part of the consultation process, relying on their experience implementing related initiatives in the region. As requested by the AF Board, Component 2 was restructured which required further participatory consultations, which were held on July 2012. Based on the last consultations, MARN developed a criteria for selecting

beneficiaries which is grouped into 2 types, depending on the nature of each adaptation measures included in the catalogue:

Community level:
Direct beneficiaries will be rural communities and indigenous peoples, which are vulnerable to climate change impacts based on socio-economic indicators, including:

- Below poverty / extreme poverty line (data provided by INE)
- At current high risk to food insecurity (data provided by SESAN and /or MSPAS)
- Women and men within19 micro basins being proposed by the Community Development Councils (COCODES).

Estate/manor level:
The selection of the beneficiaries of the climate-resilient production practices will be made respecting local processes of social organization and relying on the experience of recognized institutions, and will include the following criteria:

- Availability of land suitable to agricultural use (about 0.5 ha) to conduct adaptation activities (agroforestry, soil conservation, demonstration plot, etc.).
- Availability to provide labor within own land as in-kind contribution
- Commitment to follow technical recommendations regarding crops, agroforestry and/or soil conservation works

Component 3: Increased capacity of community based associations to reduce risks associated with climate-induced socioeconomic and ecosystemic losses in the target municipalities

113. The resilience of production landscapes affected by climate change hazards will increase 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, by strengthening their resilience through investments in community organization, micro finance (community-based loan systems, organizational capital build-up) and index insurance systems where feasible.

114. The vulnerability of communities in the target area is a function not only of their exposure to climatic events and trends, but also of limited livelihood options and access to market and services, including financial services. For example, during the past year coffee producers in the target area, as is the case of ASUVIM (a local coffee production association), have experienced the lowest historical yield (at least six times lower than average) due to an extended drought, late frosts, and intense rain (linked to Tropical Storm Agatha, 2010). [69]

115. This third component of the proposed project seeks to reduce community sensitivity of their socio-economic environment to climate events and strengthen their capacity to adapt to climate change by creating conditions for better access to post-harvest facilities, markets and financial services. This will be done by strengthening organizational capacity, constructing small support infrastructure and determining the feasibility of microfinance systems to finance adaptation measures and activities.

116. 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. Women, who are largely responsible for marketing and processing their produce, will play a critical role.

117. Component 3 will encompass the following outputs and activities:

3.1 Mechanisms to improve conservation, storage, and handling of produce from climate resilient production systems are strengthen in Solola and Suchitepequez.

118. This output will address the growing socio-economic risks of climate change by improving

[69] Described during field visits within consultation process

conservation, storage, transport and handling of agricultural products as well as improving communication with market centres and service providers. Communities in the target area often produce insufficient food for consumption, not to mention for sale. They not only lack the storage facilities needed to market or store reserves of staples in times of need but in many cases are isolated during the rainy season since crossing rivers and creeks becomes impossible or extremely hazardous and trails and paths are impassable. Communities can reduce their vulnerability to climate change if they have sufficient food storage capabilities. This would enable them to enhance their reserves for food security as well as to store a surplus for market. Both these outcomes enhance a community's ability to accumulate assets therefore reducing their exposure to the risks and impacts of long-term climate change as well as variability.

119. The vulnerability of communities is a function of not only 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, AF resources will support local economic diversification as part of a process of establishing more resilient local economies.

120. AF resources will be used to diversify local economies, especially those most dependent on climate-sensitive natural resources. The Strategic Plan for Food and Nutritional Security 2009-2012 (SESAN) has clearly identified the need for capacities for marketing to be strengthened alongside those that aim to strengthen productive processes. Small and poor producers have no capacity to manage their crop surpluses something that if well managed could substantially enhance coping ranges.When partial or total crop losses occur, however, smallholders face losing their entire savings and asset base perpetuating a cycle of grinding poverty and vulnerability to climate change. 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 proposed 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 achieving this Output; thus, the proposed project will have a strong emphasis on gender. The project team will conduct the necessary assessments to establish a baseline in roles and livelihoods of women in close consultation and collaboration with the Indigenous Women Advocacy Council (DEMI).

121. Activities under output 3.1 will include:

- Construction of at least four 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 storage facilities will permit farmers to withstand food shortages caused by climate change induced extreme weather events. These will initially be small storage installations that integrate some necessary facilities for the 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 MARN and MAGA Project team. Building will be undertaken by MARN, in compliance with UNDP requirements, including adherence to all national and local standards on environmental and social impacts. EIAs and other impact studies will be conducted by government entities using government co-financing. The storage facilities will be administered by the municipality, in coordination with farmers associations or through mechanisms of public/private partnership, such as concessions.
- MARN-MAGA team will design mechanisms and train at least 100 farmers (prioritized by the criteria defined in Component 2) to access different markets for the sale of products from resilient production landscapes, strengthening the sustainability of activities in component 2. AF resources will be used to promote the collection, processing and provision of market information, specifically agricultural product prices in urban markets and central parts of the country. This information will be vital to achieve a fair deal in the marketing and trading of local agricultural production, delivered from productive landscapes implementing adaptive strategies. The coordinated management of several individuals on the basis of a joint production project will help reduce transport costs and marketing. AF resources will stimulate

the creation or strengthening of cooperatives or associations in the areas of marketing and services. Better access to and performance in markets will permit farmers to increase incomes and assets in order to endure periods of deteriorated productivity stemming from the effects of climate change.

- MARN, with AF resources, will reconstruct or build small-scale civil engineering structures (pedestrian and small vehicle bridges, feeder roads, etc.), in the nineteen microbasins, to ensure communication and access to storage facilities, market and service centres in accordance with activities included in development plans and therefore approved by the development councils. Civil engineering options would be built taking into account current and future climate hazards as well as population growth. Building will be contracted according to national implementation procedures through the executing agency (MARN) and turned over to the municipalities. Corresponding environmental impact assessments will be conducted according to MARN's legal requirements and financed by government co financing, and have been factored into the time frame that this initiative is expected to run through.

3.2 *Institutional and social networks strengthened to build more climate resilient social environments*

122. 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. Under this output, the project team and participating institutions and NGOs will support and strengthen existing community organizations that are critical for the enhancement of social resilience in communities affected by climate change[70], and their formation in networks to strengthen their abilities to address climate change threats. Formal community organizations include traditional organizations such as cofradías, water or forest councils or committees etc. Women's participation and leadership will be encouraged in a culturally relevant manner.

123. In the social sphere, the project will enhance social networks that improve the adaptive capacity of local communities. At the community level, reducing the barriers to communication through information sharing is an important element in consolidating networks of engagement and 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 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.

124. Activities under output 3.2 will include:

- MARN, in collaboration with NGOs and CBOs, will recover and re-evaluate ancestral forms of organization related to adaptive management of land and resources. MARN will take into particular account traditional organizational forms where they exist and respect existing community rules. For example, some community norms for enhancing resilience of production systems can lead to adaptive management practices and forms of social organization of indigenous peoples, with explicit targets in the area of land and ecosystem management. This will also permit them to develop and implement community agreements and standards that are backed by the social community, contribute to conservation, and can be the basis of social construction of ecosystem resilience.[71] Table 9 shows some examples of standards and community agreements that have been registered in Guatemala.
- A targeted capacity building program focused on strengthening the ability of community

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

organizations and social networks to more effectively respond to climate change and adaptation. A closely knit and well-organized community can more successfully cope with climate variability and change than a fragmented community. With enhanced capacity and training, organized communities can sustain improvements to productivity, resilience and services and market access supported by this project. These capacity building activities will be based on proven methodologies such as the environmental education materials used by the Ministry of Environment, the support for sound agricultural practices of the extension program of the Ministry of Agriculture (supported by FAO) and the financial education campaign of the Banco Rural de Desarrollo as well as the expertise of local NGOs.

- The capacity building programme will be implemented focusing on women whom are often the foundation of both social structures and production processes in many rural and indigenous communities (Component 3). The gender perspective will be included in this process by working together with the Indigenous Women Advocacy Council (DEMI) in developing the methodology and approach. Among the capacity building activities, the AF project will promote pre-selected activities included in the adaptation catalogue and showcase progress of communities implementing small-scale project to be replicated. In addition, environmental educations materials will be facilitated and shared including climate-related information (vulnerability assessments, maps, planning tools) specifically tailored to communities in Sololá and Suchitepéquez.

Table 9. Community practices, social agreements, and arrangements for conservation and recovery of ecosystems[72]

Type of Community Practice	Objective	Benefit to ecosystem and production system resilience
Establishment of nurseries	Grow plants for reforestation	Increased coverage of soil, increased organic matter, greater water filtration; microclimate
Reforestation of communal areas	Recover degraded areas, increase tree and vegetation density	Increased coverage of soil, increased organic matter, greater water filtration; microclimate
Pruning and cropping	Shape trees	Enhancing microclimate benefits
Sanitation	Eliminate pests or diseased trees	Reduce risk of larger scale forest loss, soil degradation, water loss
Gaps and firebreaks	Prevent or control forest fires	Reduce forest loss and gaps prone to erosion
Authorization of extraction	Regulate and control logging	Reduce forest loss and gaps prone to erosion
Protection of seed trees	Ensure the production of forest seed	Enhance ecosystem regeneration
Water Source Protection	Ensure the availability and provision of water	Augment ecosystem services
Use of specific species	Protect rare species or those with cultural value	Enhance ecosystem function and regeneration potential
Surveillance	Maintain an annual harvest quota	Enhance ecosystem function and regeneration potential
Temporary closures	Allow forest recovery	Preserve ecosystem function and regeneration potential
Sanctions	Avoid excesses	Preserve ecosystem function and regeneration potential

3.3 Technical assistance to determine the feasibility of existing microfinance mechanisms to provide financing for climate resilient activities and provide recommendations for design and implementation

125. MARN, with AF financing, will improve its understanding and knowledge about the potential role that access to capital, primarily through micro-financing mechanisms, and secondly through the provision of collateral guarantees, can play in supporting communities (especially marginalized groups, such as indigenous women) to adapt to climate change pressures.

126. AF resources will be used to examine the potential, in the Guatemalan context, of microfinance for the delivery of loans, savings, insurance and other financial services to communities that lack access to regular finance services provided by banks, so they can engage in climate resilient activities, helping them build assets, stabilize consumption and protect themselves against climate change risks (along with other risks) and be able to recover from the impacts of climatic hazards. It is currently expected, although there is limited empirical evidence in Guatemala, that microfinance presents a strong linkage to socio-economic resilience in front of climate change impacts. This AF initiative will remove this informational barrier and contribute towards capacitating MARN to make informed decisions how existing microfinance institutions can be supported to adjust its practices such that sustainable financing is made available to support local communities for adaptation.

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

127. Activities under output 3.3 will include:

- The MARN project team will work with local microfinance providers such as COLUA and Guadalupana cooperatives and the Rural Development Bank (BANRURAL) to analyze barriers to access to credit in the target area and recommend measures to overcome them.
- A pre-feasibility study on the potential for incorporating a weather index insurance scheme in Guatemala will be carried out. The pre-feasibility study will build upon on experiences on the "Developing the Market for Extreme El Niño Insurance in Peru" managed by UNDP to integrate extreme weather events under a forecast insurance in Guatemala.
- MARN will work together with Ministry of Agriculture (MAGA) and the National Forestry Institute (INAB) to support communities in the 19 microbasins to access and use micro-credits for commodity production under existing certification schemes such as Rainforest Alliance, Utz, Organic, Fairtrade and Green Deal. Certification enables access to differentiated markets and income improvements that can be invested in enhancement of adaptation measures.

128. Component 4: Documentation, dissemination and uptake of lessons learned

129. The information generated and processed through the proposed project will provide inputs for development of an awareness and outreach strategy that will serve to enable a broader range of stakeholders in Guatemala to better understand the impacts of climate change as well as response measures. As such, the Ministry of Environment is particularly keen to apply the work of the project to developing technical standards and guidelines for mainstreaming climate change into planning and programming processes, as well as for production processes.

130. The technical standards and guidance materials produced by this project will be directed to government agencies (including CONAP, INAB, MAGA and other government entities) and to local municipalities to provide policy makers with new tools, and enable them to integrate climate change adaptation into policy and regulatory frameworks. All information produced or gathered by the project, including systematization of lessons learned from project activities, will feed back into planning processes at municipal, departmental and national levels, through SEGEPLAN and participating municipalities. Manuals on mainstreaming climate change into municipal, departmental and protected area management plans, including use of environmental and climatic information for decision-making and investment, will be produced. Manuals and other materials will be delivered through SEGEPLAN to users such as municipal governments, development councils, their committees and coordinating units, donors and national and international NGOs.

131. In addition, technical standards for downscaling climate scenarios and for technical specifications for climate-proof production and civil engineering infrastructure will be delivered to locally relevant academic institutions such as local centres of the San Carlos and del Valle Universities, and vocational centres, such as INTECAP, to foster research and serve as learning materials for students. UNDP and MARN will make the information available to other United Nations agencies and programmes, as well as international cooperation agencies and donors and regional bodies such as the CCAD and SICA to be taken as reference and to be used for the replication of successful practices derived from this project.
To promote behavioural changes and raise awareness of climate risks and adaptation measures, in coordination with the General Direction for Training, Organization, and Social Participation of MARN and the Ministry of Education, an awareness raising and education program will be implemented under this project using the guidance materials produced by this project. The guidance materials will be adjusted, as relevant i.e. in flip charts and teacher's guides, brochures, pamphlets, radio messages to reach different audiences.

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*

132. 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.

133. 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 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.

134. Activities under output 4.1 will include:

- Collect and disseminate information on results and impacts generated by the AF resources. More specifically, climate and environmental indicators generated under component 1 will be collected through SEGEPLAN's spatial data infrastructure (ide.segeplan.gob.gt) and MARN's environmental information system (sia.marn.gob.gt) on-line systems to be disseminated to relevant decision makers at all levels
- Conduct a gap analysis on information required to enhance adaptation capacity in decision-making at national, municipal and community levels based on the monitoring and evaluation indicators.
- 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.

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

135. 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 to better understand the impacts of climate change, as well as response measures.

136. Activities under output 4.2 will include:

- MARN will 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 results from the adaptation measures and innovation practices supported by the proposed initiative, including information from the experiences in the target municipalities. 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.

- MARN will establish agreements and find dissemination spaces for manuals, journals, and videos produced in Component 2.
- MARN will train trainers with a multicultural approach to ensure widespread replication of key project results.

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

137. 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.

138. Activities under output 4.3 will include:

- MARN will design mechanisms for gathering lessons learned, broken down by component.
- MARN will compile and systematise lessons learned in each component.
- MARN will disseminate lessons learned, systematised for different media.

139. 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 MARN, and UNDP/ALM knowledge portals.

4.4 *Formulation of four technical standards for mainstreaming climate change into planning and programming processes*

140. 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 set national standards from local experiences during Project implementation.

141. 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. These manuals will be distributed through SEGEPLAN and the National Territorial Planning System for municipal governments, development councils, their committees and coordinating units, donors and national and international NGOs (nationwide).
  - 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. As suggested above, standards for downscaling of climate models and technical specification for climate-proof production and civil engineering infrastructure will be distributed to MARN, MAGA and INSIVUMEH as well as local academic centres such as the field campuses of the San Carlos and del Valle Universities.

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

142. 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. The manuals will be to be disseminated to a broad range of stakeholders to enable replications of successful practices derived from this project at national, regional and global levels. Specifically, at the local level the manuals will be distributed through MAGA's extension services and NGOs specialized in agricultural extension work.

143. Activities - under output 4.5 the Project will:

- Develop and distribute guidance manual on resilient production practices, applied to different livelihoods and production landscapes in the target area.
- Develop and distribute guidance manual on community-based adaptation, stemming from Project experiences in the Sololá and Suchitepéquez departments.
- Develop and distribute guidance manual 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.

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

144. The Government of Guatemala has elected to focus this proposed project (with a grant of US$5m) on eleven target municipalities (with a total population of 301,763 people) in the departments of Suchitepequez and Solola. The population in these municipalities are among the most vulnerable in Guatemala, with the highest rates of poverty, extreme poverty, malnutrition, and infant mortality. In the target municipalities, poverty levels reach 70%, and chronic malnutrition exceeds 55%. Social networks are weak, with low levels of association, and significant social and cultural diversity.

145. MARN, in consultation with other government entities, local stakeholders and NGOs (See Table 11 and Annex E) has identified five main criteria to be used to identify and prioritize community beneficiaries for the development of activities under component 2 and 3 of this proposed project. The criteria are described in Output 2.3. The direct beneficiaries were estimated by MARN based on socio-economic data from Solola and Suchitepequez provided by the National Statistics Institute´s Population Census and MDG National Poll on Human Development. As well, the National Alphabetization Committee (CONALFA) provided data in terms of literacy level by age group. (See Annex B).

146. The project is structured so that the majority of AF financed activities are implemented at community level in 19 selected microbasins (Alto Nahualate, Ugualxucube, Tzojomá, Paximbal, Igualcox, Masá, Ixtacapa, Yatzá, Panán, Mixpiyá, Nicá, Mocá, Paquiácamiyá, Tarro, Bravo, San Franciso, Chunajá, Siguacán and Coralito) to deliver concrete adaptation benefits to at least 25 communities (approximately 42,000 people) living in the upper Nahualate river basin of the targeted municipalities. The project will work directly with the selected communities and local governments to implement participatory adaptation strategies (i.e. concrete water and agricultural adaptation interventions) for reducing vulnerability and enhancing climate resilience. The total population of these prioritized microbasins is 139,545 of which 85,341 (61%) are rural, and 69,918 (50%) are women (see table in Annex B). Beneficiary communities will be selected on the basis of the greatest vulnerability; preliminary criteria are indicated under component 2.
The proposed project will deliver economic, social and environmental benefits to the projected beneficiaries as follows:

147. ***In terms of economic and agricultural benefits***, by the end of the project the membership of at least 25 community producers' organizations (approximately 42,000 people, at least half of them women) in the upper Nahualate basin will have adopted specific improved farming and land management methods

that enhance production system resilience and productivity in the face of increasing climate change (see Component 2, above).

148. It is expected that this community-based adaptation approach will lead to an average increase in yields of at least 30% on smallholdings supporting approximately 42,000 people across 25 communities and a decrease in the risk of crop losses due to climate change related events. MAGA (Ministry of Agriculture) has implemented a mechanism to track yield increases in Guatemala (Yield Monitoring System [http://216.230.129.45/maga/]) developed jointly by MAGA, FAO and USAID. AF funds will be likely to have a recorded impact in yield increase and MAGA will be able to assess impact across the 25 communities. Food security will be significantly enhanced through increased yields, which will also provide a marketable surplus for the generation of income to be used to augment the adaptive capacities of smallholders and their communities. At least four strategically located storage facilities and processing locales will permit smallholders to manage their crop surpluses so that they can more effectively cope with climate change and variability. Note that the target population consists of vulnerable communities in the Poverty and Extreme Poverty socio-economic groups. Within these communities, women and indigenous people will receive special attention.

149. ***In terms of social benefits***, the project will strengthen at least 25 local community producers associations representing 42,000 smallholders, to improve management and conservation of their communal assets (reforestation of communal areas, protection of communal water resources). Building social capital and empowering communities, the project will enhance community cohesion by strengthening their capacities to respond to current and future climate change risk in an organized, effective and concerted manner. By taking a community based adaptation approach the project will promote and facilitate the active participation of the most vulnerable groups in the process of planning and implementing adaptation measures.

150. Additionally, the proposed project will address the prevalent gender inequality ensuring adequate participation of women, at least half of them in leadership and decision making to ensure that their position and points of view are properly taken into account during project implementation, and they can lead the design and implementation of adaptation measures. Addressing gender in this proposed project is based on a process of participatory analysis and change in patterns to address differentiated vulnerability, work burden and capacity for decision-making.

151. ***In terms of ecosystem based benefits***, the proposed project will enhance ecological connectivity across the productive landscape through the implementation of agro-forestry, sylvopastoral, reforestation and other sustainable land management activities. This will result in stabilization of an improvement in ecosystem services such as provisioning, regulating and cultural services that contribute to communities' wellbeing at local scale. Implementation of project activities will increase the ability of ecosystems to sustain essential ecosystem provisioning, supporting and regulating services in the face of climate change (i.e. provision of clean water, erosion prevention, flood control, microclimate as well as leading to co-benefits such as carbon storage). This increased resilience to climate change will have a positive impact on livelihoods, acting as soft infrastructure against extreme events. More specifically, those communities located near rivers and more vulnerable to landslides will be largest beneficiaries of ecosystems restoring activities.

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

152. In the past four decades, Guatemala had been impacted by hurricanes and tropical storms (Alex, Agatha, Frank, Matthew) that have disrupted its social, economic and political life. The human and economic losses have shown its vulnerability to extreme weather events and current budgetary and structural limitations make difficult to develop and implement integrated strategies to address climate change.

153. According to Guatemala Second National Communication to UNFCCC, hurricane Mitch in 1998 resulted in US$748 million in economic losses, 77% of which affected production sectors. Tropical storm Stan in 2005 caused US$989 million in economic losses, over 1,400 deaths, and over half a million victims (70% of whom were indigenous people). 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. Agatha's estimated economic damage was approximately US$1 billion.

154. The most common response to catastrophic impacts of climatic events is providing immediate food and emergency supplies ex post, followed by hasty reconstruction of vital road infrastructure, and full or partial relocation of human settlements. In the aftermath of tropical storm Agatha (2010), the required, cost for emergency relief was calculated at an average amount of US$ 1,338,677 per municipality (CONRED and SEGEPLAN, 2010), although total damage was estimated at US$ 912 million. Total damage of climate related events in Guatemala for the past four decades is estimated at US$ 3.241 billion.

155. Current widespread poverty and extreme poverty among rural and indigenous communities had increased their vulnerability to droughts, floods, and landslides and given government financial constraints had generated only short-terms solutions. Cross-cutting, 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.

156. The main objective of the project is to develop technical and practical experiences in community-based adaptation projects to ensure that 11 municipalities in Suchitepequez and Solola become climate-resilient to extreme weather events. Each component was designed to be interlinked aiming to provide relevant technical capacity and infrastructure to support decision-making and to improve climate resilience and productions system for CBOs. An integrated approach to climate change adaptation with a high replication potential, generating field-tested practices and management tools is expected to provide effective, long-term responses to managing anticipated climate change impacts.

157. The proposed project budget will support the establishment of nine new meteorological stations to generate climate-related information to develop vulnerability assessment and maps to be included into municipal and department planning instruments. The AF project will support the construction of central storage facilities and small-scale civil engineering structures and will promote climate-resilient ecosystems management and productions practices in CBOs in identified microbasins, recovery and systematization of ancestral and traditional practices, and enabling environment for investment in targeted municipalities. Furthermore, the project will support the documentation, dissemination and management of lessons learned throughout the project, aiming for Government, rural and indigenous communities to have a better understanding of climate change issues and guidance on what practical solutions will suit each group.

158. The proposed components and related activities are essential to develop and implement a multi-sectoral, integrated, cross-cutting project to fully address climate change vulnerability among rural and indigenous communities. Not addressing any one of the components would reduce the effectiveness of the overall project investment. The project structure, with approximately 95% on technical solutions and 5% on dissemination of lessons learned is believed to be the most effective and balanced way of generating long-term interventions to reduce climate change vulnerability.
Most of the program budget (95%) will support multi-sectoral and integrated interventions towards reducing climate change vulnerability of rural and indigenous groups.

<u>Component 1:</u>
159. The 11-targeted communities in the departments of Suchitepequez and Solola account a total population of 301,763 people, which are among the most vulnerable with the highest rates of poverty, extreme poverty, malnutrition and infant mortality will benefit from the AF project. In the target municipalities, more than 75% are indigenous, poverty levels reach 70%, and chronic malnutrition exceeds 55%, factors that exacerbate the impacts of floods, landslides and droughts in the rural and indigenous communities. The AF project will generate institutional and policy benefits such as strengthening capacities at municipal, departmental and national level for downscaling and mainstreaming climate information into decision-making. In addition, technical, legal and financial assessments will be carried out to generate sound information for structuring national and local financing mechanisms for adaptation in Guatemala. 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.

160. "Doing nothing", as an alternative option, means that rural and indigenous communities will increasingly suffer the severe impacts of floods and landslides (i.e. loss of productive means and goods, damage to dwells and infrastructure, etc.), which will eventually force the Government to provide immediate food and emergency supplies ex post. In order to overcome status quo, the Government of Guatemala will have to invest in technology to generate relevant climate-related information to develop vulnerability assessments, as well in capacity building and training to use and develop relevant climate data, and to carry out feasibility studies to design a finance mechanism to support adaptation measures. Given current economic and technical capacity constraints, the Government of Guatemala would have to prioritize and develop an isolated outcome, maintaining traditional short-term solutions.

161. Alternative options to the investment to generate climate-relate information to be integrated in national planning tools such as relying on external consultants for the downscaling of information and generation of climate scenarios, would ultimately imply much higher investments than the proposed initiatives as periodic updates of the information would have to contracted to external consultants in the absence of internal capacities. Similar rationale applies to the assessment of a finance mechanism to support adaptation, relying on external consultants thus, not internalizing costs or capacities of local trained Government staff. AF fund will be paramount in incorporating climate risk considerations into municipal planning tools to provide long-term benefits to the communities in Sololá and Suchitepéquez and the cost-effectiveness of the project will also be reflected at the operational level by the absorptive capacity of Guatemala and its institutions to carry out development projects in a timely and cost-effective manner.

Component 2:

162. The agricultural sector is one of those most affected by climate change in Guatemala. This has been documented in the 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 northwestern parts of the country, which caused losses of 72,798 hectares of crops (worth about US$32 million). In 2010, after Agatha hurricane, it´s been estimated that the government will need to invest about US$203 million to ensure food security in the country.

Under component 2, the bulk of project financing (USD$2,600,000) will be directed to support COBs to develop small-scale adaptation projects and to recover and systematize ancestral and traditional practices at community level benefitting approximately 26,000 people across 25 CBOs.

163. A small-scale adaptation measures catalogue was developed based on a comprehensive participatory consultative process among national, sub-national, NGOs and rural and indigenous communities in Sololá and Suchitepéquez (Table 8). Community-based organizations (COBs) and NGOs will develop and tailor proposal based exclusively on the small-scale adaptation measures catalogue. The set of adaptation measures included in the catalogue was developed in close coordination with national and regional governments, aligned to Municipal Development Plans and Departmental Development Plans and validated by community-based organizations.

164. The catalogue includes the construction of small-scale structures to protect critical sections in the river channels combining bioengineering techniques based from hydraulic analysis as a plausible option. The small-scale structures [breakwaters, embankment or rock lining] will combine bioengineering techniques (planting of bamboo, using reeds, grass and other species on the structures) and involve COBS during development and implementation. If compared with a commonly used alternative such as developing large-scale civil engineering works, the costs of implementation related to use of machinery, labor and studies would increase the finance require to pursuit this option. Another pre-selected measure is small-scale civil engineering works to protect water intakes from landslides in combination with reforestation. (Include wording in table) A possible alternative will be construction of large water storage tanks in each community, however its costs would exceed by far related to construction and operation and maintenance.

165. As a measure of prevention and control of forest fires, in the catalogue has been included training to volunteer firefighters and volunteer brigades on fire control techniques, as well as providing them with

equipment to control fires. If compared with the loss of around 100 ha of natural forest in the Cerro Pecul in 2005 when a forest fire took 2 weeks to be controlled given that firefighters had no extra personnel nor specialized equipment this measure will provide long-term benefits.

166. Reinforcement of anti-slide structures on rural roads (cobblestone, slope stabilization with berms on the banks of the roads and construction of gabions on rural roads), was agreed by the communities and selected by MARN to be included in the catalogue. In addition, improve sustainable drainage systems in selected roads and municipalities (strengthen structures infiltration galleries for fruit production, small reservoirs and small-scale diversion dams) for water infiltration to reduce surface runoff and groundwater supply was included. An alternative option for these adaptation measures would consist of paving rural roads, which could represent higher costs –asphalt, machinery, and engineering works – especially if a rain prevention approach is taken to protect access roads (paved, berm slopes for landslides, drainage wells, ditches, streams derivation).

167. Under the catalogue small-scale water storage facilities for irrigation was included to promote sustainable practices of water use while increasing food security. The lack of water is not an alternative, not for rural and indigenous communities under poverty line which rely on subsistence agriculture for maintaining livelihoods. An alternative would be the construction of wells, which are not economically profitable because the water table in the upper part of the basin (Nahualá and Santa Catarina Ixtahuacán Municipalities) is too deep (water scans at 1000 feet have not found water).

168. Beekeeping is a profitable activity currently carried out by some farmers. This activity aim to expand the number of farmers engaged in the production of organic honey and other products for the purpose of increasing sources of income and reduces pressure on forests. Although there are other sources of income diversification, beekeeping has high social acceptance pressure and has been mainly developed by large estates and small farmers would like to access to generate income.

169. During consultative processes, communities strongly supported the introduction of agroforestry systems (mix of wood trees and fruit trees in agricultural areas) to generate diverse sustainable sources of income and food. Within peasant farms reforestation of forest is not viable because farmers needs crops for subsistence and also cannot afford the expected long-term income (wooden forest cutting cycle of 20 years).

Component 3

170. The resilience of production landscapes and livelihoods affected by climate change hazards will increase from the activities implemented in Component 2. These activities will be complemented for Component 3 by increasing the adaptive capacity of local communities to support vital economic and social processes supporting construction of at least four central storage facilities and small-scale civil engineering structures to manage their crop surpluses more effectively, thus increasing their profit enabling them to quickly resume livelihoods without sacrificing the health and education of the next generation. In addition, it will strengthen their resilience through investments in community organization and technical assessment of microfinance for climate resilient activities where feasible.

171. The costs of addressing climate-resilient activities under this project proposal in components 2 and 3, would be US$4,063,000 for 11 municipalities against an estimate of US$14,725,447 (if average emergency costs are extrapolated per municipality for the target area) per climate event (Source MARN 2011 from INE 2010, BANGUAT 2010, CEPAL 2010 and EMDAT).

172. The proposed integrated approach therefore appears to be cost-effective, and will furthermore have additional value in replication at other similar sites while increasing local capacity, technology and knowledge transfer. An investment of US$4,063,000 (component 2 and 3) to develop and implement climate resilient ecosystem management and production and to strengthen capacities of COBs is considered to be low, when compared to the costs of BAU reconstruction and emergency relief and isolated efforts.

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.

173. The proposal fully conforms to the strategic priorities defined by the Government of Guatemala and MARN's Institutional Strategic Plan,[73] 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.

174. For its part, the National Climate Change Policy[74] 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.

175. In addition, the mandate of the national Sectoral Platform for Environment and Water[75] 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[76] 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.

176. 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."[77]

177. 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

[73] MARN (2008) Institutional Strategic Plan of the Ministry of Environment and Natural Resources, 2008-2011. Resolution n° 052-2008.

[74] MARN (2009) National Policy for Climate Change. Government Agreement No. 329-2009.

[75] Organizational and Procedural Manual for the Sectoral Platform on Environment and Water (2010).

[76] Multi-annual Sectoral Plan for Environment and Water 2011 -2013 (2010).

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

commercial development with a human rights and gender focus.

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

178. The AF funds will support institutional and policy capacity for mainstreaming climate change while developing technical and practical experiences in community-based adaptation to ensure that 11 municipalities in Suchitepequez and Solola increase their climate-resilience to extreme weather events. Each proposed component entails a set of predetermined and to be validated interventions. The latter apply for those interventions that will be defined and agreed upon a participatory manner among government and communities (component 2) to identify and implement adaptation strategies ensuring a grounded and community based-approach based on scientific information, technical feasibility studies, ancestral and traditional knowledge.

179. The project will guarantee fulfilment and consistent application of national standard on environmental and social safeguards. 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[78], and the "Exhaustive list of projects, works, industry or activity"[79].

180. 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.

181. 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.

182. The methodologies used by the proposed project to analyze and assess environmental impacts of the prioritized adaptation actions will be based on the methodologies for environmental impact assessment defined by the Ministry of Environment and Natural Resources of Guatemala (MARN), the executing entity of the proposed project.

183. According to the Guatemalan Law for Protection, Restoration and Conservation of the Environment, Decree 68-86, and Decree 90-2000, which creates the Ministry of Environment and Natural Resources and defines its roles and competencies, MARN is responsible for providing these norms and methodologies. The methodologies and norms are the following:

1) Self-assessment techniques, which provide technical guidance on the type and magnitude of the project and thus to which each Environmental Impact Assessment instrument will have to be applied. For defining the type of environmental impact, MARN has an exhaustive mandatory list (listado taxativo) that can be found at
2) Environmental and Social Sagefuards (Listado Taxativo) (http://www.marn.gob.gt/documentos/listado_taxativo_gestion.pdf);
3) An initial evaluation for low environmental impact projects is required for the projects that are going to be initiated (as defined during the first step, self-assessment).
4) Afterwards, the Ministry of Environment and Natural Resources elaborates a diagnostic of the

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

[79] Government Agreement N° 134- 2005.

assessments

5) Environmental assessment is used for all established projects that require re-evaluation.
6) Environmental impact assessments are used for projects that may have a medium to high environmental impact.

184. For all adaptive measures, MARN will ensure the completion of required "Initial Environmental Assessment"[80].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.

185. According to the mandatory list (listado taxativo), most "hard" interventions are classified as low to moderate impact assessment, and thus would require only "Low Impact Diagnostic", and/or "Initial Evaluation". The procedure and format of these instruments may be found at: http://www.marn.gob.gt/ (Ventanilla Unica icon).

186. The adaptation measures will be developed and implemented based on environmental and social national safeguards and related legal framework. Both UNDP Programme and Operational Policies and Procedures and EIA´s methodologies from MARN will provide an assurance mechanism to guarantee fulfilment and consistent application of national legal framework. To reassure that activities funded by AF are aligned to national standards and IEA results, the disbursement schedule (See Project Milestones and Disbursement Schedule) states that all feasibility, technical and required EIAs will be carried out in the 1st year of implementation. After review of results by MARN and UNDP and approval of 2nd year Annual Work Plan (AWP) by UNDP has been carried out, AF funds will be disbursed to commence 2nd year of implementation.

187. In the extraordinary case an EIA convey to carry out specific activities to be aligned to national standards, those activities will be reviewed and assessed based on established output budget, cost-effectiveness, additionality and relevance to the project objectives and expected outcomes. Once agreed and approved by MARN and UNDP, those activities will be budgeted and included in the 2nd year Annual Work Plan. To maintain a cohesive timeline for project implementation, any new budgeted activity will require further clearance by MARN and UNDP to disburse the specific AF funds tranche, while predetermined activities will maintain a fund disbursement calendar as agreed in the 2nd AWP. This modality will reassure that proposed interventions by community-based organizations will be implemented according to the proposed project budget and will not convey implications for the disbursement schedule.

188. As for predetermined activities in the project, the methodologies that will be used for climate models, economic valuation and data management are the following:

- Climate models:

Downscaled climate projections will be based on IPCC SRES scenarios and GCM models adequate for Guatemala (e.g. Hadley CM3) that are established in National Communications to the UNFCC. Statistical downscaling methods, i.e., weather typing, weather generators or regression methods to be used will depend on the available historical climatic data for the target area.

- Economic valuation of ecosystem services

Estimation of value of the ecosystem services will be based on methodologies currently used in the Central American region by a number of agencies and institutions such as FAO, WWF, and IUCN and which are being applied by projects implemented by UNDP-MARN in other areas of Guatemala. The contingent valuation method (CVM) estimates services, based on location of sources, total supply and quality as well as legal rights involved, and then establishes the total demand and willingness and capacity to pay by stakeholders to initiate negotiations. Feasibility of application of this method will be

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

determined in the first months of project implementation; the alternative approach would be through market determination method.

- Data management:

Data generated by the project (meteorological, environmental, social, economic indicators) will be managed and made available to the public through the planning offices of the municipalities involved, and at the national level, through SEGEPLAN (the Secretary for Planning and Programming for the Presidency) (www.segeplan.gob.gt) [81], IDE (the National Spatial Database Infrastructure) and also on-line through the MARN-SIA Municipal Environmental Indicators platform (www.marn.gob.gt)[82].

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

189. At present, Guatemala is not receiving any significant finance for concrete adaptation initiatives from any of the existing sources. Specifically, the 11 targeted municipalities are not part of any other climate change adaptation project, with the proposed approaches. The current and historic absence of international cooperation in the defined territory was also a critical criteria used by the Government of Guatemala for the selection of the area. During project formulation, discussions were undertaken with donors, and a review of ongoing projects and complementary development efforts that are currently under way in the target area was conducted to make certain that the proposed AF project will be complimentary to the existing initiatives. Additionally, all government stakeholders listed under section H of this project proposal have been consulted, in order to avoid any potential duplication of efforts and geographical coverage. During project implementation, the project team will maintain close contact with existing development initiatives and seek to identify synergies, where appropriate.

190. A special effort will be made to coordinate with the UNDP/GEF Community Based Adaptation Programme (GEF-SPA financed). Implemented at the global level, Guatemala is one of the pilot countries developing community based adaptation initiatives in the Suchiate and Naranjo basins in southwest Guatemala (as such there is no overlap with the project area), with a priority focus on agriculture and water. The proposed AF project will be able to draw on the lessons learned from the UNDP's SPA-funded project and build upon a range of relevant tools and materials to develop capacity building approaches, advocacy and mainstream community-based adaptation measures into regional and national development plans. One of the activities of the SPA-funded project is improving local agricultural techniques like soil conservation and crop intensification. The proposed project has taken into account proven ways and modalities to work with CBOs, experiences and best practices that had contributed to the final design of the proposed project in order to be up-taken and replicated. The Steering Committee will ensure information sharing and complementarities between these two projects. Relevant coordination mechanisms are further discussed in the implementation arrangement section of this document.

191. The Government of Guatemala, with support from the European Union, is currently implementing the Strategic Plan for Food and Nutritional Security 2009-2012 through its Secretary for Food and Nutritional Security (SESAN). The donation of the European Union through the EU budget support programme "Support to the National Policy on Food Security and Nutrition of Guatemala", amounts to 33.8 million Euros. The programme, which will last three years, will benefit the entire Guatemalan population, with particular attention to the most vulnerable rural population. The strategic plan intends to mitigate hunger and malnutrition by a) fomenting food availability, with emphasis on basic grain production to increase the country's food self-sufficiency; b) promoting the population's access to the basic food basket; c) strengthening education, information and communication on food

[81] SEGEPLAN, Infraestructura de Datos Espaciales:: http://www.segeplan.gob.gt/2.0/index.php?option=com_wrapper&view=wrapper&Itemid=266; and Sistema de Planificacion Territorial: http://www.segeplan.gob.gt/2.0/index.php?option=com_k2&view=itemlist&layout=category&task=category&id=366&Itemid=366

[82] MARN Sistema de Información Ambiental: http://www.sia.marn.gob.gt/

and nutrition to improve food consumption, promote breastfeeding and contribute to the reduction of chronic malnutrition; d) increasing the coverage and quality of health services, water, sanitation, family and community hygiene, to reduce chronic malnutrition; e) strengthening the institutional capacities of the National Food and Nutrition Security System (SINASAN) and Civil Society to reduce food insecurity and nutrition. Of the target area, the municipalities of Santa Catarina Ixtahuacán, Santa Clara and San Juan la Laguna, Santiago Atitlán and Chicacao are considered of high priority for this plan. The proposed AF project is seen as being complementary to the SESAN project as it aims to reduce the impact of climate change on agricultural productivity and food security by reducing the vulnerability of communities and food production systems through a community-based and ecosystem-based approach. The SESAN project will provide field-tested agricultural and food productions systems and relevant experiences that will strengthen the implementation of ancestral and traditional productions practices (Output 2.2). Coordination between the two initiatives will be enhanced locally through the Inter-Institutional Support Committee (ISC) composed of key institutions such as the MAGA, CONRED, SEGEPLAN, INAB, CONAP, INSIVUMEH, MIVI, MARN, SESAN and participating NGO's will be installed to oversee coordination and follow up on Programme Execution.

192. Government of Guatemala, led by the National Institute of Seismology, Volcanology, Meteorology and Hydrology (INSIVUMEH), has implemented a US$15 million project "Strengthening, Expanding and Upgrading Networks and Geophysical Hydrometheorological Monitoring". Its objective was to contribute to the prevention of natural disasters in the country, by installing hydrological and meteorological stations, with some of the stations located in the project area (in Nahualate, Coyolate and Madre Vieja basins). The proposed AF project, in close coordination with INSIVUMEH, will establish nine new meteorological stations installed in Solola and Suchitepequez (Output 1.1) aiming to significantly augment this effort, building on the information generated by these stations. The data and information generated by the meteorological stations network will be disseminated through a newly created information system based on existing sub-national and national centres of expertise (Output 4.1) and it will provide climate variability information to be included in Solola and Suchitepequez departmental development plans (Output 1.2)

193. Finally, a number of small initiatives are currently underway in Guatemala but they do not address community based adaptation needs. These initiatives, led by MARN and the National Protected Areas Council, are supported by the Nature Conservancy (through the project "Parks in Peril"), Vivamos Mejor, and the National Coffee Growers Association (ANACAFE), and they are focused on strengthening the national protected areas system and improving the well-being of rural communities through sustainable use of natural resources and forest management. During implementation, coordination with the institutions governing protected areas will be ensured through the Inter-Institutional Support Committee (ISC) of this proposed project at national level and locally through the system of development councils, where all institutions involved, including the National Protected Areas Council (CONAP) will be represented. The proposed project will directly interact with the development council system as it will aim to include climate change adaptation measures into planning instruments (Output 1.2) and strengthen capacity of existing social networks (councils, committees, cofradías, etc) to reduce climate risks (Output 3.2) by fostering tailored information and dissemination of lessons learned and best practices (Output 4.3)

194. As the project will be managed through a National Execution modality (NEX) the government executing agency, MARN, will guarantee coordination with other donor and government initiatives, specifically through the Sectoral Committee for Environment and Water (please refer to http://marn.gob.gt/sub/portal_samya/index.html). Also, regular stakeholder consultations are envisaged as a key component of project implementation, and key government institutions will also be actively involved in the project activities. The proposed project will be coordinated by a Programme Steering Committee assisted by an Intern-Institutional Support Committee (ISC). This latter includes representatives from all the Ministries and entities that have oversight over the existing complementary projects. Through this mechanism of coordination, any potential duplication with on-going or future projects will be avoided and complementarities would be leveraged.

195. Finally, UNDP will coordinate with other UN Agencies through the UN Country Team and UN Resident Coordinator (UNRC) within the context of implementation of the UNDAF for Guatemala.

UNDP will also work closely with bilateral development partners active in the area to create synergies, coordination and complementarities with other mentioned initiatives.

Table 10. Summary of complementarities between existing development initiatives and the proposed AF project.

Project title	Donor	Focus (and contribution to Baseline)	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 by contributing to the implementation of the National Policy of Promotion and Development of Guatemalan Women 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 (Component 2), in which DEMI (Defense of Indigenous Women) will be participating at the subregional level in Solola and Suchitepequez.	2008 2011
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 AF project will make use of the information generated by these stations, to analyze with the support of the centres for sub-national Geographic Information Systems, for use by decision-makers at all levels, including communities, to plan their crops and infrastructure investments under conditions of changing climate.	2010
Strategic Plan for Food and Nutritional Security (PESAN)	Government of Guatemala through SESAN; supported by EU	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.	The AF financed project will work to ensure that livelihoods are more resistant to climatic variables. The project will work with SESAN, and specifically the CODESAN (food security departmental commission) as it promotes the participation of women and peasants to improve marketing skills for produce that is more likely to be successful in different climate conditions.	2009 2012
Community based adaptation initiative in the Suchiate and Naranjo basins	UNDP/GEF through SGP	Development of a community based adaptation initiative in the Suchiate and Naranjo basins in southwest Guatemala, with a priority focus on agriculture and water.	The AF project will build on the mechanisms in place to deliver additional support to community based adaptation in other parts of Guatemala that are not covered by the ongoing GEF-financed project	2008 2013

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

196. 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.

197. 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.

198. 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.

199. 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.

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

201. The Government of Guatemala places high importance on the capture and systematization of lessons learned and practices from this project, as this is the only initiative in the country supporting the implementation of concrete adaptation initiatives. The lessons learned from the project will be disseminated both to the project participants (at the local, municipal and national level) and to a wider audience through a variety of approaches. The mechanisms for disseminating this information will be adjusted to different audiences (from poor communities to high-level policy makers), and the dissemination strategy will range from mechanisms such as a dedicated project website to radio programs and community outreach events (workshops, contests, etc).
Special emphasis will be given to peer to peer exchange missions to visit and enable replication. The project will also promote thematic learning exchange visits among policy makers throughout the project. Documentation of best practices and lessons learned will be carried out both electronically and in hard copy to be disseminated through different levels, as the project provides a suite of adaptation measures with replication potential in Guatemala, Central America and other places with similar conditions. Each level of dissemination would be addressed through the following channels:

a) At national level through the National Inter-institutional Committee for climate change and the Sectoral Committee for Water and Environment;
b) Sub-nationally, through the system of Development Councils at the local, municipal and departmental levels (COCODES, COMUDES, CODEDES);
c) Regionally, throughout Central America, through the CCAD knowledge network; and
d) Internationally, through the UNDP supported practice knowledge networks

202. By disseminating the experience among the members of the Sectoral Committee for Water and Environment, of the Central American Commission for Environment and Development (CCAD), other

agents of international cooperation will analyze and discuss project lessons learned, leading ideally to replication of activities at the regional level.

203. In addition, lessons learned from the project will be linked to the Adaptation Learning Mechanism to be shared with the global climate change adaptation community and enable replication of best practices in countries with similar climate change challenges.

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

204. 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 11)

205. The second phase was during the preparation of the complete document, when two main activities were undertaken. (See Table 11 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.

206. The series of consultations conducted with national authorities and local actors during the preparation of this project proposal were aimed at engaging key stakeholders in the project design, for them to take ownership of the project's goal and objectives, provide feedback on the full project proposal, and ensure their buy-in and commitment to project activities.

207. The first consultation with national authorities provided inputs for the definition of the project logical framework and main project activities, defined the geographic scope of the project, and identified key government stakeholders committed to action, leading to a document prepared with a high degree of participation of experts from the Guatemalan government institutions. In order to ensure the integration of feedback from local actors (civil society organization representatives, municipality staff members, public institution delegates, community representatives), a second consultation workshop was conducted to ensure common understanding of the problem and proposed solutions.

208. The second consultation workshop was crucial to adjust the project outputs and activities to local needs, including the redefinition of the target area and beneficiaries. Based on consensus reached during the consultation workshop, the adjustment of the project area resulted in the incorporation of three additional municipalities in the upper basin of the Nahualate River, an area that shows the largest levels of poverty, environmental degradation, and exposure to climatic threats. This change also supported a more coherent approach to watershed management and a higher emphasis on activities in the upper and medium part of the water basin. In addition, the workshop successfully identified local stakeholders, laying an important foundation for project implementation. Decisions and recommendations, including proposed

adaptation options and activities, were then systematized to be included in the project document. Specifically, the results of the workshop suggested a high demand for the project to support local income diversification, commercialization of products, and extension of services to local communities, activities that were then integrated in the design of this project proposal.

209. To reinforce the gender perspective within project outputs and activities, especially from indigenous women, the Defense of Indigenous Women (DEMI) was consulted as part of the Guatemalan Inter-institutional Indigenous Commissions (See table 11). DEMI is an institution that seeks to reinforce the role of indigenous women in development activities and will be included during the project development as a social coordinating body to mainstream gender perspective while developing community-based adaptation measures.

210. As for the methodology, in order to ensure the integration of feedback from local actors in the proposal, the second consultation workshop was organized around three methodological moments: an introductory part, a working session, and a plenary session. The purpose of the introductory part was for the participants to learn about the project proposal: its objectives, components and expected outcomes, and their own roles in achieving the objectives. The methodology used for developing the working sessions consisted of organizing working groups of participants around the four components of the project. Each group was called to review project component and respective activities, proposing adjustments or validating the proposal. Each group had one moderator and one reporter. During the plenary session, each working group gave a presentation on the results obtained. Decisions and recommendations were then systematized to be included in the project document.

Table 11. 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			

Consultative Phase	Entity or Person Consulted	Entity Type	Issues Addressed	Component Discussed
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 International Relations and Cooperation Unit	National Government Institutions	Initial agreements, logical framework of the Project, and evaluating committee for development of the complete document	1 2 3 4
	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		
	CARE	NGO		
	National Coordination for Disaster Reduction (CONRED)	Government Institutions		
	INSIVUMEH			
	Ministry of Agriculture (MAGA)			
	SESAN			
	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			

211. In addition, to define the full set of proposed activities under Component 2 requested by the AF Board, 3 additional participatory consultations were held in the Department of Sololá and the Department of Suchitepéquez as follows:

Table 12: Additional participatory consultations

Date	July 20th 2012	July 23rd 2012	July 25th 2012
Place	Santa Clara La Laguna Assembly Hall in Sololá	Santa Barbara Assembly Hall in Suchitepéquez	Santa Lucía Utatlán Principal Hall in Sololá
Participants	Community representatives from Nahualá, Santa María Visitación, Santa Clara La Laguna y Santa Catarina Ixtahuacán	Community representatives from Chicacao, Santa Bárbara, Patulul y San Juan Bautista	Community representatives from San Juan La Laguna, Santa Catarina Ixtahuacan, Nahualá, Asociación Vivamos Mejor

212. The 3 consultations were carried out to define and agree upon a participatory manner the full set of activities to be implemented under Component 2, which represent 52% of the total budget. More than 120 persons participated in the 3 consultations, including community leaders (rural and indigenous), civil society, farmers and COCODES* members.

At each consultation, a facilitator described overall project objectives and proposed activities fostering discussion among attendees and compiling feedback and recommendations. Community members fully agreed that flooding has been major obstacle for them to increment agriculture production, hence, to guarantee food security. A list of prospective activities were presented at the consultation and discussed if relevant for the community. Open discussions followed were feedback and recommendation was compiled by MARN. Community leaders and COCODES members urge MARN representatives that activities should focus on sustainable agriculture and forestry systems, which could provide subsistence and income means for community members. All information generated in 3 consultations was reviewed, aligned to Departmental and Municipal Development Plans and compiled by MARN. Subsequently, proposed activities were validated during a one-day internal workshop by MARN members and compiled as an adaptation measures catalogue (See Table 8).

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

Component 1: Institutional and policy capacity strengthened for mainstreaming climate change risk into national, departmental, municipal planning, public investment, budgeting and decision-making.

Baseline (without AF Resources)

213. In recent years, the government of Guatemala has endeavoured to establish the baseline 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.

214. According to MARN 2011 annual work plan, a study on current and future vulnerability in coastal zones and marginal urban areas will be carried out. As well, a support document to enable development of a National Plan for Climate Change Adaptation will be executed. However, given budgetary constraints and limited technical capacity to generate relevant climate information and to integrate it into decision-making processes is resulting in setbacks and only partial conclusions.

215. 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.

216. 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.

217. For the past years, Government of Guatemala has been exploring and assessing different means of climate change adaptation financing. In its National Climate Change Programme (NCCP), Government has stated that lack of financial resources to address climate change is one of the top three barriers to overcome in terms of developing and implementing mitigation options and adaptation strategies in the country. New, additional and innovative mechanisms for adaptation financing are still needed in Guatemala.

Additional (with AF Resources)

218. Through the project, the government will acquire the equipment to install nine new meteorological stations and software necessary to apply tools and methodologies for climate change vulnerability assessments, realize climate downscaling, and perform assessments of the threats and opportunities associated with climate change.

219. The Government of Guatemala, led by the National Institute of Seismology, Volcanology, Meteorology and Hydrology (INSIVUMEH), is implementing a $15 million project “Strengthening, Expanding and Upgrading Networks and Geophysical Hydrometheorological Monitoring. (See section F). Its objective is to contribute to the prevention of natural disasters in the country, by installing 30 new hydrological and 31 new meteorological stations, with some of the stations located in the project area (in Nahalate, Coyolate and Madre Vieja basins). The proposed AF project aims to significantly augment this effort, building on the information generated by these stations, and providing decision makers at all levels, including communities, with the capacity to plan their crops and infrastructure investment. 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.

220. 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[83] and simply missed opportunities.AF Funds will ensure that Suchitepequez and Solola mainstream climate change into their Development Plans. These efforts are expected to be replicated by other municipalities. Without the project, a key opportunity to ensure that these plans are "climate-proofed" will be lost.

221. 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.

222. Finally, AF resources will be used to support MARN in conducting technical, legal, institutional, financial and political feasibility studies for the design 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.

Component 2: Development and implementation of climate change resilient ecosystem management and production practices that reduce the vulnerability of communities.

Baseline (without AF Resources)

223. 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.

224. 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.

225. 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

[83] 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).

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)

226. 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.

227. AF funds will be used to formulate vulnerability analysis towards identifying options to improve climate-resilience productions system and to recover and systematize ancestral and traditional practices at community level. Inclusion of traditional and ancestral knowledge in Solola and Suchitepequez, where most of the population is indigenous, strengthens the process of empowering communities to manage production systems and it is the foundation for participatory definition of adaptation measures that will be identified, defined and agreed upon by the community.
The project will not only aim to increase resilience in production systems, but also rescue and integrate traditional practices such as adaptation measures that would otherwise be lost.

228. 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 mainstream climate change at both community and municipal levels.

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

230. Finally, Guatemala is one of the countries implementing the UNDP/GEF Community-based Adaptation pilot project, developing community-based adaptation initiatives in the Suchiate and Naranjo basins in Southwest Guatemala. AF funds will be complementary building on results generated in the vulnerability assessment of the Suchiate and Naranjo basins to be replicated, including lessons learned, in the proposed vulnerability analysis among 19 microbasins. MARN will ensure inclusion of lessons learned good practices and for building synergies from SGP Guatemala programme.

Component 3: Increased capacity of community based associations to reduce risks associated with climate-induced socioeconomic and ecosystemic losses in the target municipalities.

Baseline (without AF Resources)

231. Guatemala is implementing a Strategic Plan for Food Security and Nutrition (PESAN).[84] This initiative, spearheaded by the Secretariat for Food and Nutritional Security, has clearly identified the capacities for marketing need to be strengthened alongside those that aim to strengthen productive processes. (See section F for a description of this initiative).However, the plan does not directly address issues related to impact of climate change on agricultural productivity or food security. Therefore, it is unable to channel investments and implement activities that enable communities to increase their climate-resilience.

232. Smallholders in Solola and Suchitepequez have lost much of the staple crop year after year as a result of storms and heavy rain followed by prolonged drought. Farmers have had to switch harvesting seasons relying on seeds more resistant to drought and diversion of rivers for irrigation purposes.

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

233. 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.

234. On the other hand, weak organization among communities 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)

235. 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.

236. Through the design and establishment of central storage facilities (agricultural service warehouses) and construction of small-scale civil engineering structures (i.e. pedestrian and small vehicle bridges, feeder roads), 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.

237. To support and strengthen social networks on reducing climate change-related risks , AF funds 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 impacts 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.

238. Finally, AF funds will support technical assistant to determine the feasibility of existing microfinance mechanisms in Guatemala to provide climate change finance aiming to consolidate the process of strengthening social and cooperative networks among communities to support climate-resilient productive activities and implementation of adaptation strategies.

Component 4: Documentation, dissemination and uptake of lessons learned.

Baseline (without AF Resources)

239. Currently, the National Institute of Seismology, Volcanology, Meteorology and Hydrology (INSIVUMEH) provide limited hydrological, meteorological and seismological information and data through its webpage and bulletins to national authorities, government agencies and news media.
The disseminated information includes daily and monthly weather forecast, daily sea/ river levels and volcanology technical bulletins; however existing technical limitations and government budget constraints have undermined INSIVUMEH capacity to generate hurricane, strong wind and flood warnings in Guatemala.

240. The Natural Resources and Environment Ministry (MARN) relies on climate-related information provided by INSIVUMEH to develop climate-related risks warnings and to foster multi-level

dissemination of risks and warnings in urban and rural areas. Current lack of capacity by INSIVUMEH to provide accurate hurricane and floods-related information, have resulted in limited preparedness at a local level in Suchitepequez and Solola to access and interpret warning signals and take timely and appropriate actions.

241. At present, the capacity of the target eleven municipalities to receive, interpret, communicate and disseminate climate-related risks and early warning signals is very limited. Although INSIVUMEH has only two meteorological stations in Solola and Suchitepequez, no local early warning and communication protocols are in place. In addition, MARN has no available low-cost mechanisms to communicate hurricane and flood-warnings among 11 target communities.

Additional (with AF Resources)

242. It is expected that the proposed project will be a source of vital information on climate change adaptation to all relevant local communities and local and national stakeholders. Effective and efficient dissemination of climate-related information at the local level is especially critical in rural and indigenous communities in Guatemala.

243. Component 4 of the proposed project will enable the establishment of a decentralized information system based on sub-national and national centres of expertise build upon their expertise and capacities and linked to SEGEPLAN (Planning and Programming Secretariat of the Presidency) to support climate change-related decision-making. These various centres, which include specialized government agencies, academic institutions, and universities, do not have experience addressing climate change issues. This information system will support the capacity to disseminate climate information among 11 communities in Solola and Suchitepequez by fostering agreed adaptation measures in user-friendly channels (i.e. manuals, web portals, bulletins, trainings, etc) to enable widespread replication of adaptation measures in other communities .

244. The proposed AF project will undertake development of an awareness and advocacy programme on climate change based on the information generated and processed throughout the project to enable a broad range of stakeholders at a sub-nation and national level to better understand the impacts of climate change and prospective response measures. The programme will build on past successful awareness-raising media undertaken by the government, and will support their continuation and enhancement.

245. AF finance will support the systematization and documentation of lessons learned and best practices of ancestral and traditional practices as well as field-tested production approaches and community-based adaptation measures. A communication strategy will be established and implemented to disseminate the experience and knowledge generated in each community through appropriate mechanisms for sharing information such as case studies, photo stories, short participatory videos, posters (in local languages), etc. In addition, the proposed project will design and implement four technical standards/guidelines for mainstreaming climate change into planning and programming and will develop four manuals on new, traditional, and ancestral adaptation practices aiming to disseminate climate change adaptation issues and experiences on community- based and ecosystem-based adaptation to a wide audience. A range of knowledge management products will be developed throughout the project, tailored to different user groups and disseminated through specific channels and means. It is expected that integrated knowledge management activities will significantly contribute to the replicability and sustainability of the project results, reaching out to broader stakeholders.

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

Financial sustainability

246. 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 means of financing, and this work is a priority. However, to date, funding mechanisms are

insufficient to meet projected needs. Vertical funds such as the Adaptation Fund, Global Environment Facility, which are useful for delivering seed finance, do not have the means to finance the large sums of funding that are necessary. Moreover, limited national and local budgets are also a barrier to replication or building on the foreseen results of this project. Therefore, the Project will identify possible sources (both national and market driven) to support financial sustainability of adaptation measures.

247. At a national level, AF funds will support MARN together with other Ministries and relevant stakeholders to asses tools, mechanisms and schemes to funnel additional resources to address impacts of climate change in Guatemala. As such, resources from the AF have the potential to provide the means by which Government can analyze relevant information for tailoring and implementing tools and mechanisms to funnel climate finance to Guatemala.

Social sustainability

248. Social sustainability will be achieved through the active participation of rural and indigenous communities in the implementation of adaptation measures proposed by the communities. Community groups, community members, and women participation will be fostered and strengthened through the implementation of concrete adaptation measures that will promote social organization and provide alternatives for income generation and food production to enable individuals to better cope with the impacts of climate variability. The proposed AF project entails a set of predetermined and to be validated interventions under its 4 components. The latter apply for those interventions that will be defined and agreed upon a participatory manner among government and rural communities (component 2) to identify and implement adaptation strategies ensuring a grounded and community based-approach based on scientific information, technical feasibility studies, ancestral and traditional knowledge. Thus, the proposed adaptation measures are community-driven and will be implemented as part of a collaborative effort between community members and local and regional authorities. This approach, which includes capacity-building and awareness-raising related to climate change adaptation, will empower the participating social groups and will promote social organization for the development and implementation of strategies to reduce risk related to climate change.

Environmental sustainability

249. Communal actions to enhance ecosystem resilience for the sustainability, productivity and resilience of public goods and services would be focused on those actions that no single community member could afford to carry out or might be motivated to carry out given the disparity between private costs and public benefits. Proposals from community organizations could include reforestation or restoration of common lands, community water retention infrastructure, post harvest storage facilities (seed banks, food banks), small-scale irrigation infrastructure, and community wells, among others.
The proposed project will actively involve rural and indigenous communities and local and regional authorities in the conservation and other efforts so that all related actions build awareness among local stakeholders, and incorporate concepts of ecosystem-based adaptation into local land use planning tools.

Institutional sustainability

250. The foundation for the project's institutional sustainability is the community-institutional partnership that will be built to promote the exchange of knowledge, experiences, and dialogue among the local communities, project staff, and local and regional civic authorities about climate change adaptation and vulnerability. Institutional sustainability is also associated with the capacity of local communities and of local and regional authorities to influence collective decisions regarding the implementation of climate change adaptation measures in the target area. The project will develop an awareness and advocacy programme, technical standards and manuals to address climate variability at the community, local and regional level from the rural, indigenous and government perspective. Improved institutional knowledge and skills will be instrumental in the development and implementation of adaptation measures during the life of the project and in the future, as well as for the replication of successful activities in other areas of the region and the country.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project implementation.

251. 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.

252. 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. In this context, 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 Regional Centre and UNDP HQ, in line with the 3-tiered quality assurance function of UNDP. 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[85].

253. 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.

[85] 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.

254. 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, SESAN and participating NGO's will be installed to oversee coordination and follow up on Programme Execution.

255. 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.

256. 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) [86], 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[87] of the System of Development Councils[88] of Guatemala.

257. 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.

258. 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.

259. 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.

260. 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

[86] 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.

[87] According to Congress Decree 11-2002 Law for Development Councils (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

[88] 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.

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.

261. At present, the Small Grants Programme (SGP) Guatemala is receiving funding from the GEF for a number of technical areas, including community-based adaptation through a UNDP led Global Community-Based Adaptation (CBA) Project. The proposed AF project will integrate experiences and good practices that SGP-Guatemala has accumulated on delivering services to communities and, based on recent experiences, on supporting countries with adaptation.
In the context of the proposed AF project, community-driven project proposals will be developed by community-based organizations under the guidance and with the assistance of the Project Coordinator, and in close coordination with the Steering Committee and the implementing partner for the AF project.

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 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 already have 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.
Interdependence and sequential and simultaneous nature of some activities slows project implementation	L	To manage the risk associated with the sequential nature of some of the proposed activities, particularly related to the development of participatory adaptation strategies and community-based activities on the ground, the project team will first use state-of-the-art project management methodologies and software to ensure appropriate timing and task management of activities. The team will conduct constant monitoring in the course of project implementation, through field missions, quarterly and yearly reports, and they will incorporate risk analysis and management in all planning sessions. Risk mitigation measures will be implemented in an ongoing manner as necessary. In addition, adaptive management will be carried out to ensure appropriate and timely development and implementation of project activities and achievement of expected results.

Risk		Response Measure
Partners and stakeholders fail to cooperate and/or project data may not be shared between stakeholders.	M	The inception workshop will further define stakeholders' responsibilities and project management arrangements to align them with mandates, responsibilities and capacities of national and local organizations. Formal MOUs that define roles and responsibilities will be used and data dissemination and sharing procedures will be established that are mutually agreed and beneficial for all concerned.
Vulnerable groups with low levels of technical, management and financial capacities are unable to make efficient use of existing micro-finance facilities for climate resilient activities	M	The project will tackle this risk factor directly by increasing awareness, capacity and knowledge across vulnerable stakeholder groups of the purpose, scope, objectives and operations associated with typical micro-finance schemes, and by providing technical assistance to examine the feasibility of providing coverage for climate resilient activities using existing microfinance mechanisms. The project's awareness raising campaign will target vulnerable communities and thus generate interest and involvement of key stakeholder groups (indigenous groups and women). In terms of the risks related to the level of technical management and financial capacity of vulnerable groups, the project will build on the existing financial management experience and capacities of the different communities as well as local government partnerships that may have been established in support of these schemes in the past. In Guatemala, there is a long history of micro-finance, and there are multiple providers of microfinance, such as donor organizations, NGOs, and Banks. The micro-financing schemes to be explored by the project will examine and build on the previous experience of various development agencies, NGOs and others.

262. A comprehensive risk management strategy will be a core component of project management activities. This is in line with UNDP's stringent risk management approach which is corporate policy. The respective UNDP CO provides support to the project team and executing agency for constant and consistent risk monitoring, and the results are tracked and reported in UNDP's internal risk monitoring system. Risks will be entered into the UNDP's Atlas (project management system) and will be systematically monitored as part of the M&E process by UNDP staff carrying out their oversight related tasks.The results are also reported in the yearly evaluation undertaken for each project.

263. In addition to this, and again in keeping with UNDP practice, a dedicated budget line exists for Monitoring and Evaluation, to ensure that the necessary resources are allocated to execute the Monitoring and Evaluation framework.

C. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan. Include break-down of how Implementing Entity's fees will be utilized in the supervision of the monitoring and evaluation function.

264. 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. The break-down of how the implementing Entity's fees will be utilized in the supervision of the M&E function is included at the end of this section.

265. Project start: A Project Inception Workshop will be held within the first 2 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and program advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan.

266. The Inception Workshop should address a number of key issues including:

- Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and RCU staff vis-à-vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.
- Finalize the first annual work plan and based on the project results framework of this project document, review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
- Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
- Discuss financial reporting procedures and obligations, and arrangements for annual audit.
- Plan and schedule PB meetings. Roles and responsibilities of all project organization structures should be clarified and meetings planned. The first PB meeting should be held within the first 12 months following the inception workshop.

267. An Inception Workshop report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

268. Quarterly:

- Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.
- Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS. Risks become critical when the impact and probability are high. Note that for UNDP/GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).
- Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.
- Other ATLAS logs will be used to monitor issues, lessons learned. The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

269. Annually: Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and GEF reporting requirements.

270. The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
- Project outputs delivered per project outcome (annual).
- Lesson learned/good practice.
- AWP and other expenditure reports
- Risk and adaptive management
- ATLAS QPR

271. Periodic Monitoring through site visits: UNDP CO and the UNDP-GEF region-based staff will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.

272. Mid-term of project cycle: The project will undergo an independent Mid-Term Review at the mid-point of project implementation. The Mid-Term Review will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term review will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term review will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

273. End of Project: An independent Terminal Evaluation will take place three months prior to the final PB meeting and will be undertaken in accordance with UNDP-GEF guidance. The terminal evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term review, if any such correction took place). The terminal evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response, which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC).

274. Learning and knowledge sharing: Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums.

275. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects.

276. There will be a two-way flow of information between this project and other projects of a similar focus.

277. Audit: Project will be audited in accordance with UNDP Financial Regulations and Rules and applicable audit policies

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	$ 2,500	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	$2,500	To be determined by Project team & UNDP CO
Mid-term External Evaluation	Project Team UNDP-CO External Consultants	Indicative cost: $25,000	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
Audit	UNDP-CO Project Team	$6,000 (2,000 annually)	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 and sex-disaggregate targets and indicators, as appropriate. The project or programme results framework should align with the goal and impact of the Adaptation Fund and should include at least one of the core outcome indicators from the AF's results framework that are applicable***

	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, 25 production organisations drive adaptation strategies.	Organisation established in the target area.	Change of government limits the operational possibilities of the Project.
	O.2. Number of funding mechanisms (national and market-driven) identified, assessed and validated by MARN 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 roadmap including institutional mapping and capacity assessment related to climate change adaptation and current and prospective climate finance schemes and mechanisms available for Guatemala.	Technical document on current and prospective climate finance schemes and mechanisms available for Guatemala validated by MARN. List of attendance of training workshops.	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
	O.3. Percentage of increase in yields under climate change and variability induced stress	Currently there 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, the membership of at least 25 community producers associations will have adopted improved farming methods increasing yields by 30%.	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.
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 second year of project implementation, an inter-institutional team (INSIVUMEH, MARN, MAGA) will be able to create downscaled climate projections and promote their use in the annual revisions of municipal development plans. By the end of the project, the national meteorological record network will be increased by 7 new stations that together with information on local indicator species and biological processes will be made available on-line through the municipal environmental indicator system (MARN-SIA webpage http://www.sia.marn.gob.gt/).	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.

	Indicator	Baseline	Target (end of the Project)	Means of Verification	Risks and Assumptions
	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 third year, Sololá and Suchitepéquez Development Plans, and at least 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 identified and assessed by MARN and relevant stakeholders.	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 has been established in the target areas, and existing certification schemes that contribute to reduction of vulnerability have been validated.	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.
Outcome 2: Production landscape resilience increased through application of traditional and ancestral practices and other production activities, as well as targeted investments.	2.1. Number of ha established with agro-silvopastoral systems in the target area of the project.	Approximately 20 ha established in agro-silvopastoral systems for two users in the rural area in the Department of Suchitepéquez. Zero (0) ha in the Department of Sololá.	An additional 200 ha established in agro-silvopastoral systems in the rural area of the project´s target area (100 ha in the Department of Sololá and 100 ha in the Department of Suchitepéquez)	Reports and field verifications Project reports: annual reports; mid- and final evaluations.	Agro-ecological models prove to be beneficial to CBOs and local farmers. There is a good understanding among rural communities and indigenous groups regarding use of land and natural resources in the project area.

	Indicator	Baseline	Target (end of the Project)	Means of Verification	Risks and Assumptions
	2.2 Number of ancestral and traditional practices recovered for increased resilience of productions landscapes adopted by the communities in the target area of the project	In the project area recovery of ancestral practices are only focused on the use of biological diversity (CONAP), however not related to production practices.	By the end of the Project, at least two traditional or ancestral practices in target area and related to increasing the production landscapes resilience are recovered and implemented in the target area as follow: -Twenty (20) additional improved barns to collect manure (10 in Sololá and 10 in Suchitepéquez)-Initiative to develop a criterion for seed selection based on ancestral.	-Field surveys and inventories -Field reports -Project technical reports Interviews with community leaders.	Currently weak incentives from Government to recover traditional practices
	2.3 Based on the adaptation measures catalogue to which CBOs and NGOs will develop and tailor proposals, associated indicators have been developed to assess vulnerability reduction as follows: - Number of households, businesses engaged in vulnerability reduction or adaptive capacity development activities, as a proportion of households in the community or region targeted by the project. - Percent change in stakeholders' behaviours utilizing adjusted practices or resources for managing climate change risks. - Number of beneficiaries of project receiving training in implementation of specific adaptation	In the Departments of Sololá and Suchitepéquez efforts to address climate impacts such as floods and droughts are not systematically addresses given lack of public resources, persistent rates of extreme poverty and lack of initiatives to provide resources and to showcase hands-on experiences.	By the end of the project, at least 25 community-based organizations in the 19 microbasins are implementing community-based adaptation small-scale projects.	-Minutes of meeting -Agreements between National Steering Committee and CBOs/NGOs -Project reports: annual reports; mid-term and final evaluations	- CBOs and NGOs successfully implement CBA projects, establishing mechanisms for cooperation and joint work. - Environmental authorities and local communities work together to incorporate ecosystem management and production practices into risks reduction practices.

	Indicator	Baseline	Target (end of the Project)	Means of Verification	Risks and Assumptions
	measures or decision-support tools. - Number of CBA "lessons learned" from the project - Hectares of production landscapes / seascapes applying sustainable use - Number of significant species with maintained or improved conservation status - Total value of biodiversity products/ecosystem services produced (US dollar equivalent) - Hectares of land applying sustainable forest, agricultural and water management practices - Hectares of degraded land restored and rehabilitated - Number of communities demonstrating sustainable land and forest management practices.				
Outcome 3: Socio-economic adaptive capacity of communities improved.	3.1. Percentage of targeted households and communities with a more secure access to livelihood assets (disaggregated by gender).	Local communities have no storage facilities or differentiated marketing strategies for products.	By the end of the Project at least four agriculture service warehouse will be established in the target area, and designed a mechanism of market access for products from climate change resilient production landscapes.	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.

	Indicator	Baseline	Target (end of the Project)	Means of Verification	Risks and Assumptions
	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 end of the Project, at least two social networks (associations/production cooperatives/marketing associations) formed or strengthened 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 feasibility studies of microfinance schemes completed; number of options identified, described and supported with project technical assistance.	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 end of the project, access to micro-finance relevant to develop climate change adaptation initiatives by farmers associations from Solola and Suchitepequez will be identified and prioritized.	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. (disaggregated by gender)	There are no awareness programmes focused on climate change issues today.	By the end of the project, at least 90% of members of small farmer's associations participating in the project (at least half of them women) in the target area are aware of predicted adverse impacts of climate change and appropriate response. (disaggregated by gender)	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.

Alignment of Project Objectives/Outcomes with Adaptation Fund Results Framework:

Project Objective(s)[89]	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator
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.	Percentage of increase in yields under climate change and variability induced stress	Outcome 5: Increased ecosystem resilience in response to climate change and variability-induced stress	Outcome indicator 5. Ecosystem services and natural assets maintained or improved under climate change and variability induced stress
Project Outcome(s)	**Project Outcome Indicator(s)**	**Fund Output**	**Fund Output Indicator**
Outcome 1: Local and national capacities and tools enable decision makers and communities to reduce vulnerabilities and strengthen adaptive responses.	Number of strategies and development plans adopted and implemented, incorporating information on climate change risks and adaptation measures	Output 7: Improved integration of climate-resilience strategies into country development plans	Output indicator 7.1: Number, type and sector of policies introduced or adjusted to address climate change risks
Project Outcome(s)	**Project Outcome Indicator(s)**	**Fund Output**	**Fund Output Indicator**
Outcome 2: Production landscape resilience increased through application of traditional and ancestral practices and other production activities, as well as targeted investments.	Percentage of targeted households adopting adaptation strategies in target area (disaggregated by gender)	Output 3: Targeted population groups participating in adaptation and risk reduction awareness activities	Output indicator 3.1.1: Number and type of risk reduction actions or strategies introduced at local level.
Project Outcome(s)	**Project Outcome Indicator(s)**	**Fund Output**	**Fund Output Indicator**

[89] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

Outcome 3: Socio-economic adaptive capacity of communities improved.	Percentage of targeted households and communities with a more secure access to livelihood assets (disaggregated by gender)	Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	Output indicator 6.1.2 Type of income sources for households generated under climate change scenarios
Project Outcome(s)	**Project Outcome Indicator(s)**	**Fund Output**	**Fund Output Indicator**
Outcome 4: Effective knowledge management results in informed decision-making at all levels through an integrated information system	Percentage of targeted population affirming awareness of predicted adverse impacts of climate change and appropriate response. (disaggregated by gender)	Output 3: Targeted population groups participating in adaptation and risk reduction awareness activities	Output indicator 3.1.2 No of news and outlets in the local press and media that have covered the topic

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	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)	Budget Notes
Outcome 1: Local and national capacities and tools enable decision makers and communities to reduce vulnerabilities and strengthen adaptive responses.	MARN	62040	AF	71200	International consultant	8,000.00				8,000.00	1
				71300	Local consultant	8,600.00	7,125.00	5,000.00	5,000.00	25,725.00	2
				71600	Travel	10,200.00	3,000.00	2,000.00	2,000.00	17,200.00	3
				72200	Equipment and furniture		24,000.00			24,000.00	4
				72500	Supplies	4,000.00				4,000.00	5
				72800	Information technology equipment	24,000.00	31,500.00			55,500.00	6
				74500	Miscellaneous Expenses		1,700.00			1,700.00	7
				75700	Training	64,200.00	66,800.00	38,000.00	12,000.00	181,000.00	8
					Total Outcome 1	**119,000.00**	**134,125.00**	**45,000.00**	**19,000.00**	**317,125.00**	

Outcome/ Atlas Activity	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)	Budget Notes
Outcome 2: Production landscape resilience increased through application of traditional and ancestral practices and other production activities, as well as targeted investments.	MARN	62040	AF	71200	International consultant	4,000.00				4,000.00	9
				71300	Local consultant	124,200.00	110,000.00	110,000.00	35,000.00	379,200.00	10
				71600	Travel	18,800.00	9,000.00	6,000.00	3,000.00	36,800.00	11
				72200	Equipment and furniture	136,000.00				136,000.00	12
				72400	Communication and audiovisual equipment	10,000.00				10,000.00	13
				72500	Supplies	3,000.00	2,000.00	1,000.00		6,000.00	14
				72600	Grants	285,000.00	780,000.00	570,000.00	195,000.00	1,830,000.00	15
				72800	Information technology equipment	37,000.00				37,000.00	16
				74200	Audio visual & printing production costs		5,000.00			5,000.00	17
				74500	Miscellaneous Expenses					-	
				75700	Training	62,000.00	50,000.00	22,000.00	22,000.00	156,000.00	18
					Total Outcome 2	**680,000.00**	**956,000.00**	**709,000.00**	**255,000.00**	**2,600,000.00**	

Outcome/ Atlas Activity	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)	Budget Notes
Outcome 3: Socio-economic adaptative capacity of communities improved.	MARN	62040	AF	71300	Local consultant	19,000.00	99,000.00	99,000.00	14,000.00	231,000.00	19
				71600	Travel	8,000.00	15,000.00	13,000.00	2,000.00	38,000.00	20
				72100	Contractual services (companies)		335,000.00	600,000.00		935,000.00	21
				72200	Equipment and furniture		40,000.00			40,000.00	22
				75700	Training	37,000.00	90,000.00	60,000.00	16,000.00	203,000.00	23
				74500	Miscellaneous Expenses	1,000.00	10,000.00	5,000.00		16,000.00	24
					Total Outcome 3	**65,000.00**	**589,000.00**	**777,000.00**	**32,000.00**	**1,463,000.00**	
Outcome 4: Effective knowledge management results in informed decision-making at all levels through an integrated information system.	MARN	62040	AF	71300	Local consultant	6,000.00	2,800.00	10,000.00	10,000.00	28,800.00	25
				71600	Travel	2,000.00	3,000.00			5,000.00	26
				72100	Contractual services (companies)		25,000.00			25,000.00	27
				74200	Audio visual & printing production costs		5,000.00	26,000.00	7,000.00	38,000.00	28
				75700	Training	40,000.00	28,000.00	12,000.00	12,000.00	92,000.00	29
				74500	Miscellaneous Expenses		1,200.00			1,200.00	30
					Total Outcome 4	**48,000.00**	**65,000.00**	**48,000.00**	**29,000.00**	**190,000.00**	

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)	Budget Notes
Project management unit	**002440**	**62040**	**AF**	71200	International consultant		6,000.00		6,000.00	12,000.00	31
				71300	Local consultant	20,219.00	20,219.00	20,219.00	20,218.00	80,875.00	32
				71400	Contractual services (individual)	79,800.00	79,800.00	79,800.00	79,800.00	319,200.00	33
				71600	Travel	2,700.00	3,700.00	2,700.00	2,700.00	11,800.00	34
				74100	Profesional services	1,500.00	1,500.00	1,500.00	1,500.00	6,000.00	35
				74500	Miscellaneous Expenses					-	
					Total management	**104,219.00**	**111,219.00**	**104,219.00**	**110,218.00**	**429,875.00**	
					Project TOTAL	**1,016,219.00**	**1,855,344.00**	**1,683,219.00**	**445,218.00**	**5,000,000.00**	

Summary of Funds:

	Amount year 1	Amount year 2	Amount year 3	Amount year 4	Total
AF	**1,016,219.00**	**1,855,344.00**	**1,683,219.00**	**445,218.00**	**5,000,000.00**
TOTAL	**1,016,219.00**	**1,855,344.00**	**1,683,219.00**	**445,218.00**	**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.
2.	71300	Local consultants	$25,725	National consultant team support for climate change scenario downscaling. Support certification of local produce/ commodities value chains. Consultant to support MARN to carry out the technical study on climate finance schemes and mechanisms.
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 equipment 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 to assess current and prospective climate finance tools and mechanisms.
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	231,000	Support design of agricultural service warehouses. Support pre-feasibility insurance study. Support design of markets mechanisms assessments including certification and PES.
20.	71600	Travel	38,000	Travel costs for national and international 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.	75700	Training	203,000	Training and workshops and learning tours on community-based financing, market chains, certification, community organization, hydro meteorological monitoring and others.
24.	74500	Miscellaneous Expenses	16,000	Miscellaneous costs associated to storage facilities and small-scale civil engineering structures,
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	$28,800	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	$80,875	Consultant support for external mid-term evaluation, terminal evaluation, specialized analytical/technical reports as required.

33.	71400	Contractual services (individual)	$319,200	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.

Project Milestones and Disbursement Schedule (Gannt chart)

Project Milestone and Disbursement Schedule

	Year 1 (1 2 3 4 5 6 7 8 9 10 11 12)	Year 2 (13 14 15 16 17 18 19 20 21 22 23 24)	Year 3 (25 26 27 28 29 30 31 32 33 34 35 36)	Year 4 (37 38 39 40 41 42 43 44 45 46 47 48)	Total (USD)
Outcome 1. Development of capacities and tools that enhance natinal and local capabilities for climate change adaptation					
Output 1.1 - Strengthened capacities and tools at local and natinal levels for development of downscaled climate change scenarios	37,400	47,600	13,000	2,000	100,000
Output 1.2 - Increased capacity by local authorities and communities to mainstream climate change and variability adaptation measures into municipal and departmental development plans and other development planning instruments	56,600	64,400	17,000	7,000	145,000
Output 1.3 - Development of new and innovative financial mechanisms that support implementation of adaptation measures processes and initiatives	25,000	22,125	15,000	10,000	72,125
Outcome 2. Development of adaptatoin strategies and implementation of climate change resilient practices that reduce the vulnerability of communities					
Output 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
Output 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
Output 2.3 - Adoption and implementation of climate change resilient production practices and investments in target municipalities	329,000	819,000	609,000	233,000	1,990,000
Outcome 3. Improvement of food security and livelihood options in the target municipalities					
Output 3.1 - Reduction in socio-economic vulnerability by improving conservation, storage, tranport, handling and marketing of produce from climate resilient production landscapes	16,000	347,000	608,000		971,000
Output 3.2 - Strengthening of existing community social networks and organizations to build more resilient social environments	44,000	74,000	42,000	14,000	174,000
Output 3.3 - Technical assistance for the feasibility of existing microfinance mechanisms providing coverage for climate resilient	5,000	168,000	127,000	18,000	318,000
Outcome 4. Informed decision-making and awareness-raising, supported by decentralized information systems					
Output 4.1 - Establishment of an information system, based on existing sub-national and natinal centres of expertise, to support more robust science-based decision-	40,000	12,000	12,000	12,000	76,000
Output 4.2 - Development and implementation of an awareness and advocacy programme onclimate change for a range of target	8,000	33,000			41,000
Output 4.3 - Systematisation and documentation of lessons learned and best practices derived from efforts to develop more resilient production systems, including ancestran and traditional practices		20,000	5,000	5,000	30,000
Output 4.4 - Formulation of technical standards for development and implementation of climate change adaptation proposals			20,000		20,000
Output 4.5 - Creation of manuals on new, traditional, and ancestral adaptation practices at the community level			11,000	12,000	23,000
Project Execution, M&E	104,219	111,219	104,219	110,218	429,875
Total	**1,016,219**	**1,855,344**	**1,683,219**	**445,218**	**5,000,000**

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.

	Upon Agreement signature	1st disbursement (received at the same time as signing the agreement)	One Year after Project Start[a/]	Year 2[b/]	Year 3	Total
Scheduled Date	Mar-13		Oct-13	Oct-14	Oct-15	
Project Funds		1,016,219	1,855,344	1,683,219	445,218	5,000,000
Implementing Entity Fee	170000	51827	94623	85844	22706	425,000
Total	170,000	1,068,046	1,949,967	1,769,063	467,924	5,425,000

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:

Marcia Roxana Sobenes Garcia, Minister of Environment and Natural Resources of Guatemala	Date*: August 15, 2012*

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

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.

Yannick Glemarec
Director
Environmental Finance
UNDP
Implementing Entity Coordinator

Date: October 8, 2012	Tel. and email: +1-212-906-6843, yannick.glemarec@undp.org

Project Contact Person: Reis Lopez Rello, Regional Technical Advisor, Green-LECRDS, UNDP

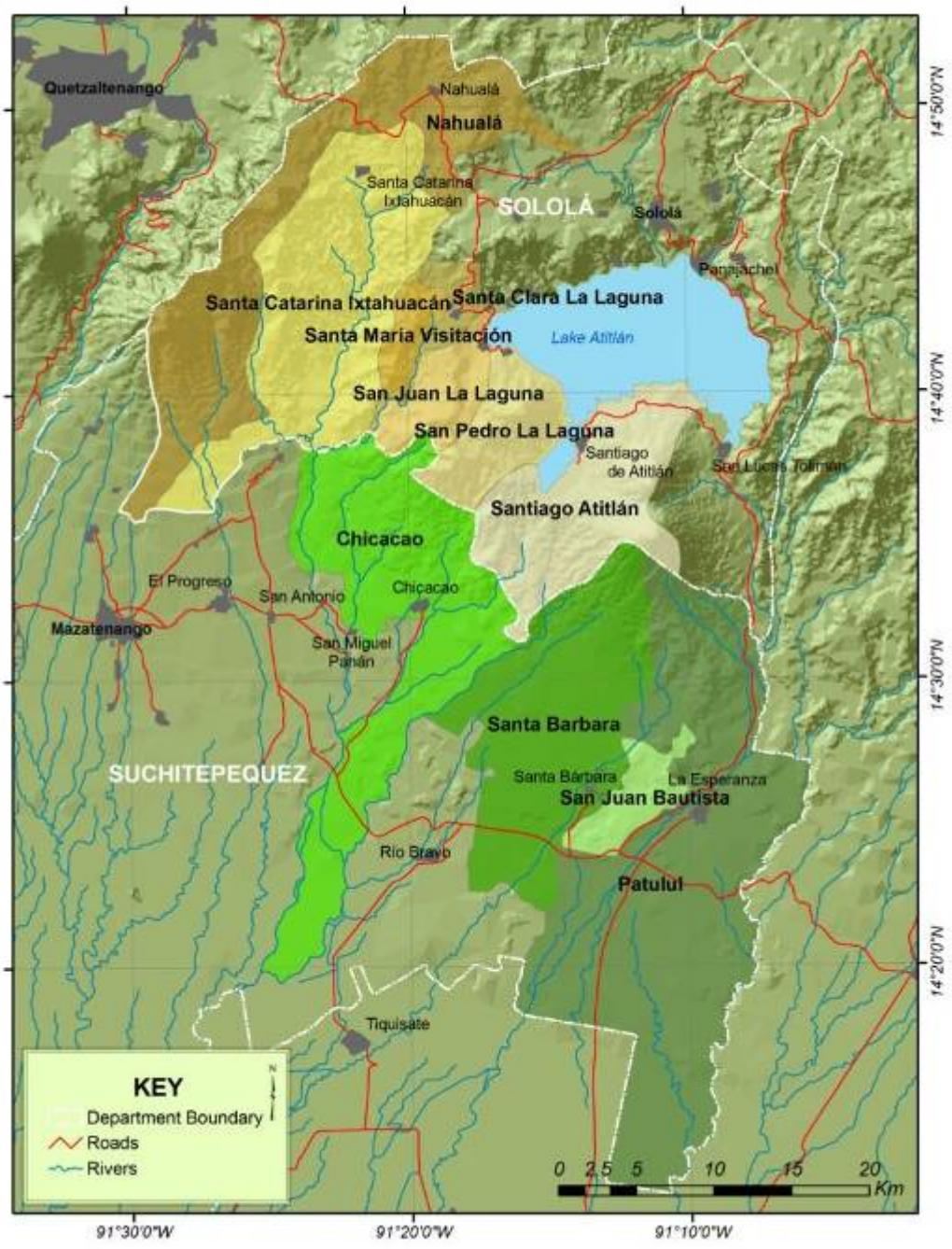
Tel. And Email: (507) 302 4628 reis.lopez.rello@undp.org

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.

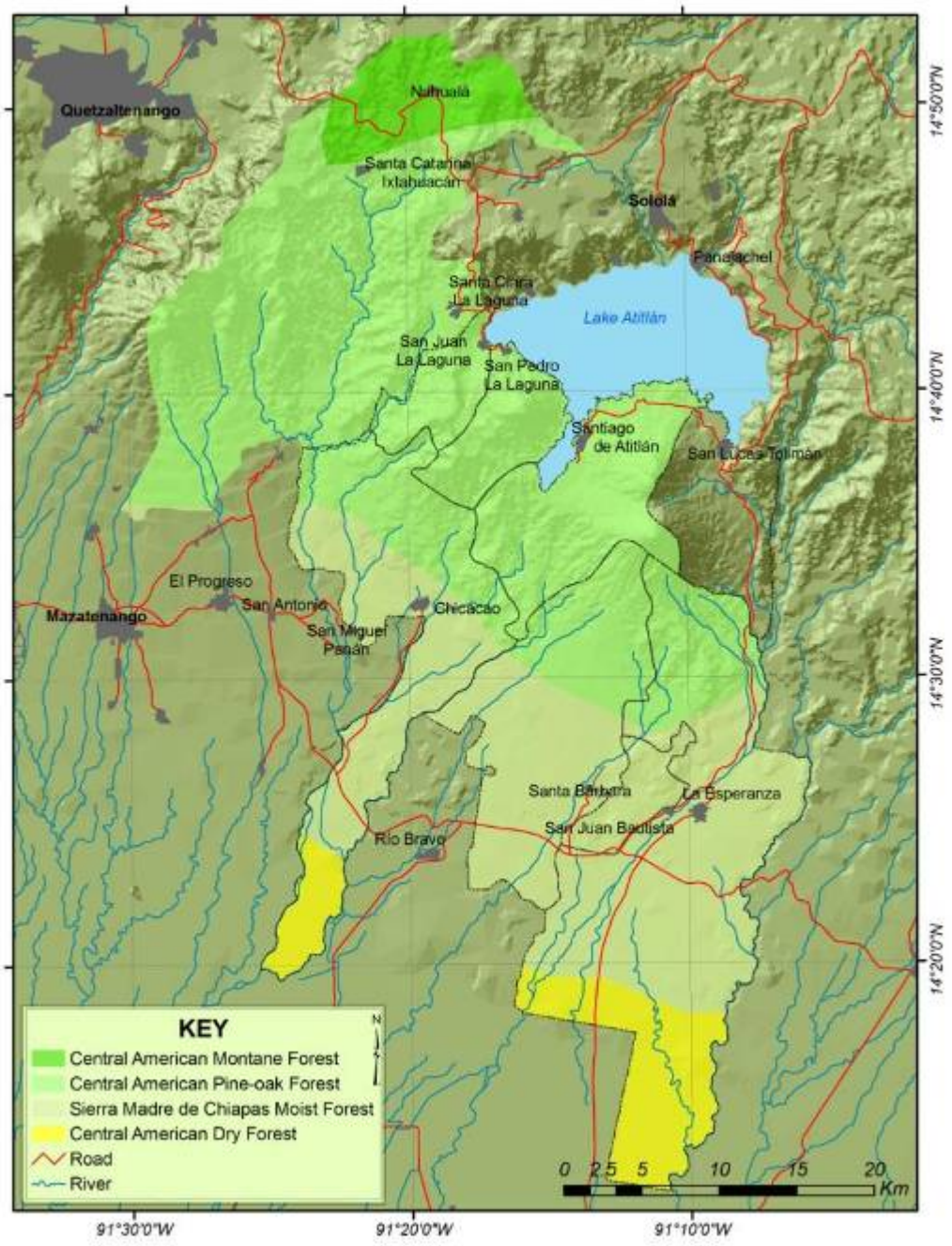
LIST OF ANNEXES

Annex A.

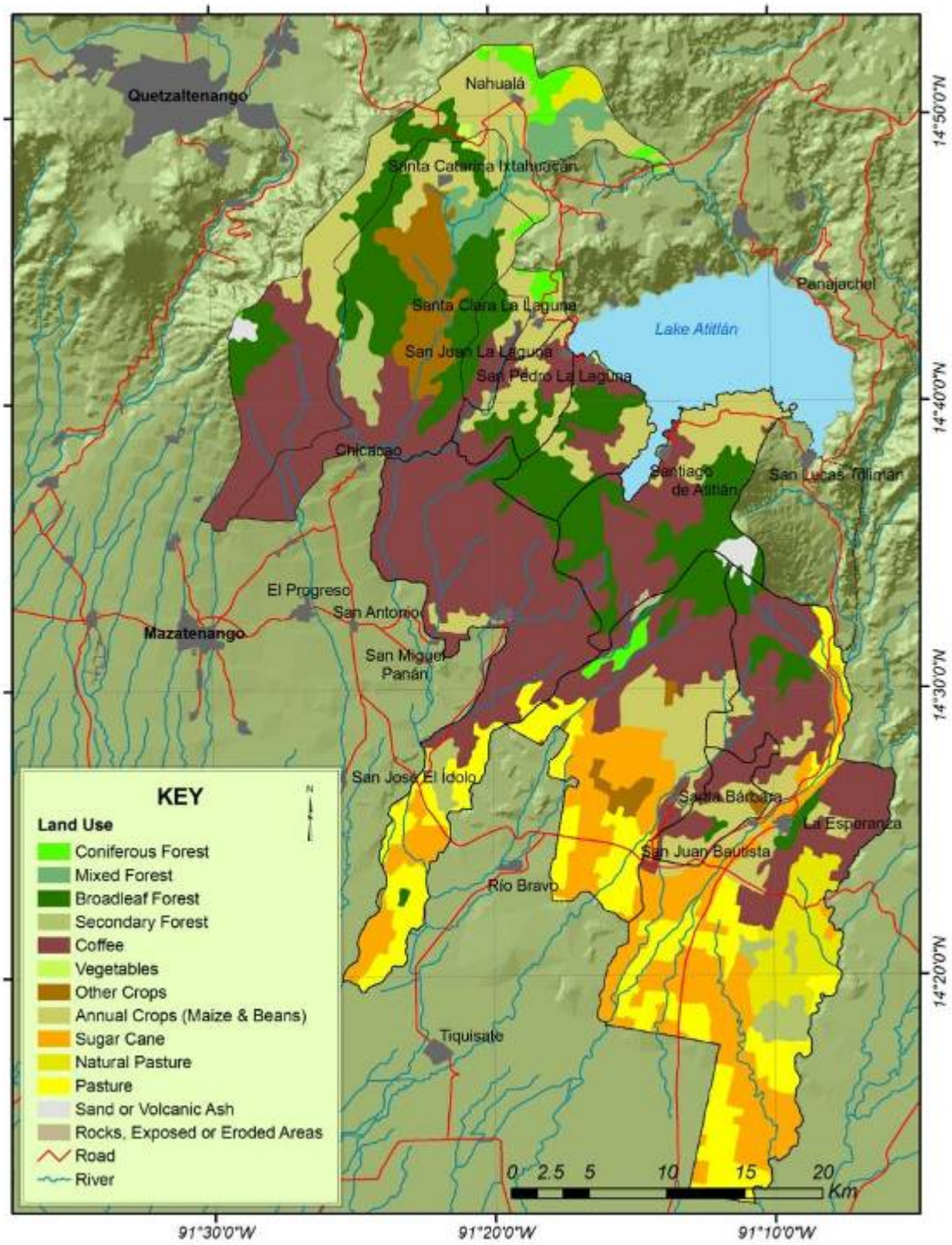
Project location



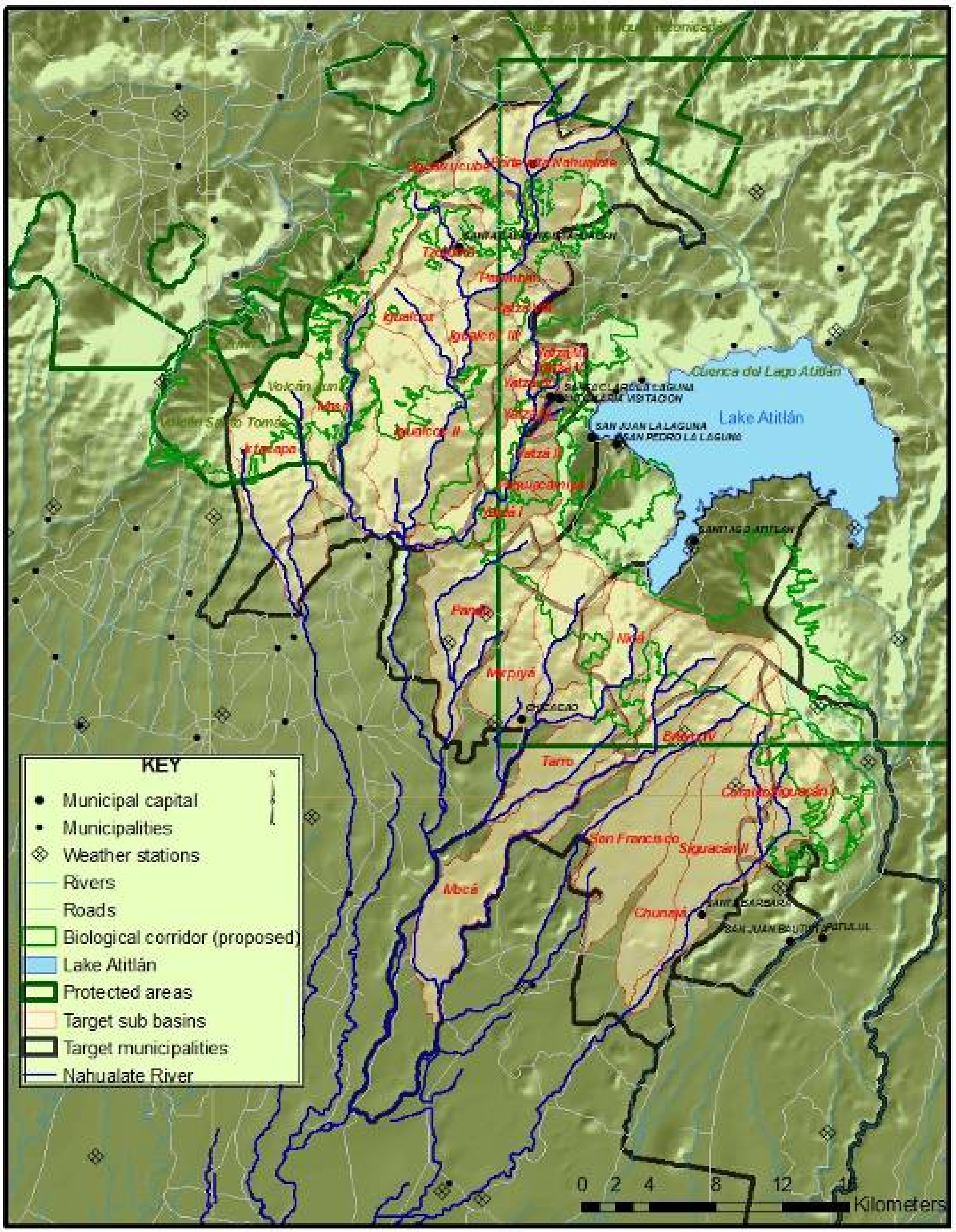
Ecoregions in target area



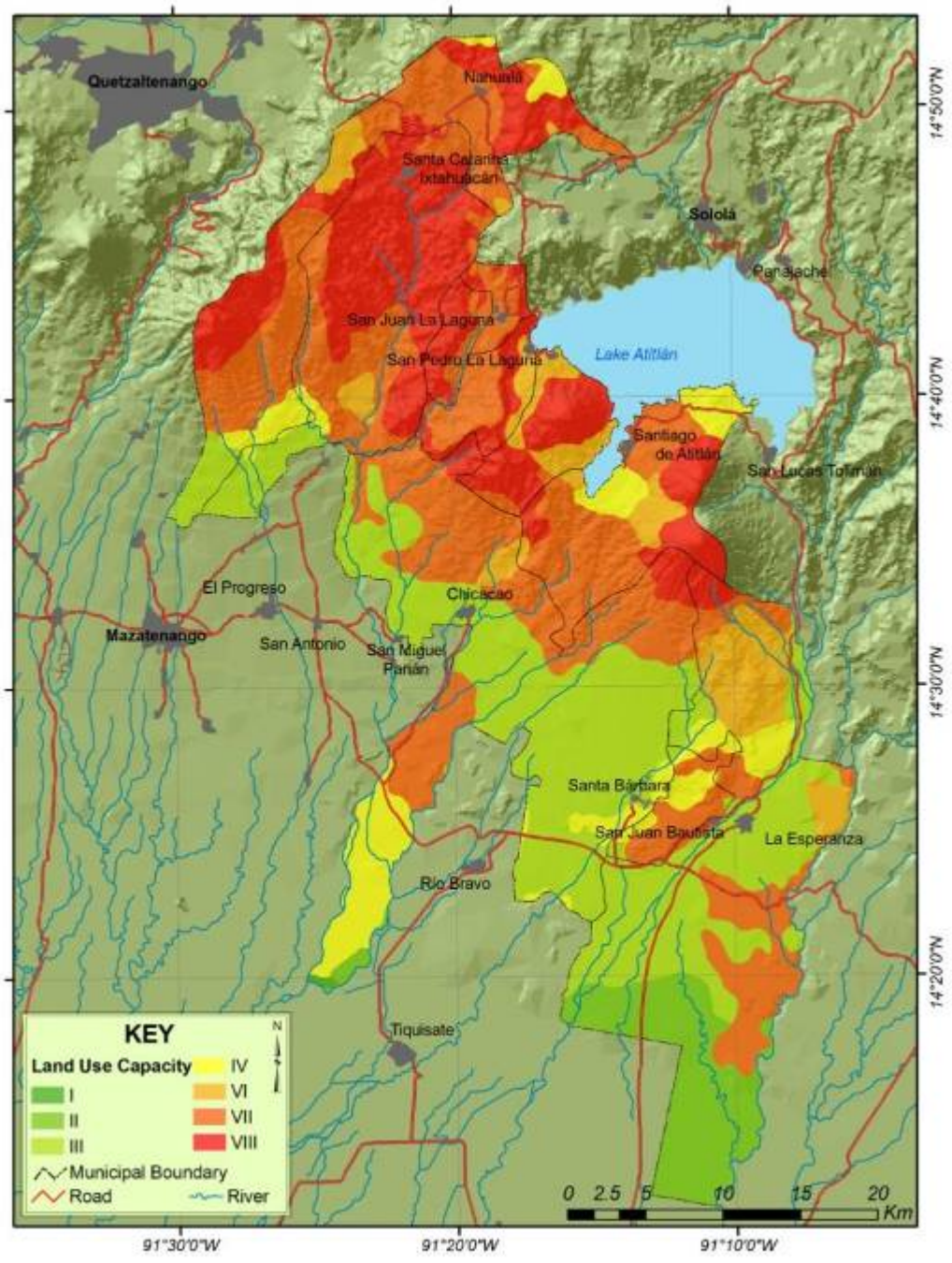
Ecosystems and production systems in target area



Target area basins



Land use capacity in target area



Annex B

Table 1. 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)

Table 2. Population of the target microbasins.

Departament	Municipality	Name	Type	Total population	Male	Female	Urban	Rural	Basin
Suchitepéquez	Santa Barbara	Mi tierra	Farm	358	189	169	0	358	Bravo IV
Suchitepéquez	Santa Barbara	Moca Grande	Farm	114	48	66	0	114	Bravo IV
Suchitepéquez	Chicacao	Brasil	Farm	0	0	0	0	0	California
Suchitepéquez	Santa Barbara	Santiago variedades	Farm	261	137	124	0	261	Chunajá
Suchitepéquez	Santa Barbara	Variedades	Farm	7	3	4	0	7	Chunajá
Suchitepéquez	Santa Barbara	Bella Luz	Farm	45	25	20	0	45	Chunajá
Suchitepéquez	Santa Barbara	El Hogar	Farm	45	27	18	0	45	Chunajá
Suchitepéquez	Santa Barbara	El Jazmín	Farm	0	0	0	0	0	Chunajá
Suchitepéquez	Santa Barbara	Santa Elena	Farm	19	14	5	0	19	Chunajá
Suchitepéquez	Santa Barbara	Santa Anita	Farm	78	32	46	0	78	Chunajá
Suchitepéquez	Santa Barbara	Covadonga	Farm	39	20	19	0	39	Chunajá
Suchitepéquez	Santa Barbara	Panorama	Farm	0	0	0	0	0	Chunajá
Suchitepéquez	Santa Barbara	El Esfuerzo	Settlement	2280	1159	1121	2094	186	Coralito
Suchitepéquez	Santa Barbara	PAnama	Farm	61	31	30	0	61	Coralito
Suchitepéquez	Santa Barbara	Santa Adelaida	Settlement	519	257	262	519	0	Coralito
Suchitepéquez	Santa Barbara	Cinco de Abril	Settlement	841	438	403	841	0	Coralito
Suchitepéquez	Santa Barbara	Los Andes	Farm	439	227	212	0	439	Coralito
Sololá	Santa Catarina Ixtahuacán	Palilic	Hamlet	179	84	95	0	179	Igualcox
Sololá	Santa Catarina Ixtahuacán	Chirijmasa	Hamlet	1067	526	541	0	1067	Igualcox
Sololá	Santa Catarina Ixtahuacán	Capucajache	ISolated settlement	140	66	74	0	140	Igualcox
Sololá	Santa Catarina Ixtahuacán	Chuachinup Ixtahuacán	Hamlet	418	210	208	0	418	Igualcox
Sololá	Santa Catarina Ixtahuacán	Xetulul	Hamlet	146	65	81	0	146	Igualcox
Sololá	Santa Catarina Ixtahuacán	Guineales	Village	1923	969	954	0	1923	Igualcox

Sololá	Santa Catarina Ixtahuacán	Paseyneba	Hamlet	852	439	413	0	852	Igualcox
Sololá	Santa Catarina Ixtahuacán	Panguiney	Hamlet	437	217	220	0	437	Igualcox
Sololá	Santa Catarina Ixtahuacán	Xoljuyup	Hamlet	761	379	382	0	761	Igualcox
Sololá	Santa Catarina Ixtahuacán	Pacut	Hamlet	361	182	179	0	361	Igualcox
Sololá	Santa Catarina Ixtahuacán	Cecuchin	ISolated settlement	107	56	51	0	107	Igualcox
Sololá	Santa Catarina Ixtahuacán	Las Palmas	Hamlet	640	319	321	0	640	Igualcox
Sololá	Santa Catarina Ixtahuacán	Chuinonabaj	Hamlet	391	192	199	0	391	Igualcox
Sololá	Santa Catarina Ixtahuacán	Chuicoljoj o chuicomo	Hamlet	169	85	84	0	169	Igualcox
Sololá	Santa Catarina Ixtahuacán	Patzite	Hamlet	832	412	420	0	832	Igualcox
Sololá	Santa Catarina Ixtahuacán	Pual0 haj	Hamlet	519	264	255	0	519	Igualcox
Sololá	Santa Catarina Ixtahuacán	Pachipac	Hamlet	189	96	93	0	189	Igualcox
Sololá	Santa Catarina Ixtahuacán	La Unión	Hamlet	310	145	165	0	310	Igualcox
Sololá	Santa Catarina Ixtahuacán	Chicosa	Hamlet	399	198	201	0	399	Igualcox
Sololá	Santa Catarina Ixtahuacán	Xo'lja	Hamlet	429	214	215	0	429	Igualcox
Sololá	Santa Catarina Ixtahuacán	Chuatzam	Hamlet	202	101	101	0	202	Igualcox
Sololá	Santa Catarina Ixtahuacán	San Miguelito	Hamlet	456	232	224	0	456	Igualcox
Sololá	Santa Catarina Ixtahuacán	Pala	Others	0	0	0	0	0	Igualcox
Sololá	Santa Catarina Ixtahuacán	Camanchaj	Others	0	0	0	0	0	Igualcox
Sololá	Santa Catarina Ixtahuacán	Pasacwoch	Hamlet	2902	1463	1439	2902	0	Igualcox
Sololá	Santa Catarina Ixtahuacán	Pachoj	Hamlet	58	30	28	0	58	Igualcox
Sololá	Santa Catarina Ixtahuacán	Pugualcox	Others	0	0	0	0	0	Igualcox
Sololá	Santa Catarina	Pacutama	Hamlet	194	89	105	0	194	Igualcox

	Ixtahuacán								
Sololá	Santa Catarina Ixtahuacán	Chiucutama	Hamlet	166	81	85	0	166	Igualcox
Sololá	Santa Catarina Ixtahuacán	Xepiecul	Hamlet	1504	755	749	0	1504	Igualcox
Sololá	Santa Catarina Ixtahuacán	Tzamchaj	Hamlet	268	126	142	0	268	Igualcox
Sololá	Santa Catarina Ixtahuacán	Xesaquiac	Hamlet	0	0	0	0	0	Igualcox
Sololá	Santa Catarina Ixtahuacán	Pasac	Hamlet	40	22	18	0	40	Igualcox
Sololá	Santa Catarina Ixtahuacán	Chuisacabaj	Others	0	0	0	0	0	Igualcox
Sololá	Santa Catarina Ixtahuacán	Chirijmay	Hamlet	99	55	44	0	99	Igualcox
Sololá	Santa Catarina Ixtahuacán	Xecalibal	Hamlet	131	64	67	0	131	Igualcox
Sololá	Nahualá	Tzucubal	Hamlet	1092	532	560	1092	0	Ixtacapa
Sololá	Nahualá	Sohomip	Hamlet	603	299	304	0	603	Ixtacapa
Sololá	Nahualá	Palacal	Village	539	279	260	0	539	Ixtacapa
Sololá	Nahualá	Tzamabaj	Hamlet	461	242	219	0	461	Ixtacapa
Sololá	Nahualá	La toma	Others	0	0	0	0	0	Ixtacapa
Sololá	Nahualá	Pasac	Hamlet	444	235	209	0	444	Ixtacapa
Sololá	Nahualá	Chirijalima	Hamlet	361	180	181	0	361	Ixtacapa
Sololá	Nahualá	Pajoca	Hamlet	996	509	487	0	996	Ixtacapa
Sololá	Nahualá	Xocola	Village	1436	720	716	0	1436	Ixtacapa
Sololá	Nahualá	Chuamango	Hamlet	65	41	24	0	65	Ixtacapa
Sololá	Nahualá	Yoxaja	Hamlet	958	471	487	0	958	Ixtacapa
Sololá	Nahualá	Chuamango xojola	Hamlet	200	110	90	0	200	Ixtacapa
Sololá	Santa Catarina Ixtahuacán	La Unión	Hamlet	0	0	0	0	0	Ixtacapa
Sololá	Santa Catarina Ixtahuacán	Chajtzucubalio	Others	0	0	0	0	0	Ixtacapa
Sololá	Santa Catarina Ixtahuacán	Pasin	Hamlet	384	193	191	0	384	Ixtacapa
Sololá	Santa Catarina Ixtahuacán	Sohoma	Others	0	0	0	0	0	Ixtacapa

Sololá	Santa Catarina Ixtahuacán	Camache Grande	Others	0	0	0	0	0	Ixtacapa
Sololá	Santa Catarina Ixtahuacán	Pacamache	Hamlet	1030	530	500	0	1030	Ixtacapa
Sololá	Santa Catarina Ixtahuacán	Tzanjuyup	Hamlet	164	84	80	0	164	Ixtacapa
Suchitepéquez	Chicacao	La Perla	Others	0	0	0	0	0	La Perla
Suchitepéquez	Chicacao	MAnacales	Farm	385	205	180	0	385	La Perla
Suchitepéquez	Chicacao	Maria del Mar	Farm	332	187	145	0	332	La Perla
Sololá	Nahualá	Xexac	Hamlet	417	206	211	0	417	Masá
Sololá	Nahualá	Pochol	Hamlet	842	422	420	0	842	Masá
Sololá	Nahualá	Pasac	Hamlet	1136	567	569	0	1136	Masá
Sololá	Nahualá	Patzulin	Hamlet	397	216	181	0	397	Masá
Sololá	Nahualá	Chirij Cruz	Hamlet	0	0	0	0	0	Masá
Sololá	Nahualá	Chimasa	Hamlet	137	72	65	0	137	Masá
Sololá	Nahualá	Maxanija	Hamlet	297	153	144	0	297	Masá
Sololá	Nahualá	Xejuyub	Village	2628	1332	1296	2173	455	Masá
Sololá	Nahualá	Sajquim	Others	0	0	0	0	0	Masá
Sololá	Nahualá	PacAnal i	Hamlet	243	123	120	0	243	Masá
Sololá	Nahualá	Parajuyub	ISolated settlement	80	38	42	0	80	Masá
Sololá	Nahualá	PacAnal ii	Hamlet	272	149	123	0	272	Masá
Sololá	Nahualá	Pasaquejuyup	Hamlet	487	247	240	0	487	Masá
Sololá	Nahualá	Chuicha o chicua	Hamlet	107	62	45	0	107	Masá
Sololá	Nahualá	Pacaman	Hamlet	314	167	147	0	314	Masá
Sololá	Nahualá	ChuisacueSan	Others	0	0	0	0	0	Masá
Sololá	Nahualá	Pasaqwach	Hamlet	66	28	38	0	66	Masá
Sololá	Nahualá	Pachutiquin	Hamlet	647	311	336	0	647	Masá
Sololá	Santa Catarina Ixtahuacán	Chui0Santo tomas	Hamlet	1014	521	493	0	1014	Masá
Sololá	Santa Catarina Ixtahuacán	Tzamabaj	Hamlet	512	258	254	0	512	Masá
Sololá	Santa Catarina	Pabalaba	Others	0	0	0	0	0	Masá

	Ixtahuacán								
Sololá	Santa Catarina Ixtahuacán	Chicorral	Hamlet	91	51	40	0	91	Masá
Sololá	Santa Catarina Ixtahuacán	Chuizacabal	Hamlet	120	66	54	0	120	Masá
Sololá	Santa Catarina Ixtahuacán	Corral	Others	0	0	0	0	0	Masá
Sololá	Santa Catarina Ixtahuacán	Pocorral ii	Hamlet	260	131	129	0	260	Masá
Sololá	Santa Catarina Ixtahuacán	Palomob	Hamlet	166	84	82	0	166	Masá
Sololá	Santa Catarina Ixtahuacán	Tzanjuyub	Village	1136	580	556	0	1136	Masá
Sololá	Santa Catarina Ixtahuacán	Palamob	Hamlet	92	46	46	0	92	Masá
Suchitepéquez	Chicacao	El recuerdo	Farm	0	0	0	0	0	Mixpiyá
Suchitepéquez	Chicacao	Chinan	Farm	702	375	327	0	702	Mixpiyá
Suchitepéquez	Chicacao	Esmeralda	Farm	0	0	0	0	0	Mixpiyá
Suchitepéquez	Chicacao	Chicacao	Town (mun. cap.)	10405	5058	5347	10405	0	Mixpiyá
Suchitepéquez	Chicacao	San Bartolo nansales	Hamlet	0	0	0	0	0	Mixpiyá
Suchitepéquez	Chicacao	Las vinas	Farm	31	16	15	0	31	Mixpiyá
Suchitepéquez	Chicacao	Belgica	Farm	45	27	18	0	45	Mixpiyá
Suchitepéquez	Chicacao	Los Manzanales	Farm	0	0	0	0	0	Mixpiyá
Suchitepéquez	Chicacao	AmericAna	Farm	34	18	16	0	34	Mixpiyá
Suchitepéquez	Chicacao	Poblacion dispersa	Others	222	106	116	0	222	Mixpiyá
Suchitepéquez	Chicacao	San Bartolo nanzales sector iv	Hamlet	82	45	37	0	82	Mixpiyá
Suchitepéquez	Chicacao	La libertad	Farm	11	7	4	0	11	Mixpiyá
Suchitepéquez	Chicacao	San Bartolo Mixpiyá	Farm	0	0	0	0	0	Mixpiyá
Suchitepéquez	Chicacao	Santa cecilia	Farm	0	0	0	0	0	Mixpiyá
Suchitepéquez	Chicacao	Santa Esther	Farm	0	0	0	0	0	Mixpiyá
Suchitepéquez	Chicacao	San Bartolo nanzales	Hamlet	1463	726	737	0	1463	Mixpiyá

Suchitepéquez	Chicacao	El Porvenir i, ii iii	Farm	68	33	35	0	68	Mixpiyá
Suchitepéquez	Chicacao	San Bartolo Mixpilla	Hamlet	1678	868	810	0	1678	Mixpiyá
Suchitepéquez	Chicacao	Santa Marta	Farm	15	5	10	0	15	Mixpiyá
Suchitepéquez	Chicacao	La Perla	Farm	0	0	0	0	0	Mixpiyá
Suchitepéquez	Chicacao	La Rochela	Farm	46	21	25	0	46	Mixpiyá
Suchitepéquez	Chicacao	Las Delicias	Farm	0	0	0	0	0	Mixpiyá
Suchitepéquez	Chicacao	El Milagro	Farm	0	0	0	0	0	Mixpiyá
Suchitepéquez	Chicacao	Santa rita	Farm	147	73	74	0	147	Mixpiyá
Suchitepéquez	Chicacao	San florencio	Others	0	0	0	0	0	Mixpiyá
Suchitepéquez	Chicacao	Concepcion Chinan sectores ii, iii y iv	Hamlet	109	50	59	0	109	Mixpiyá
Suchitepéquez	Chicacao	Concepcion chinan sector i	Hamlet	1392	675	717	0	1392	Mixpiyá
Suchitepéquez	Chicacao	San Francisco la Cruz	Farm	97	46	51	0	97	Mixpiyá
Suchitepéquez	Chicacao	Los Encuentros	Farm	0	0	0	0	0	Mixpiyá
Suchitepéquez	Chicacao	Medellin	Farm	126	70	56	0	126	Mixpiyá
Suchitepéquez	Chicacao	La Guardiania	Farm	56	26	30	0	56	Mixpiyá
Suchitepéquez	Chicacao	Milan	Farm	168	91	77	0	168	Mixpiyá
Suchitepéquez	Chicacao	Rosario Moca Echeverria	Farm	26	15	11	0	26	Mocá
Suchitepéquez	Chicacao	Segovia	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	Brisas del Moca	Farm	258	136	122	0	258	Mocá
Suchitepéquez	Chicacao	La fortaleza	Farm	91	46	45	0	91	Mocá
Suchitepéquez	Chicacao	San Jorge	Farm	65	31	34	0	65	Mocá
Suchitepéquez	Chicacao	San cayetano	Farm	43	19	24	0	43	Mocá
Suchitepéquez	Chicacao	Mariel	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	Maricela	Farm	27	15	12	0	27	Mocá
Suchitepéquez	Chicacao	El salvador Nahualáte	Farm	34	16	18	0	34	Mocá
Suchitepéquez	Chicacao	Hawaii	Farm	26	13	13	0	26	Mocá
Suchitepéquez	Chicacao	Los Cerros	Settlement	0	0	0	0	0	Mocá

Suchitepéquez	Chicacao	El rancho	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	El Naranjo	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	Santiago o Santo tomas	Farm/Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	Fegua	Plots	290	152	138	0	290	Mocá
Suchitepéquez	Chicacao	La Esperanza	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	Santa Ana	Village	1055	535	520	0	1055	Mocá
Suchitepéquez	Chicacao	Nahualáte	Hamlet	1216	592	624	0	1216	Mocá
Suchitepéquez	Chicacao	Agropecuaria Santa Ana	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	San Francisco y Esperanza Moca	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	Valuarte	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	Santa Marta	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	Concepción	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	La Batalla	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	Santa Emilia Moca	Farm	47	27	20	0	47	Mocá
Suchitepéquez	Chicacao	San Miguel Moca	Farm	60	29	31	0	60	Mocá
Suchitepéquez	Chicacao	Roselia	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	Candelaria Moca	Farm	77	38	39	0	77	Mocá
Suchitepéquez	Chicacao	Reposicion Moca	Hamlet	343	176	167	0	343	Mocá
Suchitepéquez	Chicacao	El Corozo	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	Rosario Moca Soto	Farm	19	12	7	0	19	Mocá
Suchitepéquez	Chicacao	Margen Moca	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	San Juan Moca	Farm	3142	1524	1618	3142	0	Mocá
Suchitepéquez	Chicacao	Comunidad Moca	Hamlet	689	364	325	0	689	Mocá
Suchitepéquez	Chicacao	Alejandría	Farm	183	95	88	0	183	Mocá
Suchitepéquez	Chicacao	Agua Santa	Farm	0	0	0	0	0	Mocá

Suchitepéquez	Chicacao	Argentina	Farm	227	119	108	0	227	Mocá
Suchitepéquez	Chicacao	Mercedes	Farm	148	64	84	0	148	Mocá
Suchitepéquez	Santa Barbara	San José el Carmen o las Flores	Farm	25	13	12	0	25	Mocá
Suchitepéquez	Santa Barbara	La Revolución (anexo mi tierra)	Farm	4	1	3	0	4	Mocá
Suchitepéquez	Santa Barbara	Olas de Moca	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Santa Barbara	Monte de Oro	Farm	0	0	0	0	0	Mocá
Sololá	Santiago atitlan	Olas de Moca	Farm	291	146	145	0	291	Mocá
Sololá	Santiago atitlan	Monte de Oro	Farm	274	149	125	0	274	Mocá
Sololá	Santiago atitlan	El Rosario	Farm	0	0	0	0	0	Mocá
Sololá	Santiago atitlan	Santa Amalia	Farm	0	0	0	0	0	Mocá
Suchitepéquez	Chicacao	La India	Farm	228	114	114	0	228	Nicá
Suchitepéquez	Chicacao	Valle de Oro el Refugio	Farm	138	76	62	0	138	Nicá
Suchitepéquez	Chicacao	La Esperanza	Farm	55	26	29	0	55	Nicá
Suchitepéquez	Chicacao	El Jardín	Farm	75	40	35	0	75	Nicá
Suchitepéquez	Chicacao	Las Armonias	Farm	37	24	13	0	37	Nicá
Suchitepéquez	Chicacao	El Regalo	Farm	142	67	75	0	142	Nicá
Suchitepéquez	Chicacao	Montecarlo o la Conchita	Farm	150	87	63	0	150	Nicá
Suchitepéquez	Chicacao	El Brote	Farm	0	0	0	0	0	Nicá
Suchitepéquez	Chicacao	Washington	Farm	58	26	32	0	58	Nicá
Suchitepéquez	Chicacao	La COrona	Farm	58	27	31	0	58	Nicá
Suchitepéquez	Chicacao	Dolores	Farm	26	16	10	0	26	Nicá
Suchitepéquez	Chicacao	El chorro	Farm	28	18	10	0	28	Nicá
Suchitepéquez	Chicacao	La Arabia	Farm	148	67	81	0	148	Nicá
Suchitepéquez	Chicacao	Santa Inés	Farm	92	52	40	0	92	Nicá
Sololá	Santiago atitlan	Monte Quina	Farm	111	57	54	0	111	Nicá
Sololá	Santiago atitlan	Las Cascadas de Nicaj	Farm	0	0	0	0	0	Nicá
Sololá	Santiago atitlan	El Carmen Metzabal	Farm	110	48	62	0	110	Nicá

Suchitepéquez	Chicacao	El Sol de Cañada	Farm	759	349	410	0	759	Panán
Suchitepéquez	Chicacao	Buena Vista	Farm	0	0	0	0	0	Panán
Suchitepéquez	Chicacao	Sector ii San Pedrito	Hamlet	509	259	250	0	509	Panán
Suchitepéquez	Chicacao	Selvas	Farm	27	19	8	0	27	Panán
Suchitepéquez	Chicacao	San Pablo	Hamlet	903	455	448	0	903	Panán
Suchitepéquez	Chicacao	El pito	Farm	617	327	290	0	617	Panán
Suchitepéquez	Chicacao	Buenos Aires	Farm	104	53	51	0	104	Panán
Suchitepéquez	Chicacao	El Refugio	Farm	54	23	31	0	54	Panán
Suchitepéquez	Chicacao	La Merced	Farm	35	16	19	0	35	Panán
Suchitepéquez	Chicacao	Las Camelias	Farm	231	127	104	0	231	Panán
Suchitepéquez	Chicacao	La Abundancia	Farm	25	15	10	0	25	Panán
Suchitepéquez	Chicacao	El Retiro	Farm	7	5	2	0	7	Panán
Suchitepéquez	Chicacao	Los Castaños	Farm	381	197	184	0	381	Panán
Suchitepéquez	Chicacao	Las Esperanzas	Farm	616	302	314	0	616	Panán
Suchitepéquez	Chicacao	Los Ángeles	Farm	164	82	82	0	164	Panán
Suchitepéquez	Chicacao	El MAnantial	Farm	126	60	66	0	126	Panán
Suchitepéquez	Chicacao	La Esterlina	Farm	19	9	10	0	19	Panán
Suchitepéquez	Chicacao	San Antonio las Flores	Hamlet	476	220	256	0	476	Panán
Suchitepéquez	Chicacao	El Naranjo	Farm	16	9	7	0	16	Panán
Suchitepéquez	Chicacao	Colima Pamaxán	Farm	25	13	12	0	25	Panán
Suchitepéquez	Chicacao	El Arco	Farm	90	40	50	0	90	Panán
Suchitepéquez	Chicacao	Madrid	Farm	36	18	18	0	36	Panán
Suchitepéquez	Chicacao	Las victorias	Village	436	228	208	0	436	Panán
Suchitepéquez	Chicacao	Bolivia	Farm	27	14	13	0	27	Panán
Suchitepéquez	Chicacao	Baja Vista	Farm	55	30	25	0	55	Panán
Suchitepéquez	Chicacao	Santa lucia Pamaxán	Farm	883	454	429	0	883	Panán
Suchitepéquez	Chicacao	Alta Vista	Farm	8	4	4	0	8	Panán
Suchitepéquez	Chicacao	Filadelfia	Farm	182	88	94	0	182	Panán

Suchitepéquez	San Miguel Panán	Villa Hortensia	Farm	0	0	0	0	0	Panán
Suchitepéquez	San Miguel Panán	San Miguel Panán	Town (mun. cap.)	1837	875	962	1837	0	Panán
Suchitepéquez	San Miguel Panán	San Roberto	Farm	0	0	0	0	0	Panán
Suchitepéquez	San Miguel Panán	El Engaño	Farm	19	11	8	0	19	Panán
Suchitepéquez	San Miguel Panán	Grecia	Farm	49	30	19	0	49	Panán
Sololá	San Juan la Laguna	Patzunoj	Others	0	0	0	0	0	Paquiacamiyá
Sololá	San Juan la Laguna	Pocona	Hamlet	34	21	13	0	34	Paquiacamiyá
Sololá	San Juan la Laguna	Panyevar	Village	1687	849	838	0	1687	Paquiacamiyá
Sololá	Nahualá	Xecullil	Others	0	0	0	0	0	Parte alta Nahualáte
Sololá	Nahualá	Chicullil	Others	0	0	0	0	0	Parte alta Nahualáte
Sololá	Nahualá	Balamabaj	Hamlet	525	262	263	0	525	Parte alta Nahualáte
Sololá	Nahualá	Cullil	Hamlet	1322	665	657	0	1322	Parte alta Nahualáte
Sololá	Nahualá	Patzij	Hamlet	1740	830	910	0	1740	Parte alta Nahualáte
Sololá	Nahualá	Chichojche	Hamlet	271	154	117	0	271	Parte alta Nahualáte
Sololá	Nahualá	Chuisuc	Hamlet	681	317	364	0	681	Parte alta Nahualáte
Sololá	Nahualá	Racantacaj	Hamlet	1537	745	792	0	1537	Parte alta Nahualáte
Sololá	Nahualá	Nahualá	Town (mun. cap.)	3491	1707	1784	3491	0	Parte alta Nahualáte
Sololá	Nahualá	Xoljuxup	Hamlet	153	75	78	0	153	Parte alta Nahualáte
Sololá	Nahualá	Poblacion dispersa	Others	11	5	6	0	11	Parte alta Nahualáte
Sololá	Nahualá	Chacap	Hamlet	67	27	40	0	67	Parte alta Nahualáte
Sololá	Nahualá	Chuacasiguan	ISolated settlement	92	50	42	0	92	Parte alta Nahualáte
Sololá	Nahualá	Pasuc	ISolated	91	44	47	0	91	Parte alta

			settlement						Nahualáte
Sololá	Nahualá	Chirij raxon	Hamlet	404	188	216	0	404	Parte alta Nahualáte
Sololá	Nahualá	Xepatuj o rabario	Hamlet	2279	1148	1131	2279	0	Parte alta Nahualáte
Sololá	Nahualá	Chipatuj	Hamlet	416	192	224	0	416	Parte alta Nahualáte
Sololá	Nahualá	Palanquix o tambrizab	Hamlet	1116	568	548	0	1116	Parte alta Nahualáte
Sololá	Nahualá	Quiacsiguan	Hamlet	1440	708	732	0	1440	Parte alta Nahualáte
Sololá	Nahualá	Tzucubal	Hamlet	1110	572	538	1110	0	Paximbal
Sololá	Nahualá	Chuisuc	Hamlet	180	80	100	180	0	Paximbal
Sololá	Nahualá	Chuisacap	Hamlet	479	222	257	0	479	Paximbal
Sololá	Nahualá	Parajuyub	ISolated settlement	0	0	0	0	0	Paximbal
Sololá	Nahualá	Chuisajcab centro	Hamlet	0	0	0	0	0	Paximbal
Sololá	Nahualá	Xo'ljuyub'	ISolated settlement	0	0	0	0	0	Paximbal
Sololá	Nahualá	ChuaCruz	ISolated settlement	0	0	0	0	0	Paximbal
Sololá	Nahualá	Paximbal	Hamlet	125	56	69	0	125	Paximbal
Sololá	Santa Catarina Ixtahuacán	Paximbal	Hamlet	128	59	69	0	128	Paximbal
Suchitepéquez	Santa Barbara	El tesOro	Farm	343	187	156	0	343	San Francisco
Suchitepéquez	Santa Barbara	Ofelia	Farm	36	14	22	0	36	San Francisco
Suchitepéquez	Santa Barbara	San José el Carmen	Farm	0	0	0	0	0	San Francisco
Suchitepéquez	Santa Barbara	Guayabal	Farm	1658	825	833	1658	0	San Francisco
Suchitepéquez	Santa Barbara	San Joaquín	Farm	34	15	19	0	34	San Francisco
Suchitepéquez	Santa Barbara	La distraccion	Farm	0	0	0	0	0	San Francisco
Suchitepéquez	Santa Barbara	San Rafael Panán	Farm	87	45	42	0	87	San Francisco
Suchitepéquez	Santa Barbara	Las Ilusiones	Village	1368	659	709	0	1368	San Francisco

Sololá	Nahualá	Chuacetesicabaj	Others	0	0	0	0	0	San José
Sololá	Santa Catarina Ixtahuacán	Payoxaja	Others	0	0	0	0	0	San José
Suchitepéquez	Chicacao	Loma Larga	Farm	0	0	0	0	0	Santo Tomas la Unión
Suchitepéquez	Chicacao	Argelia	Others	0	0	0	0	0	Santo Tomas la Unión
Suchitepéquez	Patulul	Santa Cristina	Farm	36	19	17	0	36	Siguacán I
Suchitepéquez	Patulul	La Ermita	Farm	154	76	78	0	154	Siguacán I
Suchitepéquez	Patulul	San Agustín	Farm	425	215	210	0	425	Siguacán I
Suchitepéquez	Patulul	Las Nubes	ISolated settlement	0	0	0	0	0	Siguacán I
Suchitepéquez	Patulul	Santa Adelaida	Farm	0	0	0	0	0	Siguacán I
Suchitepéquez	Santa Barbara	San Juan las Margaritas	Farm	0	0	0	0	0	Siguacán II
Suchitepéquez	Santa Barbara	Verapaz	Farm	0	0	0	0	0	Siguacán II
Suchitepéquez	Santa Barbara	Santa Isabel	Farm	0	0	0	0	0	Siguacán II
Suchitepéquez	Santa Barbara	Rome	Settlement	1161	614	547	1161	0	Siguacán II
Suchitepéquez	Santa Barbara	El Bosque	Farm	80	39	41	0	80	Siguacán II
Suchitepéquez	Santa Barbara	San Martín	Farm	165	78	87	0	165	Siguacán II
Suchitepéquez	Santa Barbara	Armenia	Farm	31	17	14	0	31	Siguacán II
Suchitepéquez	Santa Barbara	San Francisco	Farm	0	0	0	0	0	Siguacán II
Suchitepéquez	Santa Barbara	Santa Barbara	PUEBLO	2459	1192	1267	2459	0	Siguacán II
Suchitepéquez	Santa Barbara	San Pablo	Farm	108	58	50	0	108	Siguacán II
Suchitepéquez	Santa Barbara	La Florida	Farm	0	0	0	0	0	Siguacán II
Suchitepéquez	Santa Barbara	Maria del Carmen	Farm	277	129	148	0	277	Siguacán II
Suchitepéquez	Santa Barbara	Poblacion dispersa	Others	227	108	119	4	223	Siguacán II
Suchitepéquez	Santa Barbara	Las Conchita	Farm	0	0	0	0	0	Siguacán II
Suchitepéquez	Santa Barbara	La Asunción	Farm	0	0	0	0	0	Siguacán II
Suchitepéquez	Santa Barbara	La Zona	Farm	0	0	0	0	0	Siguacán II
Suchitepéquez	Santa Barbara	San Francisco Miramar	Farm	48	24	24	48	0	Siguacán II

Suchitepéquez	Chicacao	La Cruz	Hamlet	430	235	195	0	430	Tarro
Suchitepéquez	Chicacao	Rio Tarros	Hamlet	1475	748	727	0	1475	Tarro
Suchitepéquez	Chicacao	San Pablito o San Juan la Paz	Farm	0	0	0	0	0	Tarro
Suchitepéquez	Chicacao	Cutzan	Village	0	0	0	0	0	Tarro
Suchitepéquez	Chicacao	Santander	Farm	22	6	16	0	22	Tarro
Suchitepéquez	Chicacao	Siete Vueltas	Others	0	0	0	0	0	Tarro
Suchitepéquez	Chicacao	La Vega	Farm	111	60	51	0	111	Tarro
Suchitepéquez	Chicacao	La Soledad	Others	0	0	0	0	0	Tarro
Suchitepéquez	Chicacao	San Rafael Pamaxán	Farm	70	34	36	0	70	Tarro
Suchitepéquez	Chicacao	La Felicidad	Farm	75	43	32	0	75	Tarro
Suchitepéquez	Chicacao	Maravillas	Farm	133	70	63	0	133	Tarro
Suchitepéquez	Chicacao	San Juan	Farm	29	18	11	0	29	Tarro
Suchitepéquez	Chicacao	San Felipe	Farm	0	0	0	0	0	Tarro
Suchitepéquez	Chicacao	La Fortuna	Others	102	56	46	0	102	Tarro
Suchitepéquez	Chicacao	Mangales	Farm	459	220	239	0	459	Tarro
Suchitepéquez	Chicacao	La Luz	Farm	105	50	55	0	105	Tarro
Sololá	Nahualá	Chiquisis	Hamlet	0	0	0	0	0	Tzojomá
Sololá	Nahualá	Chiquix	Hamlet	587	276	311	0	587	Tzojomá
Sololá	Nahualá	Pabinala	Others	0	0	0	0	0	Tzojomá
Sololá	Nahualá	Parraxquim	Hamlet	300	147	153	0	300	Tzojomá
Sololá	Santa Catarina Ixtahuacán	Chuisibel	Hamlet	346	179	167	0	346	Tzojomá
Sololá	Santa Catarina Ixtahuacán	Xetinamit	Hamlet	154	79	75	0	154	Tzojomá
Sololá	Santa Catarina Ixtahuacán	Xoljuyub	ISolated settlement	173	92	81	0	173	Tzojomá
Sololá	Santa Catarina Ixtahuacán	Poblacion dispersa	Others	75	40	35	0	75	Tzojomá
Sololá	Santa Catarina Ixtahuacán	Santa Catarina Ixtahuacán	PUEBLO	2852	1461	1391	2852	0	Tzojomá
Sololá	Santa Catarina Ixtahuacán	Paqui	Hamlet	260	123	137	0	260	Tzojomá

Sololá	Santa Catarina Ixtahuacán	Chuacabaj	Hamlet	69	40	29	0	69	Tzojomá
Sololá	Santa Catarina Ixtahuacán	Panimaquim	Hamlet	43	24	19	0	43	Tzojomá
Sololá	Santa Catarina Ixtahuacán	Paquisic	Hamlet	256	125	131	0	256	Tzojomá
Sololá	Santa Catarina Ixtahuacán	Xeabaj i	Hamlet	540	256	284	0	540	Tzojomá
Sololá	Santa Catarina Ixtahuacán	Pacorral i y Xetinamit	Hamlet	398	218	180	0	398	Tzojomá
Sololá	Santa Catarina Ixtahuacán	Xepiacual	Village	390	199	191	0	390	Tzojomá
Sololá	Santa Catarina Ixtahuacán	Xecaquixcan	Hamlet	176	73	103	0	176	Tzojomá
Sololá	Santa Catarina Ixtahuacán	Xeabaj ii	Hamlet	434	220	214	0	434	Tzojomá
Sololá	Nahualá	Xolcaja	Hamlet	712	344	368	0	712	Ugualxucube
Sololá	Nahualá	Patzite	Hamlet	1815	910	905	1815	0	Ugualxucube
Sololá	Nahualá	Pachipac	Hamlet	1891	940	951	1891	0	Ugualxucube
Sololá	Nahualá	Pasajquim	Hamlet	421	204	217	0	421	Ugualxucube
Sololá	Nahualá	Palanquix guachiaquib	Hamlet	2104	1010	1094	2104	0	Ugualxucube
Sololá	Santa Catarina Ixtahuacán	Simajutio	Hamlet	489	241	248	0	489	Ugualxucube
Sololá	Santa Catarina Ixtahuacán	Pachiyut	Others	0	0	0	0	0	Ugualxucube
Sololá	Santa Catarina Ixtahuacán	Xolchajil	Hamlet	69	36	33	0	69	Ugualxucube
Sololá	Santa Catarina Ixtahuacán	Chuaxajil	Hamlet	347	169	178	0	347	Ugualxucube
Sololá	Santa Catarina Ixtahuacán	Pacaman o paculam	Hamlet	156	76	80	0	156	Ugualxucube
Sololá	Santa Catarina Ixtahuacán	Chirijox	Village	2005	1011	994	2005	0	Ugualxucube
Sololá	Santa Clara la Laguna	Paquip	Hamlet	1096	543	553	0	1096	Xechim
Sololá	Santa Clara la Laguna	Montecristo	Others	0	0	0	0	0	Xechim
Sololá	Santa Clara la Laguna	El Panorama	Farm	39	24	15	0	39	Xechim
Sololá	Santa Clara la	Chitun	Others	0	0	0	0	0	Xechim

	Laguna								
Sololá	Santa Clara la Laguna	Santa Clara la Laguna	PUEBLO	4777	2385	2392	4777	0	Xechim
Suchitepéquez	Chicacao	Los Horizontes	Farm	53	15	38	0	53	Yatzá I
Sololá	San Juan la Laguna	La dicha	Farm	0	0	0	0	0	Yatzá I
Sololá	San Juan la Laguna	Chicajay	Others	0	0	0	0	0	Yatzá I
Sololá	San Juan la Laguna	Pacaybal	Farm	3	2	1	0	3	Yatzá I
Sololá	San Juan la Laguna	Pasajquim	Village	1130	530	600	0	1130	Yatzá I
Sololá	San Juan la Laguna	San simón	ISolated settlement	21	11	10	0	21	Yatzá I
Sololá	San Juan la Laguna	PAnacal	Hamlet	176	89	87	0	176	Yatzá I
Sololá	Santa Catarina Ixtahuacán	Caleras	Hamlet	115	56	59	0	115	Yatzá I
Sololá	Santa Catarina Ixtahuacán	Paculam	Farm	0	0	0	0	0	Yatzá I
Sololá	San Juan la Laguna	Palestina	Village	919	453	466	0	919	Yatzá II
Sololá	Santa maria visitacion	TzAnatzan o Montecristo	Hamlet	404	187	217	0	404	Yatzá III
Sololá	Santa maria visitacion	Monterrico o Chuipoj	Hamlet	68	41	27	0	68	Yatzá IV
Sololá	Santa Clara la Laguna	Chacap	Hamlet	600	294	306	0	600	Yatzá V
Sololá	Santa Clara la Laguna	Xiprian	Hamlet	382	182	200	0	382	Yatzá V
Sololá	Santa Clara la Laguna	Las Delicias	Farm	0	0	0	0	0	Yatzá V
Sololá	Santa maria visitacion	El Porvenir	Hamlet	82	40	42	0	82	Yatzá V
Sololá	Santa maria visitacion	Santa maria visitacion	Town (mun. cap.)	1365	690	675	1365	0	Yatzá V
Sololá	Santa Catarina Ixtahuacán	Patzaj	Hamlet	0	0	0	0	0	Yatzá VII
Sololá	Santa Catarina Ixtahuacán	Tzumajul	Others	0	0	0	0	0	Yatzá VII
Sololá	Santa Catarina Ixtahuacán	Chuchugualcox	Hamlet	82	35	47	0	82	Yatzá VII

Sololá	Santa Catarina Ixtahuacán	Comon0oj	Hamlet	188	98	90	0	188	Yatzá VII
Sololá	Santa Catarina Ixtahuacán	Patzumajuil	Hamlet	274	143	131	0	274	Yatzá VII
Sololá	Santa Catarina Ixtahuacán	Tzucubal	Village	1587	788	799	0	1587	Yatzá VIII
Total				**139,545**	**69,627**	**69,918**	**54,204**	**85,341**	
%						**0.50**		**0.61**	

Table 3. National Statistics Institute (INE) – Municipalities Census

Sololá Department

Nahualá Municipality

Category	Population			Households					
				Area		Literacy of Household Head		Gender of Household Head	
	Indigenous	Non Indigenous	Total	Urban	Rural	Literacy	Illiterate	Men	Women
Above poverty line	11,782	2	11,784	570	2,128	1,476	1,222	2,086	612
Below poverty line	20,062	10	20,072	756	2,838	1,734	1,860	3,008	586
Below extreme poverty line	28,043	40	28,083	2,599	1,814	1,480	2,933	3,705	708
Overall Population below Poverty/Extreme Poverty	48,105	50	48,155	3,355	4,652	3,214	4,793	6,713	1,294

San Juan La Laguna Municipality

Category	Population			Households					
				Area		Literacy of Household Head		Gender of Household Head	
	Indigenous	Non Indigenous	Total	Urban	Rural	Literacy	Illiterate	Men	Women
Above poverty line	2,167	7	2,174	171	311	386	96	421	61
Below poverty line	4,199	27	4,226	474	335	632	177	725	84
Below extreme poverty line	2,624	6	2,630	252	197	292	157	404	45
Overall Population below Poverty/Extreme Poverty	6,823	33	6,856	726	532	924	334	1,129	129

Santa Catarina Ixtahuacán Municipality

Category	Population			Households					
				Area		Literacy of Household Head		Gender of Household Head	
	Indigenous	Non Indigenous	Total	Urban	Rural	Literacy	Illiterate	Men	Women
Above poverty line	10,026	11	10,037	342	1,995	1,274	1,063	1,809	528
Below poverty line	16,004	10	16,014	454	2,335	1,419	1,370	2,347	442
Below extreme poverty line	17,300	-	17,300	901	1,735	753	1,883	2,188	448
Overall Population below Poverty/Extreme Poverty	33,304	10	33,314	1,355	4,070	2,172	3,253	4,535	890

Santa Clara La Laguna Municipality

Category	Population			Households					
				Area		Literacy of Household Head		Gender of Household Head	
	Indigenous	Non Indigenous	Total	Urban	Rural	Literacy	Illiterate	Men	Women
Above poverty line	3,015	51	3,066	415	235	516	134	555	95
Below poverty line	2,445	19	2,464	300	145	329	116	401	44
Below extreme poverty line	1,720	1	1,721	239	49	163	125	258	30
Overall Population below Poverty/Extreme Poverty	4,165	20	4,185	539	194	492	241	659	74

Santiago Atitlan Municipality

Category	Population			Households					
				Area		Literacy of Household Head		Gender of Household Head	
	Indigenous	Non Indigenous	Total	Urban	Rural	Literacy	Illiterate	Men	Women
Above poverty line	4,091	144	4,235	981	27	529	479	851	157
Below poverty line	5,588	147	5,735	1,308	17	536	789	1,072	253
Below extreme poverty line	7,908	89	7,997	1,540	17	429	1,128	1,250	307
Overall Population below Poverty/Extreme Poverty	13,496	236	13,732	2,848	34	965	1,917	2,322	560

Suchitepequez Department

Chicacao Municipality

Category	Population			Households					
				Area		Literacy of Household Head		Gender of Household Head	
	Indigenous	Non Indigenous	Total	Urban	Rural	Literacy	Illiterate	Men	Women
Above poverty line	5,302	4,039	9,341	946	1,387	1,682	651	1,903	430
Below poverty line	12,081	4,366	16,447	764	2,128	1,887	1,005	2,551	341
Below extreme poverty line	18,674	4,027	22,701	1,212	2,304	1,538	1,978	3,134	382
Overall Population below Poverty/Extreme Poverty	30,755	8,393	39,148	1,976	4,432	3,425	2,983	5,685	723

*San Pedro La Laguna, Santa María Visitación, Patutul, San Juan Bausita and Santa Barbara Municipalities were not included under INE´s Municipalities Census.

Table 4. SESAN´s Forecast on Food and Nutrition Security May-July 2012

Gobierno de Guatemala
Secretaría de Seguridad Alimentaria y Nutricional

166 Municipios priorizados para el "Plan Hambre Cero"

Municipios con "Muy Alta" y "Alta" Prevalencia de Desnutrición Crónica
Método de ordenamiento: De mayor a menor prevalencia de retardo en talla

Cód. Departamento	No.	Departamento	Código Municipio	Municipio	No.	% Normal	% Prevalencia de Retardo en Talla Total	% Prevalencia de Retardo en Talla Moderado	% Prevalencia de Retardo en Talla Severo	Categoría Vulnerabilidad Nutricional
13	1	Huehuetenango	1316	San Juan Atitán	898	8.6	91.4	38.9	52.6	Muy Alta
13	2	Huehuetenango	1330	Santiago Chimaltenango	312	17.9	82.1	47.1	34.9	Muy Alta
12	3	San Marcos	1206	Concepción Tutuapa	2724	19.1	80.9	43.6	37.3	Muy Alta
13	4	Huehuetenango	1313	San Miguel Acatán	1109	19.4	80.6	48.2	32.4	Muy Alta
13	5	Huehuetenango	1318	San Mateo Ixtatán	2000	20.3	79.7	40.8	38.9	Muy Alta
13	6	Huehuetenango	1314	San Rafael La Independencia	597	20.8	79.2	45.7	33.5	Muy Alta
14	7	Quiché	1413	Nebaj	3229	21.7	78.3	41.6	36.7	Muy Alta
12	8	San Marcos	1204	Comitancillo	2463	22.3	77.7	45.8	31.9	Muy Alta
14	9	Quiché	1405	Chajul	1602	23.3	76.7	45.1	31.6	Muy Alta
7	10	Sololá	706	Santa Catarina Ixtahuacán	1801	24.5	75.5	49.5	26	Muy Alta
8	11	Totonicapán	806	Santa María Chiquimula	1801	24.5	75.5	45.3	30.3	Muy Alta
13	12	Huehuetenango	1329	San Gaspar Ixchil	355	25.4	74.7	49	25.6	Muy Alta

14	13	Quiché	1407	Patzité	265	25.3	74.7	47.5	27.2	Muy Alta
7	14	Sololá	705	Nahualá	3041	25.6	74.5	46	28.5	Muy Alta
14	15	Quiché	1411	San Juan Cotzal	1230	25.5	74.5	44.9	29.6	Muy Alta
13	16	Huehuetenango	1317	Santa Eulalia	1557	25.6	74.4	47.7	26.7	Muy Alta
8	17	Totonicapán	805	Momostenango	4531	25.9	74.1	45.9	28.2	Muy Alta
9	18	Quetzaltenango	915	Huitán	533	26.1	73.9	47.1	26.8	Muy Alta
13	19	Huehuetenango	1319	Colotenango	1071	26.2	73.8	44.2	29.6	Muy Alta
4	20	Chimaltenango	405	Santa Apolonia	538	26.6	73.4	49.1	24.3	Muy Alta
13	21	Huehuetenango	1326	Santa Cruz Barillas	3657	26.8	73.2	43.9	29.3	Muy Alta
7	22	Sololá	708	Concepción	196	27	73	44.4	28.6	Muy Alta
20	23	Chiquimula	2004	Jocotán	2324	27.2	72.8	41.9	30.9	Muy Alta
13	24	Huehuetenango	1328	San Rafael Petzal	367	27.5	72.5	46.6	25.9	Muy Alta
14	25	Quiché	1406	Santo Tomas Chichicastenango	5133	27.6	72.4	45.3	27.1	Muy Alta
20	26	Chiquimula	2006	Olopa	986	27.7	72.3	42.7	29.6	Muy Alta
13	27	Huehuetenango	1320	San Sebastián Huehuetenango	1153	27.8	72.2	49.3	22.9	Muy Alta
14	28	Quiché	1410	Cunén	1905	27.9	72.1	44.5	27.6	Muy Alta
7	29	Sololá	714	Santa Cruz La Laguna	200	28	72	41	31	Muy Alta
13	30	Huehuetenango	1321	Tectitán	446	28.3	71.8	44.4	27.4	Muy Alta
13	31	Huehuetenango	1323	San Juan Ixcoy	1089	28.7	71.3	47.7	23.6	Muy Alta
13	32	Huehuetenango	1322	Concepción Huista	954	29.6	70.4	44.5	25.9	Muy Alta
16	33	Alta Verapaz	1605	Tamahú	784	29.6	70.4	44.9	25.5	Muy Alta
9	34	Quetzaltenango	906	Cabricán	917	30.2	69.8	45	24.8	Muy Alta
12	35	San Marcos	1209	Tajumulco	2470	30.3	69.7	44.4	25.3	Muy Alta
4	36	Chimaltenango	406	Tecpán Guatemala	2824	30.8	69.2	45	24.2	Muy Alta
12	37	San Marcos	1208	Sibinal	783	30.8	69.2	45.5	23.8	Muy Alta
13	38	Huehuetenango	1310	Santa Bárbara	1192	30.8	69.2	47.7	21.5	Muy Alta
4	39	Chimaltenango	410	Santa Cruz Balanyá	193	31.1	68.9	49.7	19.2	Muy Alta
8	40	Totonicapán	804	San Andrés Xecul	1086	31.1	68.9	43.3	25.6	Muy Alta

7	41	Sololá	701	Sololá	3338	31.8	68.2	46	22.1	Muy Alta
7	42	Sololá	715	San Pablo La Laguna	230	32.2	67.8	45.7	22.2	Muy Alta
8	43	Totonicapán	807	Santa Lucía La Reforma	723	32.2	67.8	45.8	22	Muy Alta
9	44	Quetzaltenango	907	Cajolá	577	32.2	67.8	46.6	21.1	Muy Alta
13	45	Huehuetenango	1325	San Sebastian Coatán	930	32.5	67.5	44.4	23.1	Muy Alta
13	46	Huehuetenango	1315	Todos Santos Cuchumatán	1140	32.6	67.4	46.1	21.2	Muy Alta
14	47	Quiché	1417	San Bartolomé Jocotenango	805	33	67	46.2	20.7	Muy Alta
8	48	Totonicapán	803	San Francisco El Alto	2229	33.1	66.9	44.1	22.8	Muy Alta
14	49	Quiché	1419	Chicamán	1544	33.1	66.9	41.3	25.6	Muy Alta
8	50	Totonicapán	808	San Bartolo Aguas Calientes	524	33.4	66.6	43.9	22.7	Muy Alta
14	51	Quiché	1402	Chiché	1013	33.4	66.6	44.9	21.7	Muy Alta
13	52	Huehuetenango	1306	San Pedro Necta	1279	33.5	66.5	42.8	23.7	Muy Alta
12	53	San Marcos	1223	Ixchiguán	1137	33.8	66.2	45.7	20.5	Muy Alta
14	54	Quiché	1415	San Miguel Uspantán	2270	34.6	65.4	42.4	23	Muy Alta
8	55	Totonicapán	801	Totonicapán	3385	34.8	65.2	44.1	21.2	Muy Alta
4	56	Chimaltenango	404	San Juan Comalapa	1317	34.9	65.1	44.7	20.3	Muy Alta
7	57	Sololá	717	San Juan La Laguna	295	35.3	64.8	50.5	14.2	Muy Alta
14	58	Quiché	1416	Sacapulas	1902	35.3	64.7	43.7	21	Muy Alta
9	59	Quetzaltenango	912	San Martin Sacatepéquez	1174	35.4	64.6	41.3	23.3	Muy Alta
13	60	Huehuetenango	1309	San Ildefonso Ixtahuacán	1439	35.9	64.1	44.8	19.4	Muy Alta
16	61	Alta Verapaz	1603	San Cristóbal Verapaz	2114	36.2	63.8	43.1	20.7	Muy Alta
9	62	Quetzaltenango	908	San Miguel Sigüilá	364	36.3	63.7	47	16.8	Muy Alta
13	63	Huehuetenango	1327	Aguacatán	2215	36.3	63.7	45.9	17.8	Muy Alta
14	64	Quiché	1409	San Pedro Jocopilas	1115	36.4	63.6	44	19.6	Muy Alta
20	65	Chiquimula	2005	Camotán	2054	36.5	63.5	41.8	21.7	Muy Alta
7	66	Sololá	702	San José Chacayá	147	36.7	63.3	45.6	17.7	Muy Alta
12	67	San Marcos	1207	Tacaná	3342	36.8	63.2	43.2	20	Muy Alta
14	68	Quiché	1408	San Antonio Ilotenango	970	37	63	47.5	15.5	Muy Alta
15	69	Baja Verapaz	1508	Purulhá	2030	37.1	62.9	43	19.9	Muy Alta
9	70	Quetzaltenango	911	Concepción Chiquirichapa	524	37.4	62.6	44.7	17.9	Muy Alta
8	71	Totonicapán	802	San Cristóbal Totonicapán	1311	37.5	62.5	44.2	18.2	Muy Alta
16	72	Alta Verapaz	1604	Tactic	988	38.1	61.9	41.5	20.4	Muy Alta
4	73	Chimaltenango	407	Patzún	1631	38.3	61.7	45.1	16.7	Muy Alta
12	74	San Marcos	1226	Sipacapa	779	38.4	61.6	44.4	17.2	Muy Alta
9	75	Quetzaltenango	924	Palestina De Los Altos	761	38.5	61.5	42.3	19.2	Muy Alta
12	76	San Marcos	1205	San Miguel Ixtahuacán	1934	38.5	61.5	45.4	16.1	Muy Alta
4	77	Chimaltenango	402	San José Poaquil	873	39.1	60.9	42.3	18.7	Muy Alta
12	78	San Marcos	1224	San José Ojetenam	818	39.1	60.9	45.4	15.5	Muy Alta
16	79	Alta Verapaz	1611	Lanquín	1010	39.5	60.5	44.2	16.3	Muy Alta
9	80	Quetzaltenango	909	San Juan Ostuncalco	2013	39.8	60.2	43.1	17.1	Muy Alta
13	81	Huehuetenango	1305	Nentón	1393	39.8	60.2	38.6	21.5	Muy Alta
13	82	Huehuetenango	1308	San Pedro Soloma	1840	39.8	60.2	44.6	15.7	Muy Alta
16	83	Alta Verapaz	1608	Senahú	3327	39.9	60.1	41.6	18.5	Muy Alta
14	84	Quiché	1401	Santa Cruz Del Quiché	2931	40.1	59.9	42.5	17.4	Alta
20	85	Chiquimula	2003	San Juan Ermita	564	40.2	59.8	39.9	19.9	Alta
7	86	Sololá	712	San Antonio Palopó	473	40.4	59.6	43.8	15.9	Alta
4	87	Chimaltenango	411	Acatenango	772	40.5	59.5	41.5	18	Alta
7	88	Sololá	707	Santa Clara La Laguna	338	40.5	59.5	41.4	18	Alta
19	89	Zacapa	1909	La Unión	1043	40.5	59.5	40.6	19	Alta
7	90	Sololá	716	San Marcos La Laguna	96	40.6	59.4	39.6	19.8	Alta
7	91	Sololá	709	San Andrés Semetabaj	421	40.9	59.1	43.2	15.9	Alta
16	92	Alta Verapaz	1610	San Juan Chamelco	1690	41.5	58.5	41.1	17.4	Alta
16	93	Alta Verapaz	1606	San Miguel Tucurú	1598	41.6	58.4	42.9	15.5	Alta
16	94	Alta Verapaz	1602	Santa Cruz Verapaz	1027	42.4	57.6	39.4	18.2	Alta

9	95	Quetzaltenango	913	Almolonga	362	42.5	57.5	42.3	15.2	Alta
21	96	Jalapa	2102	San Pedro Pinula	2576	42.5	57.5	37.8	19.7	Alta
14	97	Quiché	1404	Zacualpa	1459	42.6	57.4	44.6	12.8	Alta
13	98	Huehuetenango	1302	Chiantla	3236	43.1	56.9	40.6	16.2	Alta
14	99	Quiché	1403	Chinique	521	43.2	56.8	41.5	15.4	Alta
3	100	Sacatepéquez	311	Santa María De Jesús	501	43.3	56.7	42.7	14	Alta
7	101	Sololá	704	Santa Lucía Utatlán	727	44	56	40	16	Alta
14	102	Quiché	1412	Joyabaj	2956	44.3	55.7	41.3	14.4	Alta
12	103	San Marcos	1203	San Antonio Sacatepéquez	739	44.4	55.6	38.3	17.3	Alta
4	104	Chimaltenango	409	Patzicía	633	44.9	55.1	38.5	16.6	Alta
16	105	Alta Verapaz	1614	Chahal	1090	45	55.1	42.5	12.6	Alta
10	106	Suchitepéquez	1011	San Miguel Panam	347	45.2	54.8	42.1	12.7	Alta
13	107	Huehuetenango	1311	La Libertad	1513	45.6	54.4	36.4	18	Alta
7	108	Sololá	713	San Lucas Tolimán	726	45.7	54.3	40.6	13.6	Alta
21	109	Jalapa	2105	San Carlos Alzatate	630	45.7	54.3	38.6	15.7	Alta
12	110	San Marcos	1221	La Reforma	737	45.9	54.1	39.5	14.7	Alta
13	111	Huehuetenango	1307	Jacaltenango	1550	46.5	53.6	37.8	15.7	Alta
16	112	Alta Verapaz	1616	La Tinta	1574	46.6	53.4	38.7	14.7	Alta
9	113	Quetzaltenango	918	San Francisco La Unión	304	46.7	53.3	39.1	14.1	Alta
7	114	Sololá	711	Santa Catarina Palopó	144	47.2	52.8	36.8	16	Alta
10	115	Suchitepéquez	1010	San Antonio Suchitepéquez	1730	47.2	52.8	38.3	14.5	Alta
12	116	San Marcos	1210	Tejutla	1362	47.4	52.6	36.9	15.8	Alta
13	117	Huehuetenango	1304	Cuilco	2332	47.6	52.4	37.4	15.1	Alta
21	118	Jalapa	2101	Jalapa	5693	47.8	52.2	34.9	17.3	Alta
12	119	San Marcos	1229	San Lorenzo	482	47.9	52.1	37.8	14.3	Alta
16	120	Alta Verapaz	1607	Panzós	1947	47.9	52.1	39.5	12.6	Alta
16	121	Alta Verapaz	1612	Santa María Cahabón	2608	48.9	51.1	38.5	12.5	Alta

12	122	San Marcos	1212	Nuevo Progreso	1283	49	51	38.4	12.5	Alta
12	123	San Marcos	1215	Malacatán	3760	49	51	38.7	12.3	Alta
13	124	Huehuetenango	1332	Unión Cantinil	621	49.1	50.9	38.5	12.4	Alta
9	125	Quetzaltenango	916	Zunil	457	49.5	50.6	40.5	10.1	Alta
14	126	Quiché	1414	San Andrés Sajcabajá	1135	49.7	50.3	39.7	10.6	Alta
12	127	San Marcos	1219	San Pablo	1871	50	50	36.8	13.2	Alta
12	128	San Marcos	1220	El Quetzal	888	50.1	49.9	37.5	12.4	Alta
7	129	Sololá	719	Santiago Atitlán	983	50.5	49.5	35.3	14.2	Alta
16	130	Alta Verapaz	1609	San Pedro Carchá	7317	50.7	49.3	37.7	11.6	Alta
9	131	Quetzaltenango	903	Olintepeque	899	50.8	49.2	36.9	12.2	Alta
10	132	Suchitepéquez	1004	San Bernardino	435	50.8	49.2	38.2	11	Alta
12	133	San Marcos	1213	El Tumbador	1439	50.9	49.1	34.5	14.7	Alta
3	134	Sacatepéquez	306	Santiago Sacatepéquez	869	51	49	38.1	10.9	Alta
4	135	Chimaltenango	413	San Andrés Itzapa	773	51	49	36.6	12.4	Alta
1	136	Guatemala	110	San Juan Sacatepéquez	6565	51.5	48.6	36	12.5	Alta
10	137	Suchitepéquez	1009	San Pablo Jocopilas	800	51.4	48.6	35.6	13	Alta
10	138	Suchitepéquez	1015	Santa Bárbara	774	51.8	48.2	38	10.2	Alta
14	139	Quiché	1420	Ixcán	4079	51.8	48.2	38.4	9.8	Alta
3	140	Sacatepéquez	304	Sumpango	812	52.1	47.9	34.9	13.1	Alta
9	141	Quetzaltenango	914	Cantel	1122	52.1	47.9	37	10.9	Alta
13	142	Huehuetenango	1312	La Democracia	1977	52.1	47.9	37.4	10.5	Alta
15	143	Baja Verapaz	1504	Cubulco	2455	52.5	47.5	36.1	11.4	Alta
20	144	Chiquimula	2001	Chiquimula	2988	52.6	47.4	33.1	14.2	Alta
4	145	Chimaltenango	403	San Martín Jilotepeque	3015	53.1	46.9	36.5	10.4	Alta
10	146	Suchitepéquez	1013	Chicacao	2058	53.2	46.8	35.8	11	Alta
12	147	San Marcos	1227	Esquipulas Palo Gordo	413	53.3	46.7	35.8	10.9	Alta
17	148	Petén	1709	San Luis	3229	53.6	46.4	35.7	10.7	Alta

12	149	San Marcos	1202	San Pedro Sacatepéquez	2102	53.7	46.3	35.3	11	Alta
12	150	San Marcos	1225	San Cristóbal Cucho	678	53.8	46.2	35.8	10.3	Alta
15	151	Baja Verapaz	1503	Rabinal	1531	53.8	46.2	36.1	10.1	Alta
16	152	Alta Verapaz	1613	Chisec	4756	54.2	45.8	36.8	9	Alta
22	153	Jutiapa	2211	Comapa	1333	54.2	45.8	32	13.8	Alta
9	154	Quetzaltenango	905	Sibilia	353	54.4	45.6	30.9	14.7	Alta
4	155	Chimaltenango	408	San Miguel Pochuta	309	55	45	32.7	12.3	Alta
9	156	Quetzaltenango	921	Génova	1841	55	45	34.8	10.2	Alta
3	157	Sacatepéquez	308	Magdalena Milpas Altas	281	55.2	44.8	34.5	10.3	Alta
16	158	Alta Verapaz	1615	Fray Bartolomé De Las Casas	2476	55.7	44.3	35.5	8.8	Alta
4	159	Chimaltenango	414	Parramos	344	55.8	44.2	37.5	6.7	Alta
10	160	Suchitepéquez	1003	San Francisco Zapotitlán	605	55.9	44.1	36.7	7.4	Alta
13	161	Huehuetenango	1324	San Antonio Huista	494	55.9	44.1	32.6	11.5	Alta
12	162	San Marcos	1228	Río Blanco	203	56.7	43.4	36	7.4	Alta
16	163	Alta Verapaz	1601	Cobán	6695	56.8	43.2	33.3	9.9	Alta
10	164	Suchitepéquez	1017	Santo Tomás La Unión	305	57	43	31.8	11.1	Alta
18	165	Izabal	1803	El Estor	2420	57	43	33.3	9.7	Alta
12	166	San Marcos	1214	San José El Rodeo	692	57.1	42.9	32.5	10.4	Alta

Fuente: MINISTERIO DE EDUCACIÓN - SESAN
Tercer Censo Nacional de Talla en Escolares del Primer Grado de Educación Primaria del Sector Oficial de la República de Guatemala. 2008
Informe Final 2009

SESAN, 8va. Avenida 13-06 zona 1 Guatemala, Guatemala.
PBX: (502) 2411-1900 Fax: (502) 2411-1901

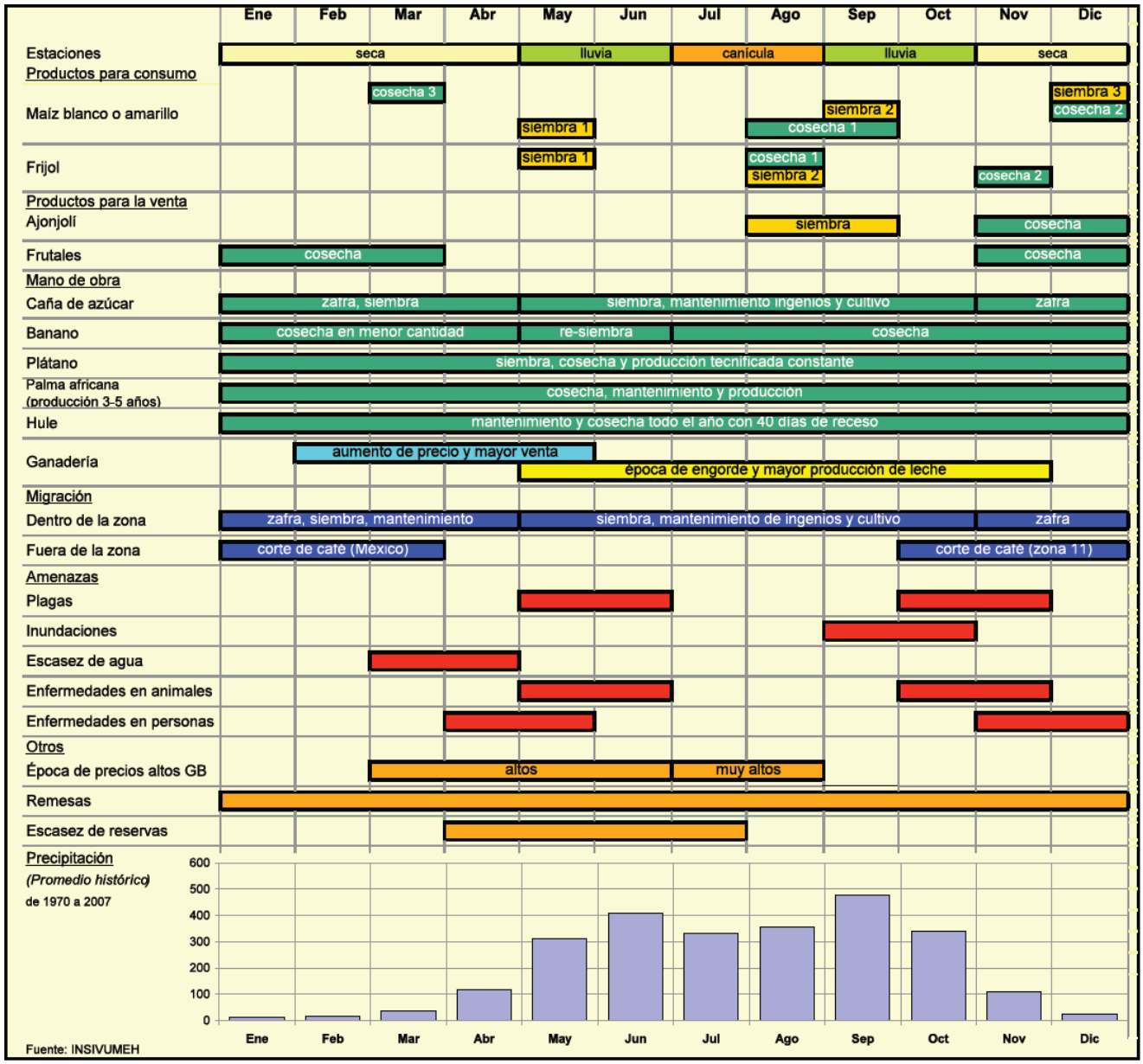
Todos tenemos algo que dar.

Annex C

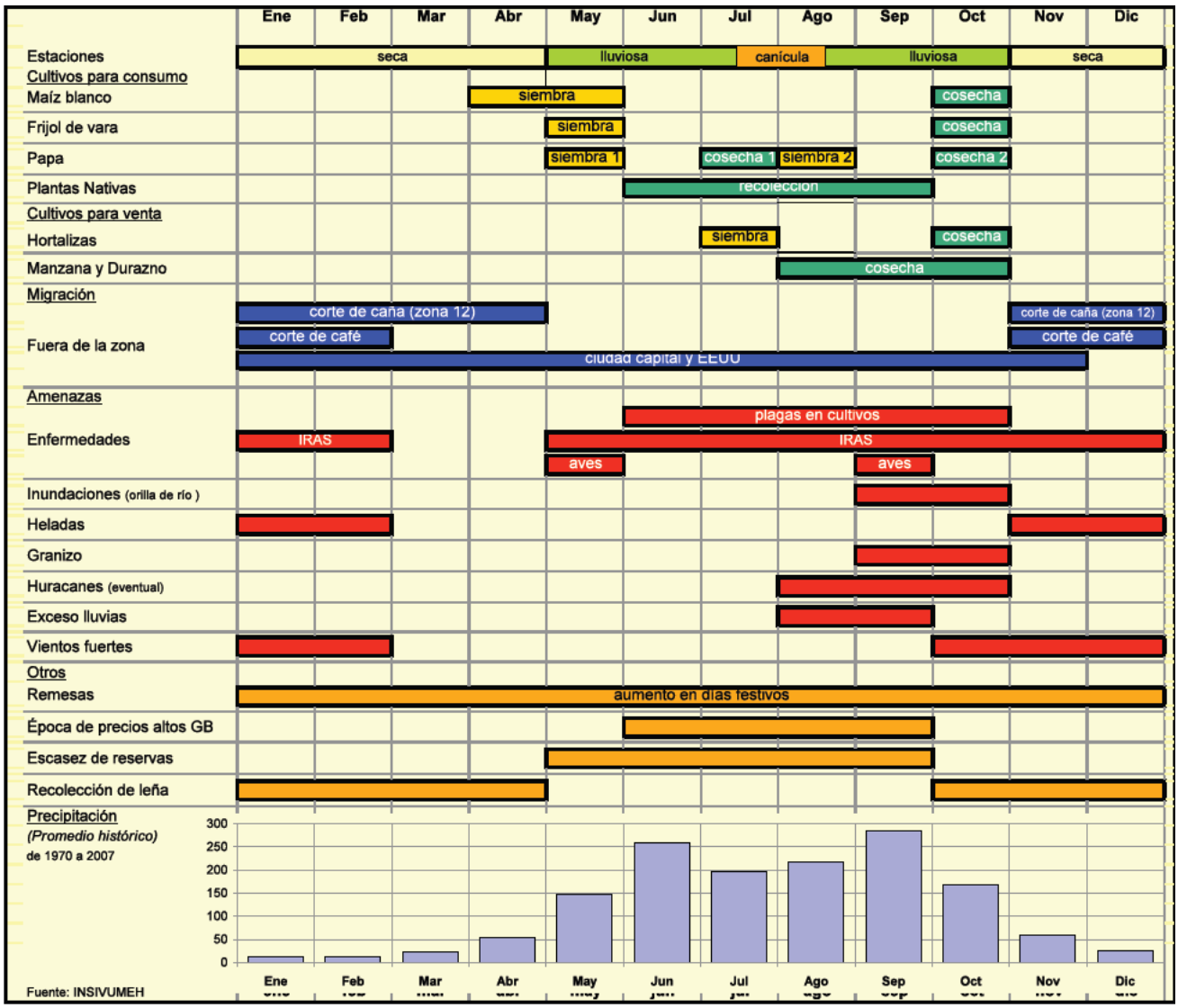
Livelihoods

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.

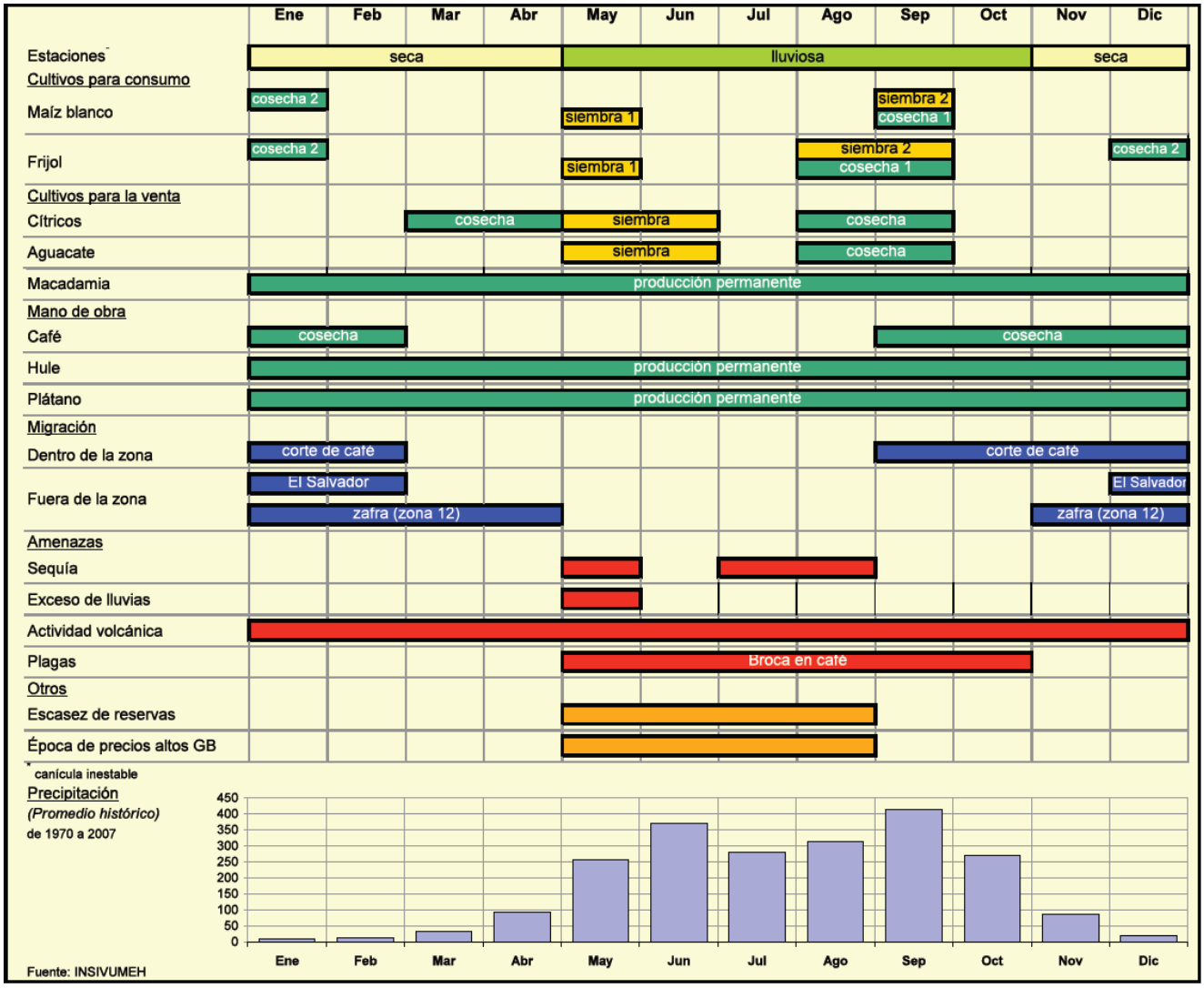
Agro industry for export and basic grains zone



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

Annex D

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.

Category	Indicative Services[90] Provided by UNDP[91]	Estimated Cost of Providing Services[92]
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. 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.	*US$191,250*

[90] 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.

[91] 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.

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

Category	Indicative Services[90] Provided by UNDP[91]	Estimated Cost of Providing Services[92]
	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***

Annex E. List of Local Organizations of the Nahualate River Basin

ORGANIZATION	LOCATION	COVERAGE	OBJECTIVE	CONTACT POINT
Asociación Fé y Amor	Racantacaj hamlet	Around Nahualá administrative center, in Nahualate sub-basin.	To support poor families and children.	Juan Chox Coj.
Asociación CODEIN	Nahualá administrative center	Some communities in Masá and Quiscab sub-basins	To promote environmental protection and restoration actions. Design, promote, and execute loans programs for production and commercialization focus on Nahualá communities.	Santiago Tambriz López.
Cooperativa Integral de Artesanía de Nahualá COPINA R.L.	Racantacaj hamlet	Chuicullil, Chirijox, administrative centers, Patzij, Tambrizab and Quiacasiguán.	To produce wood traditional craftwork	Felipe Cuc.
Alianza Mundial.	Racantacaj hamlet	Some communities in Masá and Quiscab sub-basins	Actions focused on health, education, and soil conservation.	T.S. Carlos Pérez.
Asociación de desarrollo integral comunal y recursos naturales raxquim ADICORENAR.	Parrasquim hamlet	Some communities in Masá and Upper Tzojomá sub-basins	To combat logging, promote sustainable reforestation, support productive projects to combat poverty and extreme poverty.	Lorenzo Ajtzalam.
ADIBOC.	Pajoka hamlet	Ixtacapa River Basin	To support productive programs.	
Asociación para el desarrollo integral Balam Abaj ASODIBA	Xojolá hamlet	Ixtacapa River Basin	To implement productive projects, infrastructure and sustainable programs.	Diego Alberto Marroquín.
Cooperativa Agrícola Integral Renacimiento.	Xojolá hamlet	Ixtacapa River Basin	Support environment and river basin management.	Diego Alberto Marroquín.
Asociación de la cuenca del río Nahualate.	Panquiney hamlet	Nahualate River lower basin	Cultivation of crops like pacaina, banana, and tomato and production of manure as fertilizer.	Diego Chox Quemá.
Asociación AFAN Agrupación de fomento agropecuaria Nahualá.	Patzité hamlet	Nahualate River lower basin	Cabbage production	Juan Tziquín Guarchaj.
Junta Coordinadora de Desarrollo Sostenible, Subcuenca Masá parte Alta JUCODESO.	Tzamjuyub, Chirijcalbal hamlets	Masá River upper basin	Promotes integral and sustainable development.	Diego Och Guarchaj.
Cooperativa Agrícola Santa Catarina.	Pasac hamlet	Masá and Ixtacapa Rivers upper basin	Produces organic coffee and honey.	

ORGANIZATION	LOCATION	COVERAGE	OBJECTIVE	CONTACT POINT
Cooperativa Santa Catarina.	Paquilá hamlet	Ixtacapa River lower basin	Production and commercialization of coffee	
CEDEPEM	Nahualá administrative center	Nahualate River upper basin	Productive projects focused on women	
Asociación Uniudos para Vivir Mejor. ASUVIM	Paquip´, Santa Clara la Laguna hamlets	Nahualate River lower basin	Production of organic coffee	Hector Chávez.
Asociación Femenina para el Desarrollo de Occidente de Guatemala AFEDOG.	Nahualá administrative center	Nahualate River upper basin	To support loans and marketing, “houses of family prosperity”	Cecilia Sac Guarchaj.
Asociación Agrícola Industrial Forestal de Nahualá, AGRIFORNA.	Caserío Tambrizab, Nahualá.	Nahualate River upper basin	Traditional craftwork and reforestation projects	Herbeth Flaviano Tambriz Tahay.
Asociación el Buen Sembrador.	Chuaxajil, Santa Catarina Ixtahuacán hamlets	Nahualate River upper basin	Support agriculture production, focus on sweet peas.	
Asociación de desarrollo integral y salud comunitaria Generación del maíz AGEMA	Nueva Ixtahuacán hamlet	Alaska Region	Land technical improvement, yield improvement and technical support for post- harvest management	Juan Guachiac y Guachiac, (Legal represenntative), Emilio Guachiac, Coordinator
Fundación Cristiana para niños y ancianos C.F.C.A Proyecto Hermano Pedro	Chuaxajil, Santa Catarina Ixtahuacán hamlet	Several communities in cold lands and cost of the Municipality	To support education though children sponsorship	Edwin Aroldo Chuc, Coordinator. Sara Catarina To Dionisio, Secretary.
Asociación Pro desarrollo integral de la mujer ALANEL	Barrio Chuijuyub, Santa Catarina Ixtahucán	12 communities of the Municipality, 8 in cold lands and 4 in the cost	To develop programs and projects focused on agriculture, craftwork, education, women rights, and culture	Catarina López García, Representante Legal.
Familia a Familia	Santa Catarina Ixtahucán hamlet	Communities of Antigua Ixtahuacán, Alaska Region and Masá River Basin	Forestry incentives, trout production	Adela Tambriz
Asociación Agrícola Xecaquixcan.	Xecaquixcan hamlet	Communities located in Tzojomá River Middle Basin	Vegetable production	
Asociación Agrícola Ixtahuacán.	Antigua Ixtahuacán hamlet	Communities located in Tzojomá River Middle Basin	Chinese pea production	Edy Guarchaj Guarchaj.
Programa de Desarrollo Aq'ab'al.	San Pablo Jocopilas Municipality	Communities Located in Ixtacapa and Masá River Middle basins	Primarily health care	Dr. Saul Batz.

Annex F: Government of Guatemala Endorsement Letter

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

Ministro

Guatemala, April 17th, 2012
Oficio No. MI 230-2012/MRSG-URCI

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

Subject: Endorsement for "Climate change resilient production landscapes and socio-economic networks advanced in Guatemala" project.

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

If approved the project will be implemented by the United Development Program (UNDP) and executed by the Ministry of Environment and Natural Resources of Guatemala (MARN).

Accordingly we are please to endorse hereby the "Climate change resilient production landscapes and socio-economic networks advanced in Guatemala" project for full support from the Adaptation Fund Board.

Sincerely,

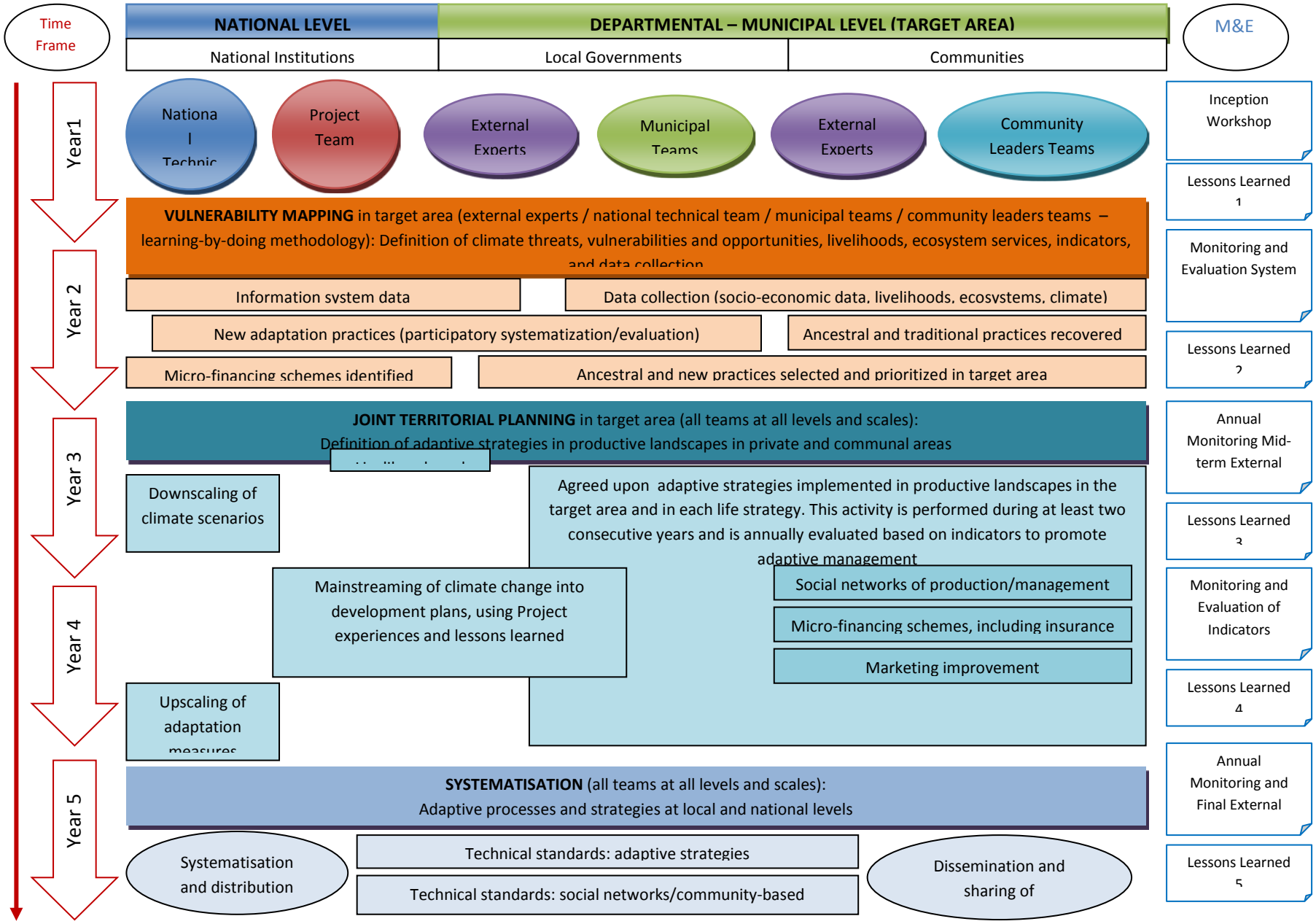
MINISTERIO DE AMBIENTE Y RECURSOS NATURALES — MINISTRA

Marcia Roxana Sobenes García
Minister of Environment and Natural Resources

c.c. *Adaptation Fund Board Secretariat*
Mr. Yannick Glemarec, Director Environmental Finance UNDP
Mr. René Mauricio Valdes, Resident Representative, UNDP Guatemala
Mr. Reis López Rello, Regional Technical Advisor, UNDP Regional Centre LAC
Ms. Paola Andrea Morris, Cooperation and Foreign Affairs –MARN-

20 Calle 28-58 Zona 10 Edificio MARN
PBX: 2423-0500
http://www.marn.gob.gt

Annex G: Critical route for project implementation



Annex H: SGP´s Eligibility Criteria for Grantees and Projects

1. **Organization carrying out the project**
    a. Registered NGO or recognized CBO in the village
    b. Existence and effectiveness of decision-making structures/ board
    c. Existence of a bank account
    d. Required administrative attachments
    e. Description of past experience and lessons learned from them
    f. Influence on and other groups in the village involved in the project
    g. Grassroots ownership (potential tensions for ownership of the project?)
    h. Identification of potential risks and barriers to the implementation
    i. Scoping and designing an adaptation project
    j. Engaging stakeholders in the adaptation process
2. **Local vulnerability and resilience analysis**
    a. Identification of climate related risks and their drivers
    b. Analysis of ecosystems and land practices current and future vulnerability
    c. Analysis of community current and future vulnerability
3. **Adaptive capacity and resilience building**
    a. Assessing vulnerability for climate change adaptation
    b. Assessment of current and future adaptive capacity
    c. Analysis of available coping strategies
    d. Previous attempts to tackle environmental issues
    e. Check if different options have been explored
    f. Technical / scientific survey conducted
    g. Viability of chosen option
    h. Promotion of indigenous coping practices
    i. Developing and formulating adaptation strategies
4. **Compliance of the goal with targeted environmental areas**
    a. GEF focal areas [operational programme]
        i. Climate Change adaptation under the countries CPS for the phase
        ii. CBA programme overall goal
    b. Approved CBA Country Programme Strategy
        i. Geographical sectors identified
        ii. Thematic areas identified
    c. Other National and Local Policies that should be influenced and or promulgated out of the project experiences
5. **Benefits of the project**
    a. Beneficiaries
        i. Most vulnerable groups (youths, women, fishermen, other disadvantaged etc)
        ii. Future generations
        iii. Other secondary beneficiaries via capacity building / raising awareness activities
        iv. Respect of gender equality, balance between socio economic groups, human rights etc
    b. Measurable benefits
    c. Long term and immediate benefits
    d. Sustainable livelihoods provisions both for immediate and long terms agenda
    e. Provision of Global Environmental Benefits (GEB)-optional but highly recommended
    f. Resilience building around and to promote these GEBs

6. Consistency of the project proposal

a. The goal, outcomes, and activities are consistent and support each other
b. The activities are feasible and can be handled by the community
c. The budget is realistic and cost effective
d. Complementarities with other activities conducted in the village or district
e. Potential to create synergies with other projects is explored
f. Sustainability: environmental and project impacts sustainability (exit strategy)

7. Resources

a. GEF 1:1 co funding principle
b. Other partners: actual and potential co-financing
c. Contribution of the community in cash / in kind
d. Commitment to financial reports, receipts keeping

8. Monitoring

a. Initial Vulnerability Assessment completed
b. Monitoring & planning (reports, other VRAs, participatory methodologies)
c. IAS indicators chosen

9. Pilot project criteria

a. Replication potential
b. Potential for integrating lessons in national policies
c. Quota of CBA projects respected
d. Grant requested in the margin of allowable grants
e. Duration of the project (1-2 years)
f. Potential for sharing / comparison with other CBA pilot projects feasible
g. Project is representative of national issues
h. Complementarities with the SGP operational phase country strategy
i. Innovativeness