



Community Development Plan for Climate Resilience: from the Perspective of Women

Arenal-Belize, Cayo District, Belize

March 2025



Prepared by:

Salvador Mesh, Esther Sanchez Sho, and Eduardito Mendez. Friends for Conservation and Development.

Cover photos:

Top: Participation of women from Arenal-Belize in a training session at Oxmul Coffee.

Bottom: Consultation workshop in the community of Arenal-Belize.

© Friends for Conservation and Development 2024

With the support of:



**Ministry of Rural
Transformation**
Community Development, Labour
and Local Government

And the financial support of:



This material has been funded with UK International Development Funds through the Biodiverse Landscapes Fund (BLF). The views expressed do not necessarily reflect the official policies of the British Government.

Contents

I. Technical Information.....	1
II. Summary:.....	2
III. Introduction: Geographic, Environmental and Socioeconomic Context.....	3
III.I Geographic Context	3
III.II Environmental Context	3
III.III Socioeconomic Context.....	4
III. Climate Change Vulnerabilities.....	5
III.I Impacts of Climate Change on the Community	5
III.II Impacts of Climate Change on Livelihoods	6
III.III Impacts of Climate Change on Natural Resources	7
IV. Interventions Needed to Adapt to Climate Change.....	8
V. References	12
VI. Appendix	12
Appendix 1: Classification of the Severity of Climate Change Vulnerability Impacts	12
Appendix 2: Classification of the Urgency/Priority of Identified Interventions.....	12
Appendix 3: Classification of Intervention Costs	13
Appendix 4: Meeting Minutes:	13
1: Consultation Workshop - September 13, 2024.....	13
2: Consultation Workshop - November 2, 2025	19
3: Validation Workshop - March 8, 2025	24

I. Technical Information:

Community	Arenal-Belize
Protected Area (if applicable)	Not applicable
Protected Area Zone (if applicable)	Vaca Forest Reserve
Area of Influence (ha)	Not applicable
Habitat	Tropical broadleaf forest on limestone soils
Population	945
Families	244
Ethnicity	Mestizo
Tenure	Private
Plan Date	March 2025
Update Date	March 2025
Main climate change vulnerabilities	- Changes in weather patterns - Drought - High temperatures (heat waves) - Intense rainfall - Flooding - Hurricanes - Forest fires - Biodiversity loss
Priority actions required for community adaptation to climate change	- Alternative livelihoods - Environmental governance - Infrastructure improvement - Improvement of agricultural practices - Community outreach
Participating organizations	Department of Agriculture Ministry of Rural Transformation La Inmaculada Roman Catholic School

II. Summary:

This Community Development Plan for Climate Resilience was developed through a participatory workshop held on September 13, 2024, followed by a second consultation on November 2, 2024, and a validation session on March 8, 2025. A total of 24 representatives from the Arenal-Belize community participated in the workshops. This plan reflects women's priorities regarding the actions and investments needed to help them adapt to the impacts of climate change (CC). This summary of local priorities is designed to advance the community's sustainable development by strengthening social resilience and the sustainable use of the community's natural resources, while contributing to more effective conditions for biodiversity conservation.

Objective:

Consult community leaders to generate a "living document" that can be updated periodically and serve as a guide for the actions and investments needed to help the community adapt to the impacts of climate change and achieve its sustainable development goals.

Specific Objectives:

- **Introduce the BLF:** Present to the community the project entitled "Resilient and Biodiverse Landscapes of Northern Mesoamerica," supported by BLF/DEFRA, clarifying the programme objectives and how the community can participate in the project.
- **Define Climate Change Impacts:** Conduct a participatory analysis of the impacts of climate change on the community, its livelihoods, and natural resources, prioritizing the predominant impacts.
- **Determine Adaptation Measures:** Identify adaptation and/or mitigation actions that, according to the community, are needed in the short term to reduce the impacts of climate change on people, their livelihoods, and natural resources.
- **Prioritize Actions and/or Investments:** Develop a list of the main actions or investments needed to promote the community's adaptation to climate change in the short/medium term, estimating the cost or effort required for each action or investment.
- **Consultation and Consensus:** Produce a planning document that details the community's priorities, ratified through a process of prior informed consent (PIC) by the community as a whole and/or its representatives, with evidence of consent.
- **Management and Investment:** Share the final version of the plan with the community and its partner organizations so the document can be used to explain climate change impacts to third parties, guide BLF investments, and mobilize additional resources from future funding sources.

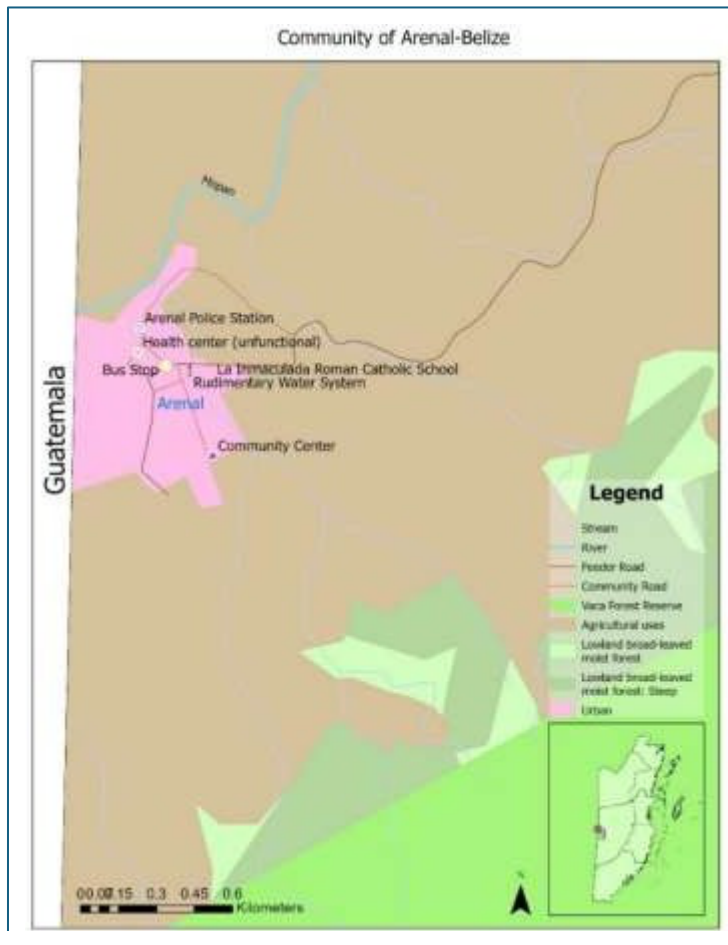
III. Introduction: Geographic, Environmental and Socioeconomic Context

III.I Geographic Context

Arenal Village is a cross-border community. One half of the village is located in Guatemala (Arenal-Guatemala) and the other half is in Belizean territory (Arenal-Belize). The nearest municipality is Benque Viejo del Carmen, located 3 kilometres north of Arenal-Belize. The village is recognized as an important buffer community for the Vaca Forest Reserve, which is located approximately 1.8 kilometres to the southeast.

Its geography includes hills and low-lying terrain. The soils are well-drained grey or brown clays over limestone substrate. The region receives approximately 2,000 mm of rainfall annually, with a pronounced dry season from February to May.

Although fragments of tropical broadleaf forest are common, small-scale agriculture dominates the landscape (see map).



III.II Environmental Context

Map 1: Geographic location of Arenal-Belize and important community infrastructure

The Arenal-Belize landscape is composed mainly of cultivated areas, pastures, and regenerating forests (wamiles). Timber trees are almost nonexistent; instead, species such as pixoy (*Guazuma ulmifolia*), papturo (*Cocoloba belizensis*), aceituno (*Simarouba glauca*), and cohune (*Attalea cohune*), among others, predominate. Consequently, the use of timber and non-timber forest resources is minimal. The community depends on forests for firewood collection, which is the main household fuel source.

Despite forest fragmentation, various birds and medium-sized mammals can still be observed, including chachalacas (*Phasianus motmot*), grackles (*Dives dives*), collared aracaris (*Pteroglossus torquatus*), white-nosed coatis (*Nasua narica*), and opossums (*Didelphis marsupialis*), among others. Animals associated with unfragmented forests, such as jaguars and tapirs, are less common. The community reports that game animals for household use are scarce. The Vaca Forest Reserve is located a few kilometres to the southeast and is an important area for biodiversity conservation and the protection of water sources.

The Mopan River, which flows northeast of the village (see map), is a key water source for the community, both for consumption and agricultural activities. Water quality in the

Mopan is influenced by seasonal conditions as well as water use in Guatemala, since the river crosses much of the Petén Department of Guatemala. The community also has temporary streams that fill during the rainy season.

III.III Socioeconomic Context

Arenal-Belize has a population of approximately 945 residents comprising about 244 families, according to the 2022 census. The vast majority of the community identifies as Mestizo, and the main language is Spanish. The village has a local government (village chairman) that receives support from the central government for community services and infrastructure improvements.

The community has basic services. A rural road (in deteriorated condition) connects the village to Mollejon Road, which leads to the George Price Highway. At the entrance to the village there is a bus stop where some residents offer taxi service to Benque Viejo. Arenal is connected to the national electricity grid and has potable water through a rudimentary system. There is no telephone coverage from local networks; however, the community relies on Guatemalan telecommunications for internet access and communication.

The community centre is located southeast of the village (see map). Although the building is in good condition, it does not have electricity. For education, children attend La Inmaculada Roman Catholic School. Guatemalan children also cross the border daily to receive an education in English. Access to secondary and university education requires travel to Benque Viejo and other nearby locations.

Arenal has a building designated as a medical clinic, but it is currently not operating. To receive medical care, residents must travel to Benque Viejo (1.8 km) or San Ignacio (19 km).

Economic activities in the village are diverse. Most of the community depends on small-scale agriculture as its main source of livelihood. Crops are grown for household consumption, such as corn and beans, as well as commercial products such as pepitoria, tomatoes, sweet peppers, watermelon, and seasonal fruits such as plantains and oranges. Medium-scale livestock farming is also practiced.

Some villagers occupy the northeastern area of the Vaca Forest Reserve (VFR) for agriculture and livestock farming, although no formal tenure arrangement has been established with the Forest Department. The exact number of farmers occupying this area and the productivity derived from the reserve are unknown. Agriculture and livestock farming in Arenal and neighbouring communities in northeastern Guatemala are responsible for the deforestation of 3,669.2 acres within the reserve (Guerra, 2022). In addition, forest fires caused by the inappropriate use of fire to clear land contribute to deforestation in Arenal-Belize and the northeastern VFR.

Because of its proximity to Guatemala, informal cross-border trade plays an important role in the local economy, as residents frequently cross the border in search of goods, services, and employment. For these reasons, the village has a police station with a Belize Defence Force presence. There is also a police checkpoint at the intersection of Arenal Road and Mollejon Road.

Some residents seek employment in nearby towns such as Benque Viejo del Carmen and San Ignacio, working in agriculture, construction, and the service sector (tourism).

III. Climate Change Vulnerabilities

The community of Arenal-Belize faces a range of vulnerabilities to climate change. In order of severity, the main vulnerabilities identified are (1) changes in weather patterns (intense rainfall, flooding, prolonged drought periods, and hurricanes); (2) high temperatures; and (3) biodiversity loss. These directly affect the community's quality of life and health, livelihoods, and surrounding natural resources. The following sections describe these vulnerabilities and their impacts.

III.I Impacts of Climate Change on the Community

Intense rainfall, flooding, and torrential rain during hurricanes and tropical systems mainly affect road conditions. This has made it more difficult to access services outside the community and markets, limiting economic opportunities. Although these events are short-lived, the deteriorated road conditions persist throughout the year. This problem has become more pronounced with the increase in intense rainfall and flooding.

The loss of crops and livestock pasture due to droughts, intense rainfall, flooding, and forest fires threatens the community's livelihoods. These losses occur throughout the year: droughts and forest fires from February to June, and flooding and heavy rainfall from June to November. These impacts contribute to food and economic insecurity among villagers.

Climate-related illnesses are another serious impact on the community. Factors such as air pollution during forest fires, dust resulting from drought, and high temperatures have contributed to worsening respiratory illnesses and allergies. Stomach illnesses have also been reported, which the community attributes to flooding and intense rainfall that contaminate water sources. The community has also experienced outbreaks of vector-borne diseases such as dengue, which are aggravated by climate change.

High temperatures require households to invest in appliances to cope with the heat. This is not only an additional expense, but also increases electricity demand for cooling and ventilation. Households face greater economic pressure because electricity bills are higher. Everyone in the community is affected, particularly during the dry season from February to June.

The loss of traditional knowledge was also identified as an extremely severe impact. Knowledge of plants, medicinal plants, edible plants, and wildlife is already being lost. Although other factors, such as the need to migrate for employment, contribute to this loss, biodiversity loss is also a factor. Tree mortality during droughts and deforestation caused by forest fires are among the main factors affecting the loss of this knowledge.

The shortage of potable water during the dry season and the use of this water for fighting forest fires are considered impacts of moderate severity. Water shortages occur only during the dry season, when temperatures are high and demand for irrigation and household consumption increases.

Table 1. Assessment of climate change impacts on the Arenal-Belize community, including severity, frequency, and percentage of the community affected. See Appendix 1 for a description of impact severity.

Vulnerability		Impacts Requiring Mitigation	Severity (1-10)	Frequency		% Populatio n affected
				Years	Days	
Changes in weather patterns	Drought	Lack of potable water (Resources to fight fires)	5	5	150	100
	Intense rainfall, flooding, hurricanes	Illnesses	9	5	365	100
		Road deterioration	10	20	365	100
		Economic losses	9	5	365	100
	High temperatures	Health impacts (polvo/calor)	9	5	365	100
		Need to invest in appliances	9	5		
		High electricity bill	8	10	150	100
Forest fires		Illnesses and impacts on well-being	9	5	150	100
Biodiversity loss		Loss of traditional knowledge	9	20	365	100

III.11 Impacts of Climate Change on Livelihoods

Changes in rainfall patterns have affected agriculture and livestock farming in the community. In recent years, an increase in crop pests has been reported, reducing production and causing economic losses. Prolonged droughts and high temperatures dry out pastures, a problem worsened by forest fires, leaving livestock without food. During the rainy season, cutworms also affect pasture quality, resulting in lower weight gain in cattle. Faced with these challenges, many farmers and livestock producers have been forced to seek other sources of income or invest in more resilient infrastructure.

High temperatures during the dry season reduce farmers' physical productivity and limit their working hours. They also affect the quality of agricultural products, since irrigation is insufficient to keep crops in good condition.

In the past, the community depended on hunting and the collection of wild foods. Timber was also used for house construction and as a source of income. Although other factors have contributed to deforestation and biodiversity loss, the community recognizes that climate change has affected the ecosystem to the point that active restoration and reforestation efforts are now required.

Table 2. Assessment of climate change impacts on livelihoods in Arenal-Belize, including severity, frequency, and percentage of the community affected. See Appendix 1 for a description of impact severity.

Vulnerability		Impacts Requiring Mitigation	Severity (1-10)	Frequency		% Population affected
				Years	Days	
Changes in weather patterns	Intense rainfall, flooding, hurricanes	Crop pests and livestock diseases	10	5	365	30
		Crop loss	8	3	240	80
		Economic costs (need to invest in alternatives)	10	5	365	100
	Drought	Crop loss	8	3	240	80
		Low production of crops and livestock	9	3	240	80
		Economic costs (need to invest in alternatives)	10	5	365	100
	High temperatures	Reduced working hours	8	4	120	100
		Low quality of products	8	4	240	80
	Forest fires	Loss of pasture	8	5	240	30
		Crop loss	8	3	240	80
Biodiversity loss		Loss of wild foods	10	5	365	100
		Loss of timber and non-timber products	10	5	365	100

III.III Impacts of Climate Change on Natural Resources

Intense rainfall and flooding cause water contamination. During rainy periods, fecal material has been reported in potable water. The community has also observed that waste from illegal dumping sites is washed into the river and streams during hurricanes and intense rainfall events. Although other factors, such as the lack of garbage collection, are primary causes, the community recognizes that intense rainfall associated with climate change has worsened the problem. Heavy rainfall also causes erosion in deforested areas of the community, reducing soil productivity.

In contrast, prolonged droughts and high temperatures have caused wells and water ponds to dry up. Although the community has a potable water system, water ponds are important for agriculture and livestock farming.

Climate variability and unpredictability, such as early rains or prolonged droughts, affect plant flowering cycles, causing flowering to occur earlier or later. The community has also noticed increased tree mortality from prolonged droughts and forest fires, resulting in deforestation and lower fruit-tree productivity, with impacts on wildlife.

These changes have contributed to biodiversity loss, particularly the loss of pollinators. Participants noted that beekeeping was formerly practiced, but the activity has largely disappeared because of the lack of nectar sources. They have also observed a decline in the presence of birds in the community, affecting seed dispersal, a key process for ecosystem regeneration.

Table 3. Assessment of climate change impacts on the natural resources of Arenal-Belize, including severity, frequency, and percentage of the community affected. See Appendix 1 for a description of impact severity.

Vulnerability		Impacts that Require Mitigation	Severity (1-10)	Frequency		% Population affected
				Years	Days	
Changes in weather patterns	Intense rainfall, flooding and hurricanes	Erosion	7	20	180	100
		Poor water quality (fecal material reported)	9	10	365	100
	Droughts	Delayed flowering	7	5	365	100
		Wells dry up	9	5	120	100
		Deforestation	7	5	120	100
Forest fires		Deforestation	7	5	120	100
Biodiversity loss		Loss of seed dispersers	8	10	365	100
		Loss of pollinators	9	10	365	100

IV. Interventions Needed to Adapt to Climate Change

In response to the various challenges of climate change, the women's community group identified six priority impacts and five "key actions" for adaptation and mitigation. These interventions are important because they help reduce multiple climate change impacts and aim to protect livelihoods, conserve natural resources, and improve community well-being. See Table 4 for the costs and prioritization of the interventions.

1. Alternative livelihoods: The Arenal-Belize community depends on a variety of activities for its livelihood, with agriculture being the sector most affected by climate change. In response, diversifying sources of income is prioritized to strengthen household economic resilience.

- Women's involvement in the household economy: three potential women-led enterprises were identified:
 - i. Raising local chickens: There is local and cross-border demand for local chickens and chicks. Developing this enterprise will require support for the construction of chicken coops and for incubators, feeders, drinkers, feed, water storage tanks, chicken-processing equipment, and other items.
 - ii. Artisanal bakery: There is currently local demand for bread and pastries. The women indicated that a traditional oven is the most cost-effective option for the enterprise. They will need support to construct the oven and obtain equipment such as

- thermometers, baking trays, a worktable, scales, molds, containers, and other items.
- iii. Sustainable handicraft production and the creative economy: There is potential to reach external markets through handmade products such as rugs and bags made from banana fibre, as well as embroidered clothing and other items. Since some women already produce these items, support would focus on acquiring raw materials and marketing the products.
- Agro-processing: During crop harvest and fruiting seasons, surplus production results in waste. Agro-processing was identified as a key strategy to reduce these losses, generate additional income, and strengthen food security. However, the community requires training workshops and support with specialized equipment to implement this practice effectively.

2. Environmental governance: The community identified environmental governance as a second priority for climate change adaptation. This key action seeks to ensure the management and conservation of natural resources through participatory processes, implementation of environmental laws, and coordination among the community, local stakeholders, government, and organizations:

- Reforestation and restoration of key areas, such as the school and public spaces in the community.
- A community cleanup campaign, including riparian areas and streams.
- Implementation of a household garbage collection programme to improve waste management.
- Creation of a collection point for transferring waste to the central sanitary landfill.
- Enforcement of environmental laws, including wildlife and forest protection and the regulation of agricultural fires.
- Community awareness on proper management and responsible disposal of household waste.

3. Infrastructure improvement: The community identified infrastructure improvement as the third priority for climate change adaptation. Key interventions include:

- Establishment of a community pharmacy to improve access to basic medicines and first aid.
- Thermal insulation of the school roof to regulate classroom temperatures, reduce the impacts of extreme heat, and improve the learning environment.
- Installation of fans at the school to mitigate the effects of heat waves and improve classroom conditions.
- Acquisition of firefighting equipment for the community, such as a bowser, trailer, and fire-suppression tools. This will enable a more effective response, reducing the loss of natural resources and property as well as exposure to smoke and other pollutants.

4. Improvement of agricultural practices: Because few of the households participating in the consultations are farmers or livestock producers, strengthening agricultural practices was identified as the fourth priority. Key interventions include:

- Implementation of fodder banks to ensure feed for livestock during prolonged droughts and forest fires, reducing dependence on natural pastures.
- Inga alley cropping, a technique that improves soil fertility, promotes nutrient cycling, and optimizes moisture retention.
- Adoption of agroforestry systems to diversify crops and increase household income.
- Formalization of agricultural cooperatives and associations (livestock producers and farmers): Formalizing both livestock producers and farmers is a key intervention to strengthen knowledge exchange and improve resilience. Formal registration of these producers is also important, as local agricultural products have on multiple occasions been confiscated at the police checkpoint because they were considered contraband.

5. Community outreach and education on the risk of diseases caused or aggravated by climate change. By understanding how climate change affects the spread of illness (such as heatstroke, respiratory illnesses from wildfire smoke, or outbreaks of vector-borne diseases such as dengue), the community can implement adaptation strategies, including better hygiene practices and healthier lifestyles, to reduce the vulnerability of the groups most affected, such as children and older persons.

Table 4. Description of interventions needed to adapt to climate change, their priority, and cost.

Sector	Impacts Requiring Mitigation	Intervention	Cost	Priority	Community contribution	Other stakeholders that can contribute
Livelihoods	Loss of pasture	Improvement of agricultural practices Bancos de forraje	5k≥ ≤10k	2	Labour	Development Finance Corporation Ministry of Agriculture Belize Livestock Producers Association Belitrade FCD Cooperatives Deaprtment of Belize
	Crop loss	Improve agricultural and livestock practices - Improvement toward agroecological and sustainable practices. - Formalization of agricultural cooperatives and associations (livestock producers and farmers)	>25k >25k	3 2	Labour	
	Economic costs (investment in alternatives is needed)	Alternative livelihoods - Women’s involvement in the household economy - Agro-processing	>25k	4	Labour; time	
			5k≥ ≤10k	3		
Natural Resources	Deforestation	Environmental governance - Reforestation and restoration in key areas such as the school and community public spaces Improvement of agricultural practices - Alley cropping - Agroforestry systems	5k≥ ≤10k >25k	3 3	- Nursery care - Labour - Time; area for reforestation	Belize Forest Department FCD La Inmaculada Roman Catholic School Local government
	Poor water quality	Environmental governance - Cleanup campaign - Create a waste collection site - Law enforcement - Awareness-raising - Garbage collection	>25k	4	Labour	
Community	Health and well-being impacts	Community outreach Disease awareness	5k≥ ≤10k	4	Space; water Labour; school cooperation	Ministry of Health and Wellness Local professionals and pharmacists Ministry responsible for rural development Ministry of Education, Science and Technology
		Infrastructure improvement: - Community pharmacy - Firefighting equipment (bowser, trailer...) - School roof insulation - Fans at the school	>25k >25k	4		
			>25k	3		
			1≥ ≤5k	4		

V. References

Guerra, W. (2022). A Comprehensive Report of Human Activities and Monitoring Interventions in The Vaca Forest Reserve. Friends for Conservation and Development. Internal document.

VI. Appendix

Appendix 1: Classification of the Severity of Climate Change Vulnerability Impacts

Range	Description	Definition
10	Dangerously high	Dangerously high impact, with catastrophic effects that put the very existence of the community at risk.
9	Extremely high	Extremely high impact, with critical and widespread adverse effects that seriously threaten the viability of the community.
8	Very high	Very high impact, with severe adverse effects that seriously affect the community.
7	High	High impact, with significant and widespread adverse effects that substantially affect the community.
6	Moderately high	Significant impact, with clear and widespread adverse effects in the community.
5	Moderate	Clear and noticeable impact, with some adverse effects on the community.
4	Moderately low	Moderate impact, with minimal effects on the community.
3	Low	Slight impact, noticeable but not concerning.
2	Very low	Very slight impact, barely noticeable.
1	No severity	No noticeable impact.

Appendix 2: Classification of the Urgency/Priority of Identified Interventions

Range	Description	Definition
4	Critical Priority	Failure to implement it may result in consequences that are serious or catastrophic.
3	High Priority	Failure to implement it may lead to a significant decline in quality of life and livelihood security.
2	Moderate Priority	Implementation can wait for a limited time but should be planned for the medium term.
1	Low Priority	They do not require immediate resources and can be implemented gradually.

Appendix 3: Classification of Intervention Costs

Range	Description
6	More than \$25 thousand
5	Between \$15 and \$25 thousand
4	Between \$10 and \$15 thousand
3	Between \$5 and \$10 thousand
2	Between \$1 thousand and \$5 thousand
1	\$1 thousand or less

Appendix 4: Meeting Minutes:

1: Consultation Workshop - September 13, 2024

Resilient and Biodiverse Landscapes of Northern Mesoamerica.

Workshop/Meeting: Community consultation for climate smart community development plan: Arenal-Belize Village.

Virtual (indicate platform) / Face-to-face:

In person

Link/Location:	Casa Caracol: Arena-Belize, Cayo District
Landscape:	Maya Forest Belize: Central Corridor Cluster
Date:	September 13, 2024
Starting time: 9:00	End Time: 11:30
Component: 1	Activity: 2.1

Participants:

No.	Name	Institution/Organization
1	Jessie Madrid	Ministry of Agriculture, Food Security and Enterprise
2	Heidy Cob Canto	Ministry of Agriculture, Food Security and Enterprise
3	Wilford J. Pook Jr.	FCD
4	Delcy Sanchez	Arenal-Belize
5	Debora Valladarez	Arenal-Belize
6	Janeily Valladarez	Arenal-Belize
7	Lesbia Sanchez	Arenal-Belize
8	Gilma Henri	Arenal-Belize
9	Agripina Alcozer	Arenal-Belize
10	Moises Tobias	Arenal-Belize
11	Hugo Alberto Gonzales	Arenal-Belize

12	Salvador Mesh	FCD
12	Eduardito Mendez	FCD
14	Esther Sanchez Sho	FCD

Disclaimer: Consultations were held in Spanish.

Meeting started later than anticipated (10 a.m.); turnout was low.

Welcome:

Esther Sanchez Sho welcomed all participants and introduced the BLF project. Esther Sanchez Sho also highlighted the role of FCD in the Vaca Forest Reserve, and why work in Arenal-Belize matters. Arenal-Belize is a buffering community to the Forest Reserve, as such FCD has been working in the community for several years. Esther explained past work of FCD:

- Restoration along the Mopan River.
- Establishment of agroforestry plots in the community.
- Rearing of chicken by local women.

Due to time the agenda was modified: presentation on climate change was not done. Eduardito and Salvador led participatory discussion with all participants to identifying climate change vulnerabilities and primary impacts of climate change:

Climate change vulnerabilities:

Salvador explained that a similar consultation session was conducted in the vaca community. The vulnerabilities identified by the vaca were high temperatures, forest fires, flooding, hurricanes, forest fires, drought, intense rains, and strong winds. The community members agreed that these are also the same vulnerabilities they were facing, however they opted to remove strong winds, and added loss of biodiversity. They also lumped all weather related vulnerabilities to “Changes in weather patterns”.

List of identified and prioritized vulnerabilities:

1. Changes in weather patterns
 - Drought
 - High temperatures (heat waves)
 - Intense rainfall
 - Flooding
 - Hurricanes
2. Forest fires
3. Biodiversity loss

Climate change impacts

Participants systemically discussed the impacts of climate vulnerability on the community, natural resources and livelihoods. The severity of the impacts was also defined, as well as the duration of the event, and the percentage of the community that is affected by the impacts.

Impacts of climate change on the community.

The main impact of changes in weather patterns, specifically torrential rains and flooding is the deterioration of road to the community and to farmlands. Roads are a main infrastructure for the

community since a lot of people are engaged in commerce between Guatemala and Belize, and farm roads are critical for transporting agricultural products from the farm to markets.

The community also identified impacts to health, especially high temperatures. Several members reported an increase in allergies due to the heat, as well as outbreaks of flu and other respiratory illnesses during intense rainy season and especially during the fire season when smoke is prevalent for prolonged periods.

Changes in weather patterns also contribute to economic losses in the community. During the dry season, prolonged droughts cause farmers to lose their crops to the lack of water and high temperatures. Similarly, the dry season causes infections in crops and livestock which has reduced productivity over the years.

The loss of biodiversity, a combined effect of forest fires and deforestation for agriculture has led to the loss of local knowledge of flora and fauna. The youth no longer depend on the forest for food, and economic activities related to timber and non-timber resources is no longer possible.

The community agreed that while these impacts have been prevalent over many years, it has only become worse in the last 5 years. In all cases, 100% of the community is affected by the impacts brought by climate change.

Vulnerability	Impact	Severity	Years	Days	% community affected
Changes in weather patterns	Lack of potable water	5	5	150	100
	Illnesses	9	5	365	100
	Road deterioration	10	20	365	100
	High electricity bill	8	10	150	100
	Resources to fight fires	5	5	120	100
	Economic losses	9	5	365	100
High temperatures	Health impacts (dust/heat)	9	5	365	100
	Need to invest in appliances	9	5		
Loss of biodiversity	Loss of traditional knowledge	9	20	365	100

Impacts of climate change on natural resources

Water quality is the natural resource primarily impacted by climate change. Water quality is primarily impacted by illegal dumping in ephemeral streams and free ranging livestock. This being the main factor, contamination is exacerbated by flooding events and torrential rains which wash garbage and residual faeces into the river and even underground water.

During the dry months, farms also experience water shortages, especially those which are located far from the river or permanent sources of water. By contrast, the village rarely experiences water shortages because of the recent upgrade of the rudimentary water system.

Loss of pollinators because of deforestation and fires--aggravated by climate change--was identified by community members as another main impact.

Other important impacts include a reduction of pasture quality during both the rainy and dry season, loss of local seed dispersers from the continues deforestation, erosion of agricultural lands, and delayed and out of season flowering of plants, both domestic fruit trees and wild plants

Vulnerability	Impact	Severity	Years	Days	% community affected
Changes in weather patterns	Erosion	7	20	180	100
	Delayed flowering	7	5	365	100
	Wells dry up	9	5	120	100
	Poor water quality (fecal material reported)	9	10	365	100
	Deforestation	7	5	120	100
High temperatures	Low pasture quality	8	5	120	30
Biodiversity loss	Loss of seed dispersers	8	10	365	100
	Loss of pollinators	9	10	365	100

Impacts of climate change on livelihoods

Outbreaks of pests during prolong droughts, extreme temperatures and intense rainy period are the primary impact of climate change on the community's livelihoods, farmers and cattle ranchers. These pests range from fungus outbreaks, locusts, white flies, hoppers and cutworms in pasture lands. Pest outbreaks cause economic losses, which results in farmers having to invest in re-planting of crops, or alternative crops and livelihoods.

Loss of biodiversity has caused the loss of forest food and economic opportunities in the timber and non-timber industries.

With high temperatures and unpredictable torrential rains, dry spells and heat waves, farmers have noticed increase in diseases for cattle, loss of weight gain of cattle, as well as a reduction in crop yields. Crop failure is also common.

Farmers have also noticed a reduction in crop quality during torrential rains, heat waves, and dry spells.

Similarly, farmers have been forced to reduce working hours during the months of April and May due to high temperatures.

Vulnerability	Impact	Severity	Years	Days	% community affected
Changes in weather patterns	Pests	10	5	365	30
	Loss of pasture	8	5	240	30
	Livestock diseases	9	10	365	30
	Crop loss	8	3	240	80
	Low production of crops and livestock	9	3	240	80
	Economic costs (need to invest in alternatives)	10	5	365	100
High temperatures	Reduced working hours	8	4	120	100
	Low quality of products	8	4	240	80
Loss of biodiversity	Loss of food wild foods	10	5	365	100
	Loss of timber and non-timber products timber and non-timber products	10	5	365	100

Although the consultation was for climate change, community members highlighted that continued neglect and inaction of the local government has increased their vulnerability to climate change.

Interventions for mitigation or adapting to climate change were not identified due to low participation and women present had to return home to look after their children who had been dismissed from school.

The consultation ended until 12:26.

Working agreements:

- Community input will be summarised and brought back for validation.

Follow-up actions

- A second consultation will be carried out later, preferably during the weekend to accommodate women. The consultation will validate impacts, and at the same time identify interventions for climate change adaptation.

Annex:

1. Agenda



Resilient and Biodiverse Landscapes of Northern Mesoamerica.

Workshop/Meeting: Workshop

Virtual (indicate platform) / In-person:	In person
Community:	Casa Caracol: Arenal-Belize
Date:	September 13, 2024
Start:	9:00 a.m. End: 3:00 p.m.
Component:	1 Activity: 2.1

Objective: Develop a Climate-Smart Adaptation Plan for Arenal Village.

EXPECTED RESULTS:

1. List of the community's climate change vulnerabilities and their associated impacts in Arenal-Belize.
2. Prioritization of climate change impacts and adaptation measures by the Arenal-Belize community.

Time	Activity	Responsible
9:00-9:05	Welcome	Esther Sanchez Sho
9:05-9:20	Participant introductions and expectations	Salvador Mesh
9:20-9:25	General description of the session and expected results	Salvador Mesh
9:25-9:45	About the BLF Project	Salvador Mesh
9:45-10:15	Presentation on Climate Change: regional and local perspectives; climate change vulnerabilities	Salvador Mesh
10:15-10:20	BREAK	
10:20-11:00	Identification of climate change vulnerabilities	Led by Salvador Mesh
11:00-12:00	Group session 1: Identify the impacts of climate vulnerabilities on livelihoods, community well-being, and natural resources	Salvador Mesh
12:00-1:00	LUNCH	
1:00-2:00	Group session 2: Identify and prioritize adaptation measures; estimate costs; prioritize community actions/interventions	Moderators
2:00-2:45	Group presentations on adaptation measures, priorities, costs, and community contributions	Participants
2:45-3:00	Closing remarks	Esther Sanchez Sho

2. List of participants:

ATTENDANCE LIST										Biodiverse Landscapes Fund				UKaid		WCS		FCD	
Resilient and Biodiverse Landscapes of Northern Mesoamerica																			
Biodiverse Landscapes Fund (BLF)-WCS Wildlife Conservation Society (WCS)																			
Event Name: Community Climate Adaptation Plan Consultation										Type of Event: Planning/Analysis Workshop									
Date & Time (Start/End): September 13th, 2024										Location (Town/Village): Arenal Village, Belize									
No.	Names and Surnames	Entity/Organization	Gender	Age	Occupation	Telephone	Email	Place of Origin	Residence										
1	Jesse Rodriguez	WCS	M	43	1	685-1457		Cayo											
2	Heidy Cob-Canto	WCS	F	43	1	631-0238	heidy.cob@gmail.com	Cayo											
3	Miguel J. Pook Jr.	FCD	M	43	1	667-2085	jpook@fcdbelize.org	Cy											
4	Delany Sanchez		W	43	1	650-5872-6857	delany.sanchez@fcdbelize.org	Arenal											
5	Debara Valladares		W	43	1	633-6873	debara.valladares@gmail.com	Cayo	Arenal										
6	Imelda Valladares		W	43	1	3107-9739	imelda.valladares@gmail.com	Cayo	Arenal										
7	Lesbia Sanchez		W	43	1	7658-0871	lesbia.s72@gmail.com	Cayo	Arenal										
8	Gilma Henri		W	43	1	45131391	gilmahenri@gmail.com	Cayo	Arenal										
9	Angela Alvarez		W	43	1	4524-1348		Cayo	Arenal										
10	Moises Fajin		M	43	1														
11	Eduardo Nodet	FCD	M	43	1	622-4584	eduardo.nodet@gmail.com	Cay											
12	Hugo Lila Gonzalez		M	43	1														

Symposium									
Sex	Male	Female	Gender	Age	Occupation	Telephone	Email	Place of Origin	Residence
Male	3	2	Gender	4	Occupation	Telephone	Email	Place of Origin	Residence
Female	3	2	Gender	4	Occupation	Telephone	Email	Place of Origin	Residence
Age	10-12	13-15	16-18	19-25	26-35	36-45	46-55	56-65	66+
Occupation	1	2	3	4	5	6	7	8	9

Language Community									
English	Spanish	Mayan	Guatemala	Honduras	El Salvador	Costa Rica	Panama	Colombia	Venezuela
English	5	1	1	1	1	1	1	1	1
Spanish	1	1	1	1	1	1	1	1	1
Mayan	1	1	1	1	1	1	1	1	1
Guatemala	1	1	1	1	1	1	1	1	1
Honduras	1	1	1	1	1	1	1	1	1
El Salvador	1	1	1	1	1	1	1	1	1
Costa Rica	1	1	1	1	1	1	1	1	1
Panama	1	1	1	1	1	1	1	1	1
Colombia	1	1	1	1	1	1	1	1	1
Venezuela	1	1	1	1	1	1	1	1	1

ATTENDANCE LIST										Biodiverse Landscapes Fund		UK International Development		WCS		FCD	
Resilient and Biodiverse Landscapes of Northern Mesoamerica																	
Biodiverse Landscapes Fund (BLF)-Wildlife Conservation Society (WCS)																	
Event Name		Community Climate Adaptation Plan Consultation		Type of Event		Planning/Analysis Workshop		Modality		In-person							
Date & Time (Start/End)		September 17th, 2024		Location (Lat/Longitude)		Arenal Village Belize											
No.	Names and Surnames	Entity/Organization	Gender	Age	Phone	Telephone	Email	Place of Origin									
1	Salvador Mesh	FCD	M	13	2	6	623-5539	smesh@fcd.org.bz	San Antonio								
2	Esther Sanchez Silva	FCD	F	13	1	04	822-2657	Esther.sanchez@fcd.org.bz									
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	

Symptomatology				Mobility									
Sex	Visual	Audio	Verbal	Visual	Audio	Verbal	Visual	Audio	Verbal	Visual	Audio	Verbal	
Male	1	1	1	1	1	1	1	1	1	1	1	1	
Female	1	1	1	1	1	1	1	1	1	1	1	1	
Age	1	1	1	1	1	1	1	1	1	1	1	1	

3. Image of participants on virtual platform or photographs



2: Consultation Workshop - November 2, 2025

Resilient and Biodiverse Landscapes of Northern Mesoamerica.

Workshop/Meeting: Community consultation for climate smart community development plan:
Arenal-Belize Village.

Virtual (indicate platform) / Face-to-face:

In person

Link/Location:

Community Center: Arenal-Belize, Cayo District

Landscape:	Maya Forest Belize: Central Corridor Cluster
Date:	November 13, 2024
Starting time: 9:00	End Time: 11:30
Component: 1	Activity: 2.1

List of participants:

No.	Name	Institution/Organization
1	Mitzi Sanchez Rodriguez	Arenal-Belize
2	Crispina Alcozer	Arenal-Belize
3	Primitiva Ruiz	Arenal-Belize
4	Delcy Sanchez	Arenal-Belize
5	Adrian Cus	Ministry of Rural Transformation and Local Government
6	Abel Sila Jr.	Principal: La Inmaculada RC School
7	Johana Gonzalez	Arenal-Belize
8	Salvador Mesh	FCD
9	Eduardito Mendez	FCD

Disclaimer: consultation session was held in Spanish

Summary of the meeting:

The meeting started around 10:14 a.m.

Eduardo Mendez from FCD opened the meeting by welcoming attendees.

Because there were new participants, Salvador described the BLF project and why work in Arenal is critical.

Salvador outlined the objectives of the session:

1. Validate climate change impacts identified in the September session
2. Identify interventions for climate change adaptation.

Due to time constraints and low turnout, the climate change presentation was not carried out.

Salvador and Eduardito proceeded to validate the climate change impacts identified in the previous session.

All participants agreed with the climate change vulnerabilities. Change in weather patterns was determined to be the main vulnerability, followed by forest fires and loss of biodiversity.

Participants corroborated all previously identified climate change impacts on the community, natural resources and livelihoods.

The school principal added that heat waves and high temperatures contribute to low productivity of students.

Due to low participation and non-representation of farmers, participants decided to select 3 primary impacts from the long list of each sector. Adaptation intervention for each selected impact was then collectively discussed.

Livelihoods:

Loss of pasture due to pests, fires and drought: fodder banks were identified as a primary intervention.

Loss of crops and reduction in crop yields: improvement of agricultural practices. The participants felt that this impact is critical but however felt that they could not adequately represent the voices of farmer. They agreed that these should be further consulted and developed with farmers.

High economic costs/losses: several interventions were identified.

- Agroporcessing for value added products for additional household income, and as means of salvaging crop surplus.
- Involvement of women in household income by the rearing of chichens and artisanal products.
- Formalization of farmer and livestock associations.
- Registering of cooperatives to reduce confiscation of local produce which are often mistaken for contraband.

Natural resources

Deforestation: participants identified reforestation and restoration in key community areas such as public spaces and riparian zone of the mopán as a key intervention for climate change adaptation. Reforestation at the school compound was also identified. However, fencing has to be considered since horses roam freely in the village and trees are a safety concern for students. Adopting alley cropping and agroforestry plots were also identified as another appropriate intervention to mitigate the impacts of deforestation.

Low water quality due to contamination that is exacerbated by flooding and torrential rains: community sensitization on proper garbage disposal was proposed as a long-term intervention. However, the participants said that due to a lack of proper garbage collection schedule, and a formal transfer station, community members have been improperly disposing their waste. Therefore, support from the village council and central government is needed to establish a garbage collection program, and a formal transfer station. Application of already existing laws and regulations along with the local government and relevant agencies was also suggested as an effective intervention. Community members also suggested a community cleanup campaign along roads and main bodies of water and ephemeral streams to reduce the contamination of water.

Community

Impacts on health: community outreach on the increased risks of climate change related diseases and vector transmitted diseases was identified as a primary intervention. The participants recognized that sensitization and awareness of the community is very important in preventing climate related illnesses. Community members also complained that medical services and medications are hard to come by. Access in Arena-Guatemala is also challenging

since they are required to be Guatemalan citizens to obtain medical care. Although the community has a building that was designated as a community clinic, it has not been functioning for several years now. Participants recommended the operationalization of a community pharmacy to improve access to health care and medications.

Impacts of fire: fire equipment was recommended as an adaptation measure. While the community is willing to assist in addressing forest fires, they do not have proper equipment to put out fires.

Impacts of high temperatures on school children: participants recommended the isolation of the schools ceiling as the primary need for the improvement of the school's learning environment. The school is also in need of fans, either standing or ceiling fans to improve ventilation in classrooms.

The session concluded around 12:56. The participants reiterated that while these interventions have been identified, support from the local and central government such as the ministry of rural transformation and ministry of education are critical for the successful implementation of interventions for adaptation to climate change.

Working Agreements:

FCD will compile community inputs, transcribe into technical language where possible and arrange for a validation session.

Follow-up Actions:

A validation session will be held to corroborate FCD's transcription of outcomes of the community consultation.

Annex:

1 Agenda:

Resilient and Biodiverse Landscapes of Northern Mesoamerica.

Workshop/Meeting: Workshop

Virtual (Indicate platform) / In-person:	In person
Community:	Arenal Community Center
Date:	November 2, 2024
Start:	9:00 a.m. End: 12:00 p.m.
Component:	1 Activity: 2.1

Objective: Develop a Climate-Smart Adaptation Plan for Arenal Village.

EXPECTED RESULTS:

1. List of the community's climate change vulnerabilities and their associated impacts in Arenal-Belize.
2. Prioritization of climate change impacts and adaptation measures by the Arenal-Belize community.

Time	Activity	Responsible
9:00-9:05	Welcome	Eduardo Mendez
9:05-9:20	Participant introductions and expectations	Eduardo Mendez
9:20-9:25	General description of the session and expected results	Salvador Mesh
9:25-9:35	About the BLF Project	Salvador Mesh
9:35-9:45	Presentation on Climate Change: regional and local perspectives; climate change vulnerabilities	Salvador Mesh
9:45-10:15	Wildlife vulnerabilities and impacts identified in the previous session	Led by Salvador Mesh
10:15-10:20	Methodology for today's workshop	Salvador Mesh
10:20-10:30	BREAK	
10:30-11:00	Group session 1: Prioritize climate change impacts; identify and prioritize adaptation measures; estimate costs; prioritize community actions/interventions	Moderators
11:00-11:15	Group presentations on adaptation measures, priorities, costs, and community contributions	Participants
11:15-11:55	How a community can identify adaptation measures for climate change impacts affecting the community/government	Community
11:55-12:00	Closing remarks	Eduardo Mendez

2: List of participants:

ATTENDANCE LIST										Biodiverse Landscapes Fund				UKaid		WCS		FCD	
Resilient and Biodiverse Landscapes of Northern Mesoamerica																			
Biodiverse Landscapes Fund (BLF)-Wildlife Conservation Society (WCS)																			
Event Name: Climate Smart Community Development Plan-Arenal Village										Type of Event: Planning/Analysis Workshop				Modality: In person					
Date & Time (Start/End): 02.11.2024 9:00 a.m. to 12:00 noon										Location (Loc/District): Arenal Village, Belize, Cayo District									
No.	Names and Surnames	Entity/Organization	Sex	Age	Disability	Telephone	Email	Place of Origin											
								District	Municipality										
1	Mikel Sánchez Rodríguez		F	43		502-54210249	mikel.sanchez@jgma.com												
2	Lupiana Alvaraz		F	59		502-65224-1348													
3	Primitiva Ruiz		F	43		502-30304691													
4	Deby Sánchez		F	38		502-5816555	luis.sanchez@jgma.com												
5	Adrian Cus	MRTCC	M	38		672-4144	adrian.cus@labnig.org.bz												
6	Abel Silva Jr.	La Inmocupada RC School	M	43		605-5049	abelsilvajr@yahoo.com	Cayo	BVD										
7	Yokema Gonzales			42		55045827													
8	Salvador Mesh	FCD	M	13		623-5523	smesh@kulturas.org.cyo		San Antonio										
9	Eduardo Mendez	FCD	M	42		622-4584	eduardo.mendez@kulturas.org.cyo		Bogotá										
10																			
11																			
12																			

Demographics				Disability				Language Community			
Sex	Male	Female	Other	Physical	Visual	Acoustic	Psychic	Intellectual	Multiple	Other	Language
Male	1	2	0	0	0	0	0	0	0	0	English
Female	4	5	0	0	0	0	0	0	0	0	Spanish
Other	0	0	0	0	0	0	0	0	0	0	Other

3: Image of participants on virtual platform or photographs



3: Validation Workshop - March 8, 2025

Resilient and Biodiverse Landscapes of Northern Mesoamerica.

Workshop/Meeting:

Virtual (indicate platform) / Face-to-face:	In person
Link/Location:	Arenal Community Center
Landscape:	Maya Forest Belize-Central Corridor Cluster
Date:	8th March, 2025
Starting time: 9:50	End Time: 11:
Component: 1	Activity: 2.3 Development of Climate Change Adaptation Plan

Participants:

No.	Name	Institution/Organization
1	Ema Valladares	Arenal Village
2	Thelma Valladares	Arenal Village
3	Keila Coc	Arenal Village
4	Anne Ramos	Arenal Village
5	Irena Cunil	Arenal Village
6	Claudia Ramos	Arenal Village
7	Yaisi Valladares	Arenal Village
8	Salvador Mesh	FCD
9	Eduardito Mendez	FCD

Disclaimer: the validation session was held in Spanish

Summary of the meeting:

Eduardito welcomed participants by outlining the objectives of the workshop. The session seeks to validate the climate change vulnerabilities, impacts and interventions identified by the community in past sessions.

Salvador shared the agenda with the participants.

Salvador initiated validation by presenting and discussing the climate vulnerabilities identified: Change in weather patterns which include hurricanes, intense rain, flooding, high temperatures (heat waves); forest fires; and loss of biodiversity. Participants agreed that these are the primary vulnerabilities that they face, highlighting that the community has started to experience forest fires.

During the previous sessions, community members identified 3 sectors which were impacted by climate change vulnerabilities. The participants validated these 3 main sectors.

Before validating interventions, Eduardito clarified that the previous session tried to create a comprehensive community development plan. However, due to directives from the BLF, the community development plan now focuses on entrepreneurship for women. The focus should therefore be on evaluating whether the intervention is of priority to women as a community.

Salvador initiated the validation session by sharing a printed copy of the climate change vulnerability impact, along with the interventions, cost, priority, contribution of the community, and other stakeholders which can assist in the implementation.

Salvador corrected an error on column 4 of the validation sheet. The column labelled “livelihoods” should be corrected to “priority”.

Cost ranking was validated using the following table:

Range	Description
6	More than \$25 thousand
5	\$15-\$25 thousand
4	\$10-\$15 thousand
3	\$5-\$10 thousand
2	\$1-\$5 thousand
1	\$1 thousand or less

Prioritization of interventions were validated using the following table:

Range	Description	Definition
4	Critical Priority	Failure to implement may result in serious or catastrophic consequences.
3	High Priority	Failure to implement may lead to a significant decline in quality of life and livelihood security.
2	Moderate Priority	Implementation can wait for a limited time but should be planned for the medium term.
1	Low Priority	No immediate resources are required; implementation can be gradual.

The validation:

- The loss of pastureland due to fires and extended drought will be mitigated by creating fodder banks. Cost of the intervention was kept at 2 and given that none of the women's household practice cattle ranching, a priority of 4 was reduced to 2.
- Loss of crops due to extended drought, high temperatures, intense rain and pests and diseases are to be mitigated by improving agricultural practices. This depending on the farmer's crops. The cost of this intervention remained over 25k, while the priority was reduced from 4 to 3. Only one of the present households practice crop agriculture.
- Economic costs brought by the need to invest in alternative livelihoods due to crop failure or unsustainable current livelihood should be mitigated by adopting alternative sustainable/climate smart interventions. The estimated cost of these interventions was validated to be more than 25k, and remains of critical priority. The interventions identified in the previous session remained, except for their priority ranking.
 - Agro processing of crop surplus into value added products. Ranking was reduced from 4 to 3
 - Involvement of women in household economy through entrepreneurship ventures remained at 4 (critical priority). Salvador requested for the women to elaborate on their involvement in the household income. 2 interventions were identified: a bakery and the rearing of local chickens.
 - Women aspire to make bread for the local market. One of the members already has skills in bread and pastry baking. The women would prefer a wood oven to reduce the financial burden of purchasing gas.
 - Rearing of local chicken (chicks) will require a head start of chicks, coops, feed, an incubator, and other necessary infrastructure.

Salvador highlighted the need for conducting a feasibility analysis to understand the market and identify needed equipment/infrastructure, training, and location for the investment. Salvador added that to proceed with the investments, an agreement between FCD and the women's group is necessary. The agreement is a requirement of the project to safeguard the investments and guarantee that the project will have an impact on improving alternative livelihoods.

Eduardo added that the feasibility study/analysis will be conducted in April.

Participants have identified 7 women who are willing to join the women's group.

- The formalisation of cooperatives and the creation of new farmers and livestock associations are still relevant for participants. These are necessary to legitimize the produce of farmers which are usually labelled as "contraband goods" by local authorities. The priority of this intervention was reduced from critical (4) to moderate priority (2).
- For the natural resources sector, all impact, interventions and ranking remained the same:

Impact	Intervention	Priority
--------	--------------	----------

Deforestation (due to forest fires, droughts and flooding events)	Reforestation and restoration in key areas including the school, community areas, adoption of alley cropping and agroforestry plots.	3
Contamination of potable and surface water resulting from flooding (washing off solid waste and faeces from free roaming animals into water bodies)	Cleanup campaign, creation of designated garbage collection site and collection of household garbage, enforcement, community education and outreach.	4

- Impacts to people (community) were then validated. The cost and ranking remained unchanged. Only one intervention (community pharmacy) which did not have an estimated cost and priority ranking were

Impact	Intervention	Priority
Health impacts due to high temperatures (heat waves), intense rain, and dust resulting from droughts.	Community health outreach and education.	4
	Community pharmacy	4
Health impacts due to forest fires	Bousser	3
Impacts of high temperatures (heat waves) on primary school children.	Insulation of school roof Fans Upgrade of school	4

Participants added that a community pharmacy is of top priority since access to medical attention is not possible without Guatemalan nationality documents at the border community.

Validation was completed.

Eduardo opened the floor for additional questions and feedback.

Women reiterated their interest in entrepreneurship ventures to improve household income. They added that the community experiences seasonal water shortage which can hinder the production of chickens. Investment in water storage may be necessary.

Working Agreements:

- A community plan will be developed by FCD
- Women will work together to refine the details of their entrepreneurship ventures.

Follow-up Actions:

- Eduardito will meet with the women to discuss their entrepreneurship venture feasibility. The group will need to identify the site for infrastructure, equipment, tools, technology, and skills

need. Eduardito will contact the group by April to initiate planning for interventions and investments.

Annexes:

1. Agenda.



Resilient and Biodiverse Landscapes of Northern Mesoamerica.

Workshop/Meeting: Indicate Name

Virtual (indicate platform) / In-person:	In-person
Link/Location:	Arenal Community Center
Date:	08.02.2025
Starting time: 9:30 a.m.	End Time: 11:00 a.m.
Component: 1	Activity: Development of Climate Change Adaptation Plan

OBJECTIVES:

- Validate community identified climate change vulnerabilities
- Validate community identified climate change impacts and adaptation interventions

EXPECTED RESULTS:

- Arenal Women's Community Development Plan

AGENDA

Hour	Activity	Responsible
9:30	Welcome	Eduardito Mendez
9:35	Validation of vulnerabilities	Eduardito Mendez & Salvador Mesh
9:50	Validation of impacts	Eduardito Mendez & Salvador Mesh
10:00	Validation of interventions: with a focus on women's involvement in household income.	Eduardito Mendez & Salvador Mesh
10:30	Discuss the next steps for Women's group work	Eduardito Mendez
11:00	Closing	Eduardito Mendez

2. List of participants (scanned)

ATTENDANCE LIST									
Resilient and Biodiverse Landscapes of Northern Mesoamerica Biodiverse Landscapes Fund (BLF) - Wildlife Conservation Society (WCS)									
Event Name		Accord Refers Community Development Plan Validation		Type of Event		Planning/Analysis Workshop		Modality	
Date & Time (Start/End)		08.02.2025 9:30 a.m. to 11:00 a.m.		Location		Arenal Village, Costa Rica		In person	
No.	Name and Surnames	Entity/Organization	Gender	Age	Telephone	Email	Place of Origin	Address	Residence
1	Emilia Valladares		W	43	16	-	Caja	Arenal	
2	Thelma Valladares		W	43	16	-	Caja	Arenal	
3	Keila Coc		W	42	16	-	Caja	Arenal	
4	Anne Ramos		W	43	16	-	Caja	Arenal	
5	Irena Conil		W	43	16	-	Caja	Arenal	
6	Clardia Ramos		W	43	16	-	Caja	Arenal	
7	Yaisi Valladares		W	42	16	-	Caja	Arenal	
8	Salvador Mesh	F.C.D.	M	13	3	Mar. Y. Y.	San Carlos	Arenal	
9	Eduardo Mendi	F.C.D.	M	42	16	632-4524	San Carlos	Arenal	
10									
11									
12									

SYMBOLS									
Sex	Age	Gender	Residence	Address	Telephone	Email	Place of Origin	Address	Residence
Male	1	2	3	4	5	6	7	8	9
Female	1	2	3	4	5	6	7	8	9
Age	1	2	3	4	5	6	7	8	9
Gender	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5	6	7	8	9
Email	1	2	3	4	5	6	7	8	9
Place of Origin	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Residence	1	2	3	4	5	6	7	8	9
Address	1	2	3	4	5	6	7	8	9
Telephone	1	2	3	4	5				

3. Image of participants on virtual platform or photographs.

