



ADAPTATION FUND

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18 September 2023

Adaptation Fund Board
Project and Programme Review Committee
Thirty-second Meeting
Bonn, Germany, 10-11 October 2023

PROPOSAL FOR INNOVATION SMALL GRANT FOR PANAMA



ADAPTATION FUND

ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Innovation Small Grant

Country/Region:	Republic of Panama
Project Title:	Improved livelihoods through access to water, health and food security through innovation and technology transfer to the population of the province of Darien of the Republic of Panama
Thematic Focal Area:	Water resources management, Food security
Implementing Entity:	Natura Foundation
AF Project ID:	
IE Project ID:	Requested Financing from Adaptation Fund (US Dollars): 249,994.74
Reviewer and contact person:	Rywon Yang
IE Contact Person:	Co-reviewer(s): Alyssa Gomes

**Technical
Summary:**

The project “Improved livelihoods through access to water, health and food security through innovation and technology transfer to the population of the province of Darien of the Republic of Panama” aims to improve health and food security in the most vulnerable communities in the province of Darien by improving water supply. This will be done through the three components below:

Component 1: Rainwater harvesting systems and precision agriculture (USD 140,000);

Component 2: Women for water through water purification technologies (USD 50,000);

Component 3: Knowledge management to capture and disseminate lessons learned (USD 20,420).

Requested financing overview:

Project/Programme Execution Cost: USD 19,989.90

Total Project/Programme Cost: USD 230,409.90

Implementing Fee: USD 19,584.84

Financing Requested: USD 249,994.74

	The initial technical review raises some issues, such as a lack of innovation rationale, lack of clarity on the proposed solutions(activities), environmental and social policy compliance and the implementation arrangements, as is discussed in the number of Clarification Requests (CRs) and Corrective Action Requests (CAR) raised in the review.
Date:	08/27/2023

Review Criteria	Questions	Comments
Country Eligibility	1. Is the country party to the Kyoto Protocol?	Yes.
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	Yes. As per the Endorsement letter dated 28th June 2023
	2. Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience? ¹	Not cleared. The project's objective is to implement water supply systems, enhancing both water and food security as well as the well-being of communities in the province of Darien. This region is particularly susceptible to climate change and is expected to face even greater exposure to its impacts in the future, especially in the water sector. The project plans to achieve the objective by deploying an integrated solution involving a rainwater harvesting system, a hydroponic setup, and water

¹ A concrete adaptation project/programme is defined as a set of activities aimed at addressing the adverse impacts of and risks posed by climate change. The activities shall aim at producing visible and tangible results on the ground by reducing vulnerability and increasing the adaptive capacity of human and natural systems to respond to the impacts of climate change, including climate variability. Adaptation projects/programmes can be implemented at the community, national, regional and transboundary level. Projects/programmes concern activities with a specific objective(s) and concrete outcome(s) and output(s) that are measurable, monitorable, and verifiable. (Source: Operational Policies and Guidelines, amended October 2017)

		<p>filtering systems to the most vulnerable communities in the province of Darien.</p> <p>CAR1: The total requested amount, implementing entity fees and execution costs includes decimals. Please ensure figures add up and match across the tables – components table vs. budget and ensure that the figures are rounded to a whole numbers consistently (i.e., no decimals).</p> <p>CR 1: Please explain further the current status of community-based organizations in Santa Fe and Pinogana districts and based on which criteria the organization will be selected in Component 1.</p> <p>CR 2: Please clarify how this project, especially Component 2, is related to 'Mujer Agua Rural program'. If this program has carried out the same activities, please explain why this proposed project needs to provide additional support.</p> <p>CR 3: Please describe further who will be the target audience for the workshops in Component 3 and add the number of participants disaggregated by gender as an indicator in Part III C.</p> <p>CR 4: Please explain the knowledge capture system and how learning arising from the project will inform the implementation of innovations. Please also include knowledge targets such as the number of knowledge products produced (ex. video, workshop material, manual, etc.) as an indicator of Component 3 in Part III C.</p>
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	<p>3. Does the project encourage or accelerate development of innovative adaptation practices, tools and technologies?</p>	<p>Not cleared.</p> <p>The climate change adaptation innovation rationale is not clear.</p> <p>The project proposes to establish rainwater harvesting systems to support vulnerable communities' water collection efforts, particularly during arid seasons and emergencies. Simultaneously, it aims to integrate hydroponic agricultural practices to enhance local food production. Furthermore, the initiative encompasses installing a water purification system to enhance women's health and well-being within the community.</p> <p>CR 5: Rainwater harvesting systems, hydroponics, and water filtering system are widely applied technologies. Please explain further in what aspect this project supports innovative adaptation practices, tools, and technologies.</p> <p>CR 6: Please provide more information on the rainwater catchment system and hydroponics:</p> <ul style="list-style-type: none">a) What are the proposed locations for the facilities, and how will land disputes be avoided?b) Who will assume the ownership of these facilities - Individuals, the community, or another organization?c) How and by whom will the operation and maintenance (O&M) be ensured?d) How will the profit generated from the hydroponic be divided?
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		<p>e) Is the rainwater collected exclusively reserved for hydroponic use, or are there other intended purposes for it as well?</p> <p>CR 7: Please explain further the hydroponic technology: 1) Has a particular hydroponic technology been chosen for this project? If so, please elaborate on the specifics (such as the type of hydroponic system and the crops intended for cultivation), 2) please provide the unit cost of the selected technology.</p> <p>CR 8: Please provide additional details regarding the filtering technology. Specifically, clarify whether the technology serves a village or household, elaborate on the frequency of filter replacements, outline the operation and maintenance approach, and provide associated costs.</p>
	<p>4. Does the project help generate evidence base of effective, efficient adaptation practices, products or technologies, as a basis for potential scaling up?</p>	<p>Not cleared.</p> <p>The proposal shows the potential climate change impact that would exacerbate the water scarcity situation in the Province of Darien. Apart from the broad description of the climate vulnerability of the region, there is a lack of clarity regarding the specific water supply status at the village level of the target area as well as its associated social and economic problems.</p> <p>CR 9: Please further explain the current water access situation in the target area: 1) what is the main source of water, 2) how this water is provided, and 3) how the rainwater harvesting system will improve this situation.</p> <p>CR 10: Please explain the status of agricultural activities (revenue, number of people generating</p>

		<p>income through this activity) in the target area. Explain further how introducing hydroponics would help increase the residents' income in the area.</p> <p>CR 11: Please provide more information (data, statistics, etc.) on the status of waterborne diseases in the target area.</p> <p>CR 12: Please provide more details on how the results of this project will be scaled up after the project is completed</p>
	<p>5. Does the project engage, empower and/or benefit the most vulnerable communities and social groups?</p>	<p>Not cleared.</p> <p>The project aims to address the most vulnerable communities in the target area, considering both the impact of climate change and the economic situation. The primary stakeholders and beneficiaries include grassroots organizations and women within these communities. The proposal also suggests engaging diverse stakeholders in knowledge-sharing activities, including civil society, academia, government, and youth.</p> <p>CR 13: Please provide further information on the grassroots communities (ex. number of organizations in the target region, the composition of the organization, role & responsibilities of the grassroots organization and the Red de Vida Pastoral Center).</p> <p>CAR2: Please include an environmental and social risk assessment table in Section II.F.</p> <p>CAR3: Please include arrangements for a Grievance Mechanism.</p>
	<p>6. Does the project advance gender equality and the empowerment of women and girls?</p>	<p>Cleared.</p>

		Component 2 of the proposed project mainly targets women in the most vulnerable communities. It entails planned activities aimed at enhancing women's resilience towards challenges related to water scarcity and women's health.
Resource Availability	1. Is the requested project funding within the parameters for small grants set by the Board?	Yes.
	2. Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project budget before the fee?	Yes. The IE fee is 8.5% of the total budget before the fee.
Implementation Arrangements	1. Is the project submitted through a National Implementing Entity accredited by the Board?	Yes.
	2. Is the timeframe for the proposed activities adequate?	Yes.
	3. Is a summary breakdown of the budget for the proposed activities included?	Not cleared. CR 14: Please provide detailed information on the unit cost of the last budget item of Component 1. (Part III. E. 16p.)



ADAPTATION FUND

**PROGRAMME ON INNOVATION:
SMALL GRANTS PROJECTS THROUGH DIRECT ACCESS
MODALITY**

REQUEST FOR PROJECT FUNDING FROM THE ADAPTATION FUND

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project must be fully prepared when the request is submitted.

Complete documentation should be sent to:

The Adaptation Fund Board Secretariat
1818 H Street NW
MSN P4-400
Washington, D.C., 20433
U.S.A
Fax: +1 (202) 522-3240/5
Email: afbsec@adaptation-fund.org



ADAPTATION FUND

PROGRAMME ON INNOVATION: SMALL GRANT PROJECT PROPOSAL

PART I: PROJECT INFORMATION

Country:	Panama
Title of Project:	Improved livelihoods through access to water, health and food security through innovation and technology transfer to the population of the province of Darién of the Republic of Panama.
National Implementing Entity:	NATURA FOUNDATION
Executing Entity/ies:	RED DE VIDA PASTORAL CENTER
Amount of Financing Requested:	US\$249,994.74

Project Background and Context:

The Republic of Panama presents evidence of the effects of climate change throughout its territory. Increase in temperatures, rise in sea level, intensification of extreme events due to precipitation and storms, devastating effects of El Niño Phenomenon and secondary effects due to the frequency of cyclonic events (Ministry of the Environment, 2022). In addition, structural socio-environmental factors, strongly influenced by the high poverty rate and the various social asymmetries characteristic of the country, add to the vulnerability of our various ecosystems and the dependence on the economic activities of these ecosystems.

Climate alterations and the increase in the frequency and intensity of the hazards associated with climate change affect our country through several factors: the increase in average temperature; loss of biodiversity of fragile ecosystems; the incidence of extended droughts with the decrease in yield and loss of production; The increased frequency of heavy rains caused by tropical storms leading to landslides and flooding. Similarly, the crises resulting from extreme precipitation events such as La Purísima in 2010, El Niño in 2015, Storm Otto in 2016 and Eta and Iota in 2020, as well as the rainfall deficits observed during El Niño in 2015 and 2016 where the levels of water sources were critical, have revealed the vulnerability of systems at the national level around the catchment, distribution and access to water.

From an adaptation perspective, Panama's NDC1 update promotes climate resilience and risk reduction in the face of the effects of climate change. And they clearly represent the ambitions and commitments that Panama has in all prioritized sectors to keep the country carbon negative and carbon neutral by 2050. In this work vision, a guiding framework for adaptation in the country

has been established, based on conceptual models that account for how climate change affects the territory, the population, and goods and services.

Under this scheme, various decision-making tools have been developed, such as: Climate Change Scenarios (2030, 2050, 2070) which demonstrate the incidence and effect that climate change has on the territory, the Climate Change Vulnerability Index, maps of climate threats, study of threats of sea level rise, among other studies (Directorate of Climate Change). Which synthesize their study in threats to Panama such as increased temperatures, extreme events due to precipitation and storms, devastating effects of El Niño phenomenon and secondary events due to the frequency of cyclonic events.

Once the climate risks and their effects have been delimited, it is possible to propose and analyze different alternatives to achieve the desired final situation. This allows for the establishment of the strategic lines to develop, consolidate and expand the adaptation measures proposal. These effects are severely affecting all social and economic aspects of society, including the availability of natural resources and the security of livelihoods, threatening water security, agricultural production, food systems, water availability, as well as the health and safety of people. Therefore, solutions to address climate change and adapt to its negative effects are inseparable from socio-economic issues and the achievement of the Sustainable Development Goals (SDGs) in all developing countries.

The province of Darién is a strategic region for the country. With a fifth of the national territory, Darién is home to an important fraction of Panama's natural heritage; Its forest and fishing resources are a source of wealth for the national economy, generating a considerable part of the product of these sectors. Its inhabitants, however, are among the poorest in the country.

During water scarcity, the population is greatly affected by the poor distribution of drinking water and, therefore, extremely vulnerable to suffer when the distribution system and surface and ground water sources are inefficient and unsafe.

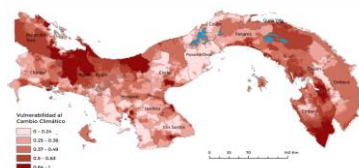
Darién, according to the Vulnerability Index Map, the Climate Change Scenarios 2030, 2050, 2070. The reading of this projection, for the Central and Eastern Pacific Region, indicates where the Panama Canal Basin is located, San Blas region and the Chucunaque river basin in the province of Darién, could record minimum precipitation values for this period of time, which is worrisome for the development of all economic activities and the health of the population. It is a very vulnerable territory where precipitation will decrease and maximum temperatures will increase.

Table 1 Average Values of Change for Precipitation and Temperature According to the three Climate Change Models

Valores Promedios de Cambio para Precipitación y Temperatura de Acuerdo a los Tres Modelos de Cambio Climático y el Escenario SSP5-8.5			
Línea Base	2,100.00 mm	22.5°C	31.6°C
Año	Precipitación (cambio en %)	Temperatura mínima (cambio en °C)	Temperatura máxima (cambio en °C)
2030	-5.3	4.8	4.1
2050	-2.2	5.2	4.7
2070	-0.7	5.7	5.7

Source: MiAMBIENTE, 2021

Map 1 Vulnerability to Climate Change in the Republic of Panama by category



Source: MiAMBIENTE, 2021

According to the Climate Change Vulnerability Index, (2021) in the province of Darién townships of Chepigana, Río Iglesias, Jaqué, Camongantí, Tucutí with values above 0.70.

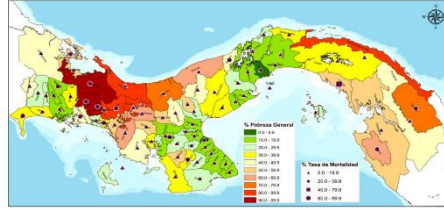
As a result of drought events, the Government of Panama has many times declared the Darién region, in 2016 and 2018, with a very intense drought, this being one of the driest seasons in the last 50 years, given that this problem is affecting the supply of drinking water and its technical resources, the necessary machinery was deployed to supply water to all communities through water tank trucks in Meteti, Santa Fe, La Palma, Garachine among others. To address some of these problems, the National Commission for Sustainable Development (CONADES) aims at the goal of "sustainable water management in response to the demands of the population and their productive activities." Consequently, the provincial Innovation Strategy was designed within a framework of water, health and the food nexus, adopted as a provincial commitment, favoring the promotion of "efficient use and technologies that improve the storage, distribution, purification, reuse and saving of water". The project focuses on improving safe access to water in emergency situations by obtaining the most appropriate existing solutions at low cost, under a competitive, healthy system and improving food security. The goal is to develop a low-cost water catchment and supply system that can be used in rural communities so they can function under a climate catastrophe.

The development of the "Mujer Agua Rural" ("Woman Rural Water") program provides water filtering technology for bacteria, such as salmonella, cholera, E. coli, protozoa, such as giardia and cryptosporidium, and food production through the smart farming or precision farming that are easily replicated elsewhere. (Villagepump 500 Standard). Strengthening the capacities of rural women and men in precision agriculture (hydroponics and drones) in the production of climate-smart food, is revealed as a solution to fight against climate change, environmental degradation and the extinction of species caused by overexploitation and intensive crops, these innovative techniques allow a greater rational use of water in the region, an increasingly scarce commodity. Likewise, crops under these innovative techniques are more profitable and easier to control, which makes them a tool to fight hunger and strengthen food security, especially in developing countries like ours.

The region that includes the province of Darién is perhaps the most isolated and least studied of all the regions of Panama. This region has historically functioned as a natural barrier between Central and South America. Even today there are no land communication routes that cross the entire province. The population of the province of Darién is characterized by being scarce, dispersed and heterogeneous, and is located in numerous hamlets linked to watercourses. The province of Darién is the largest in territorial extension of Panama with 11,892 km², but the smallest in population with 48,358 inhabitants registered in the 2010 census.

One of the provinces most affected by poverty is Darién, which has up to 60% of households in general poverty and mortality rates of up to 80%. In comparison, 36.0% of households nationwide are in extreme poverty. Map 2 shows general poverty levels per district from 10 – 30% per district. We can see that the province of Darién is in the highest levels of poverty, with a minimum of 40% and a maximum of 80% for the year 2015.

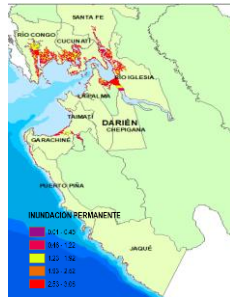
Map 2 General incidence of poverty and mortality rate, by district: Year 2015



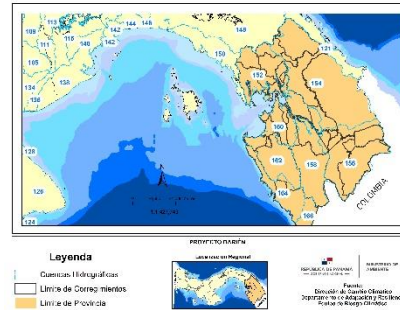
Source: Ministry of Economy and Finance, 2015

Climate change presents societies with a variety of new challenges, especially in the poorest areas, as changes in average temperatures affect food productivity and water availability, causing another burden of malnutrition, diarrheal and other waterborne and airborne infections (Huq, 2014). Darién province's water resources and water supply systems are vulnerable to current weather patterns, their variability, expected droughts and floods, and sea level rise.

Map 3 Permanent Flood in the Province of Darién



Map 4 River Basins of the Province of Darién
Source: MiAMBIENTE, 2023



Drinking water consumption has grown rapidly. In the last 20 years, with the extraction of water from rivers, wells, and artificial lakes, the main supply source has become more contaminated due to the use of chemicals for agricultural activity and poor drainage systems. Water-related health problems affect the majority of poor people who cannot afford clean water.

The project would cover the districts of Santa Fe and Pinogana, where the Red de Vida Pastoral Center is located, in the heart of the Darién tropical forest; The Center, with 35 years working with this community, was born from a set of needs generated from the synergies between grassroots groups that lead sustainable development activists, and faith in the spirit of nature to conserve the natural wealth of the place. Slash and burn have plagued the Darién forests for decades, causing deep environmental destruction, in God's creation. The center has developed in its 40 hectares, several programs to combat the destruction of the forest, such as sustainable alternatives to feed their families, compost, crop rotation, use of natural fertilizers and herbicides, shade-grown coffee, rainwater harvesting, sustainable energy, medicinal plants, reforestation among other activities, which has made it possible to optimize the environment. For the Red de Vida Pastoral Center, the most important thing is the comprehensive education program that incorporates faith, art and theater with environmental education, teaching the caring for creation from a Christian perspective that respects the ancestral knowledge of indigenous peoples, so that children see the beauty of the forest and develop a cultural identity, innovating in environmentally sustainable techniques.

Project Objectives:

List the main objectives of the project.

The general objective of the project is to accelerate the implementation of water supply technology, reduce water-borne diseases in emergency situations, and improve food sovereignty in the most vulnerable communities in the province of Darién.

This general objective will be achieved through three specific objectives:

- a) Design and build rainwater harvesting systems for the supply of water and food through smart agriculture or precision agriculture that are easily replicable in other places.
- b) Provide water filter technology to eliminate bacteria and protozoa, creating capacities in the field of water for rural women.
- c) Strengthen the capacities of children, women, youth and men in water security, health and sustainable food.

Project Components and Financing:

Project Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
Component 1 Rainwater harvesting systems and precision agriculture	Activity 1.1 Selection of community-based organizations that will benefit from rainwater harvesting systems and precision agriculture systems. Results: Eight (8) selected community-based organizations	Strengthened livelihoods through the adoption of appropriate and efficient technologies to face the effects of climate change. The participation of community-based organizations to obtain, consume and commercialize agricultural products is fully incorporated.	140,000
	Activity 1.2 Creation and signing of agreements with the identified organizations to be benefited. Results: Eight (8) agreements established for joint work.		
	Activity 1.3 Design and construction of a water harvesting system and precision agriculture systems. Results: a) Diagrams of water collection systems. b) Diagram of the hydroponic system. c) Eight (8) water collection systems and integrated hydroponic systems, installed.Procedural manual prepared.		
	Activity 1.4 Developed value chain for the commercialization of agricultural products. Results: a) Systematization of lessons learned on the subject of value chains.		
Component 2	Activity 2.1: Selection of the community most vulnerable to microbial diseases due to		50,000.00

Project Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
Women for Water through Water Purification Technologies	contamination of water as a consequence of climate change Results: a) Diagnosis of water diseases, meeting with the Ministry of Health, water boards and the Community to address the technology prototype.	Adapted technology devices tested and established in a pilot community with access to water.	
	Activity 2.2 Awareness of the selected communities where the new adaptation technology will be tested. Result: a) Selected community trained.	Women trained in the management and operation of adaptive technologies	
Component 3 Knowledge management to capture and Disseminate lessons learned	Activity 3.1: Workshops for capacity building and dissemination of the experience acquired with the project, aimed at community-based organizations, civil society, academia, and government institutions. Results: a) Training workshops on water technology and precision agriculture 1. Developed videos of 3 minutes. 2. Visualization of the project banner, folders, t-shirts, brochures of the experiences. b) Systematization of field experiences. c) Awareness campaign for future users on a more sustainable use of water and better management in the face of scarcity. d) Program for children, youth to incorporate faith, art and theater with environmental education and technological innovation.	At least 500 people trained and participating in the knowledge management program in water technology, precision agriculture.	20,420.00
Total Direct Cost			210,420.00
Total Executing Cost (9.5%)			19,989.90
Total program cost (Adaptation Fund)			230,409.90
Total NIE (8.5%)			19,584.84
Amount of Financing Requested			249,994.74

Projected Calendar:

Indicate the dates of the following milestones for the proposed project/programme

Milestones	Expected Dates
Start of Project Implementation	January 2024
Project Closing	June 2025
Terminal Evaluation	October 2025

PART II: PROJECT JUSTIFICATION ¹

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

To promote these technologies in an accelerated way, it should be considered under a process or methodology that people can instantly adopt and under a structured leverage of financial resources to carry out optimal and sustainable management of results, open dialogue between the church, the vulnerable people, communities and private companies can achieve the objective of introducing technology for adaptation to climate change.

Component 1: Rainwater harvesting systems and precision agriculture

In the province of Darién, there is a significant problem with access to water resources suitable for human consumption, which promotes the development of new innovative technologies in order to provide the vital liquid in quantity and quality. Through coordination between grassroots organizations in the areas most vulnerable to climate change, as key actors in the districts of Santa Fe and Pinogana of Darién, we will be able to improve the catchment, storage and distribution of water during emergencies in the dry season and the development of agricultural activities with precision technologies (hydroponics), which will provide people with:

1. Improve the quantity and quality of agricultural products, therefore, food security at the family level without increasing costs.
2. Strengthen the family economy, generating income and reducing the costs of the basic food basket.
3. Create jobs where there is no easy access to stable employment.
4. Generate and promote positive attitudes towards community self-management.

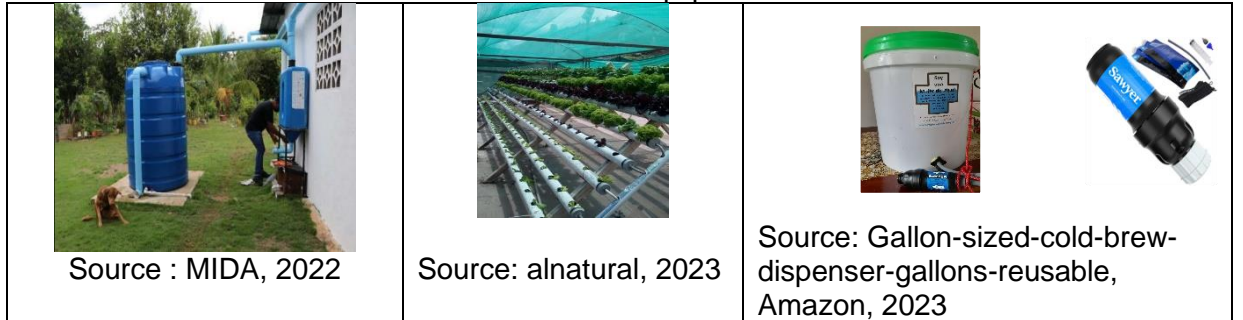
The most essential is to prevent the degradation of the province's natural resources and increase adaptation measures to reduce the vulnerability of natural and human systems.

Component 2: Women for Water through Water Purification Technologies

Adaptation is an essential element of the human response to climate change. The negative impacts of climate change on water resources are accentuated in the daily activities of the population, and this is manifested by women who are generally in charge of household chores and other tasks where they offer support, such as agricultural work subsistence. Women are a highly vulnerable population, so access to a diversity of adaptation technologies and practices that must be appropriate and affordable in various contexts is a pressing need. The Women for Water program brings adaptation technologies/practices to the household level (for example, domestic water treatment), state-of-the-art filters in the hands of mothers and empowers them to provide clean water, not only for their own families, but also for others in the community. Each Villagepump employs ultrafiltration-based multi-stage filters that reduce disease by removing waterborne pathogens that can cause diarrhea, dysentery, cholera and hepatitis. Units can operate from all forms of surface water, including ponds, lakes, and streams. The unique patented self-cleaning system extends the life of the precious ultrafiltration membrane up to several years, resulting in low maintenance needs and low total cost of ownership. For these families where accessibility to water resources is difficult, this type of technology will improve the quality of life of this population and it will strengthen capacities, with the vision of being replicated in other areas of the country, which also presents this same environmental problem.

¹ Parts II and III should jointly not exceed 10 pages.

Illustration 4 Rainwater harvesting system, Scheme of Hydroponic System and Water filter equipment



Component 3: Knowledge management to capture and Disseminate lessons learned

Workshops for capacity building and dissemination of the experience acquired with the project, aimed at community-based organizations, civil society, academia, and government institutions.

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

Grassroots communities served with adaptive technology, to be selected in the districts of Santa Fe and Pinogana, will solve their problems associated with lack of access to water, increase food efficiency and productivity, and diversify their livelihoods through the sale of hydroponic foods. The project does not contemplate negative environmental and/or social impacts. It is the intention of the executor of the project to strengthen the capacities of women and men in grassroots organizations for the management of techniques and food sales.

C. Describe how the project encourages or accelerates development of innovative adaptation practices, tools or technologies and/or describe how the project helps generate evidence base of effective, efficient adaptation practices, products or technologies, as a basis for potential scaling up.

The strengthening of grassroots organizations in innovation for the adoption of climate change adaptation technologies considered in the proposed project is unique, not only because it focuses on climate change adaptation but also because for the first time it addresses the water-health-food nexus. The components guarantee innovation, support the design and storage of water points, the development of food through the insertion of precision agriculture, the improvement of the health of children, youth, the elderly, men and women who suffer from water-related diseases, the process of strengthening their capacities can guarantee a permanent source of financing and sustainability.

D. Please confirm whether the project meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and is in line with the Environmental and Social Policy of the Adaptation Fund.

The Program is aligned with the National Strategy for Development and Climate Change, which establishes Panama, the protection of the environment and natural resources and promotes adequate adaptation to climate change established in the NDC-1 of Panama. In addition, the project is aligned with the 2030 Agenda for the Development of the Nations. Likewise, in the National Climate Change Policy. All these policies point to the implementation of various

strategies, such as water resources, agriculture, ecosystem restoration, and achieving universal access to water. On the other hand, the project seeks to support the development of strategic sectors in the region, prioritized in the province's Sustainable Development Plan, the CDN-2 and in the climate change policy:

- The vulnerability of poor communities and vulnerable groups will be a priority for the country, due to the threats of climate change to human settlements and infrastructure.
- Institutional and community capacities will be strengthened to provide adequate responses to the challenges of climate change and increase resilience.
- It is essential to promote alliances that include the private sector and civil society to address climate change in low- or limited-income areas; and

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

Knowledge management is very relevant to the project, knowledge management, maintenance and sustainability of the technologies to be established, rainwater harvesting, precision agriculture, water filtration, the incorporation of private companies in the product value chain. In addition, for all the products that will be developed, printed material, videos, will allow more people to learn about the results of the project and motivate them to replicate this in other communities.

F. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project. Describe how the project will engage, empower and/or benefit the most vulnerable communities and social groups, including gender considerations, in line with the Environmental and Social Policy of the Adaptation Fund.

In conditions of water scarcity at home, it is disproportionately more difficult for the elderly, girls and single mothers to collect the resource, have food and cope with diseases from the water. The elderly have reduced mobility and cannot stand for long periods of time, women caring for young children cannot leave them unattended; The exposure of these vulnerable people is much more binding to social problems. The implementation of these techniques in key points of the base communities will ensure easy access to water, benefiting from all the comforts of the place.

G. Provide justification for funding requested, focusing on the full cost of adaptation reasoning. According to the United Nations, by 2025, nearly 1800 million people worldwide will experience severe water scarcity². Rainwater harvesting can be used to a large extent to meet this demand. The expected impacts on the rural water system derived from climate change in Panama have the potential to affect the different areas of Water Security, either by conditioning the availability of water (in quantity and quality) or by increasing the exposure of communities to extreme events of hydrometeorological origin that are expected to be more frequent and intense. Under this aspect, adaptation financing is requested to implement concrete innovative measures and a pilot project that has the potential to reduce the vulnerability of rural communities in a highly vulnerable province. The objective of achieving safe access to water in emergencies is achieved by minimizing the exposure of low-income communities, as well as increasing food collection mechanisms, counteracting water-related diseases, successful awareness of more sustainable habits in the younger population can reduce future stress on the ecosystem and reduce the risks associated with reduced water availability (in quantity and quality) having a more resistant population to future events.

PART III: IMPLEMENTATION ARRANGEMENTS

² H. Sharon, KS Reddy, Una revisión de las tecnologías de desalinización con energía solar, *Renew. Sostener.* 41 (2015) 1080–1118

A. Describe the arrangements for project / programme implementation.

The project is aligned with the National Climate Change Policy and the Nationally Determined Contribution in the sectors of Integrated Watershed Management and Sustainable Agriculture, Livestock and Aquaculture. It will be executed in a period of eighteen months, starting in 2023. The project will be implemented by Panama's NIE Fundación Natura (Natura Foundation) and by the Centro Pastoral Red de Vida (Red de Vida Pastoral Center). Red Vida will work in partnership with the communities, the grassroots organizations, non-governmental organizations, NGOs and the local government of the districts of Santa Fe and Pinogana, the Ministry of the Environment of Darién. The Project Coordinator (PC) will be responsible for coordinating and supervising the AF Project. The following services will be provided by the PC, with the support of Fundación Natura:

1. Information and communication management to track and monitor progress (financial and substantive) in project implementation;
2. Improve project activities, including financial matters, prepare monthly and quarterly progress reports, and organize monthly and quarterly progress reviews.
3. Develop relationships with project stakeholders, including local government, NGOs, government agencies, and others as needed.

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

The project will be monitored through the set of M&E activities. Monitoring will be carried out by Natura's specific M&E coordinator who will conduct field visits for information gathering and monitoring of activities and provide feedback on the progress and success of the Project based on the objectives and indicators set out in the Project Results Framework.

The following reports will be submitted throughout the project:

1. Monitoring Plan (MP) - Approved by the NIE prior to the start of project activities and will detail all activities to be carried out, all milestones and targets to be achieved and the execution dates for each indicator.
2. Quarterly Progress and Final Reports: Reports will be submitted at the end of each operational quarter in accordance with AF and Natura standards. The final report will be submitted one month before the end of the project.
3. Final evaluation. It will be carried out by an external consultant and submitted one month before the end of the project.
4. External audit report: Based on the periodic financial statements, an external audit report will be prepared in accordance with the standards established by the executing agency.

Table 2: Costs Associated with Implementing M&E

Type of M&E Activity	Budget (USD)	Responsible
Monitoring plan, quarterly progress reports, final report and communication	5,000	M&E Project Coordinator Natura and communication officer
Final evaluation. At least 2 months before the end of project	2,500	External consultant
Audit At least 2 months after the end of project	2,500	External auditing company
Visits to field sites	4,000	M&E Project Coordinator Natura and communication team

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

Result	Indicator(s)	Base	Miles tone	Means of verification
<i>Component 1. Rainwater harvesting systems and precision agriculture.</i>				
Result 1.1 Alliances with grassroots organizations for the design, construction of rainwater harvesting systems and precision agriculture and incorporation of the private sector into the value chain.	Number of alliances with grassroots organizations.	0	8	Quarterly and final reports
	Number of people benefiting from the new infrastructure (disaggregated by gender).	0	300	
Result 1.2 Creation and signing of agreements with the identified organizations to be benefited.	Number of agreements signed	0	8	
Result 1.3 Design and construction of rainwater systems and precision agriculture.	Number of systems built.	0	8	
Activity 1.4 Developed value chain for the commercialization of agricultural products.	Document of systematization of lessons learned	0	1	
<i>Component 2. Women for Water through Water Purification Technologies.</i>				
Result 2.1 Selection of the community most vulnerable to microbial diseases due to contamination of water as a consequence of climate change	Number of meetings with health institutions for the selection of communities.	0	3	Quarterly and final reports
Result 2.2 Handing over of filters and training in their use and maintenance.	Number of people directly benefited from the filters and trained.	0	500	Quarterly and final reports.
Activity 2.3 Awareness of the selected communities where the new adaptation technology will be tested.	Number of people aware of the use of new technologies	0	500	Quarterly and final reports.
<i>Component 3 Knowledge management to capture and Disseminate lessons learned</i>				
Result 3.1 Workshops to train, disseminate the experience acquired with the project, to grassroots organizations, institutions, academia, children, youth, women, men.	Number of Workshops in water technology and precision agriculture.	0	3	Quarterly and final reports.
	Number of Awareness Campaign for users on a more sustainable use of water.	0	5	

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

Project objectives) ³	Indicator(s) of project objectives	Results of Fund	Results of Fund Indicator	Amount of grant (USD)
<p>1. Accelerate the implementation of water supply technology, reduce water-borne diseases in emergency situations, and improve food sovereignty in the most vulnerable communities in the province of Darién.</p> <p>2. Increased capacity of coastal communities to take concrete actions to adapt to the hazards caused by climate change.</p> <p>3.Reduce community-level exposure to weather hazards and threats.</p> <p>4.Focus on individuals in the community to strengthen their quality of life through strategies related to climate change, including variability.</p>	<p>1.1 Number of physical infrastructures built.</p> <p>2.1 Number of communities exposed to risk, protected through adaptation measures.</p> <p>3.1 Relevant information on threats and hazards generated and disseminated to interested parties in a timely manner.</p> <p>4.1 Create safer access to homes and communities to ensure their subsistence.</p> <p>4.2 Create types of household income sources generated under the climate change scenario.</p> <p>4.3 Create a percentage of climate resilient sustainable livelihoods, both physical and intangible at the knowledge level to support individual and community livelihood strategies.</p>	<p>Result 4. Greater adaptability within the relevant services of the development sector and infrastructure assets.</p> <p>Outcome 2. The community's ability to reduce risks associated with climate-induced environmental and socioeconomic losses.</p>	<p>4.2. Improvement of the physical infrastructure to resist climate change and stress induced by variability.</p> <p>2.1. Increase staff capacity to respond to and mitigate the impacts of weather-related events in selected areas. Communities.</p> <p>2.2 Number of people with reduced risk of extreme weather events.</p>	<p>19,000</p>

³The FA used OECD/DAC terminology for its results framework. Project proponents may use different terminology, but the general principle should still apply.

Project objectives)³	Indicator(s) of project objectives	Results of Fund	Results of Fund Indicator	Amount of grant (USD)
Promote innovation and raise awareness in the local community about the efficient use of water for human consumption. Increased ability of communities to make informed decisions about climate change hazards affecting their specific locations.	Percentage of the target population reported. Number of communities with improved climate-related planning and policy frameworks.	Result 3. Increased awareness and ownership of climate risk reduction and adaptation processes at the local level. Strengthening awareness and involvement in climate risk adaptation and reduction processes at the local level.	3.1 Percentage of the target population aware of the expected adverse effects of climate change and the appropriate responses.	20,000
Result(s) of Project	Indicator(s) of result of project	Production of Fund	Indicators of production of fund	Amount of grant (USD)
Result 1.1 Alliances with grassroots organizations for the design, construction of rainwater harvesting systems and precision agriculture and incorporation of the private sector into the value chain.	Number of alliances.	Result 2. Strengthening community capacity to reduce risks associated with climate-induced environmental and socioeconomic losses.	2.1.1 Increased staff capacity to respond to and mitigate the impacts of weather-related events in selected communities.	4,000
Activity 1.2 Creation and signing of agreements with the identified organizations to be benefited.	Number of agreements signed.			
Result 1.3 Design and construction of rainwater systems and precision agriculture.	Number of systems built.	Result 4. Greater adaptability within the relevant services of the development sector and infrastructure assets.	4.2. Improvement of physical infrastructure to withstand climate change and variability-induced stress.	110,000

Project objectives) ³	Indicator(s) of project objectives	Results of Fund	Results of Fund Indicator	Amount of grant (USD)
Activity 1.4 Developed value chain for the commercialization of agricultural products.				
Result 2.1 Selection of the community most vulnerable to microbial diseases due to contamination of water as a consequence of climate change	Number of meetings with health institutions for the selection of communities.	Result 2. Strengthening community capacity to reduce risks associated with climate-induced environmental and socioeconomic losses.	2.1.1 Increased staff capacity to respond to and mitigate the impacts of weather-related events in selected communities.	4,200
Result 2.2 Handing over of filters and training in their use and maintenance.	Number of people directly benefited from the filters and trained.	Result 2. Strengthening community capacity to reduce risks associated with climate-induced environmental and socioeconomic losses.	2.1.1 Increased staff capacity to respond to and mitigate the impacts of weather-related events in selected communities.	35,000
Result 3.1 Workshops to train, disseminate the experience acquired with the project, to grassroots organizations, institutions, academia, children, youth, women, men.	Number of Workshops in water technology and precision agriculture.	Result 2. Strengthening community capacity to reduce risks associated with climate-induced environmental and socioeconomic losses.	3. 1.2 Increased staff capacity to respond to and mitigate the impacts of weather-related events in selected communities	14,000
	Number of days of public campaigning.	Output: Target population groups involved in adaptation and risk reduction awareness Activities.	3.1.2. Number of media outlets in the local media that have covered the issue.	1,000
	Systematization of field experiences.	Output: Strengthening of specific individual and community livelihood strategies in relation to the impacts of climate change, including variability.	3.1. 3. Work document prepared	3,220

In addition, the project is expected to contribute to outcome ER3 - New innovations encouraged and accelerated. Development of innovative adaptation practices, tools and technologies encouraged and accelerated of the Adaptation Fund Strategic Approach 2.

E. Include a budget, including a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

Activity	Unit	No Unit	Unit costs (USD)	Total (USD)
Component 1. Rainwater harvesting systems and precision agriculture				
Meetings with grassroots organizations, presentation of projects, coordination, agreements on the construction and sustainability of water collection systems and precision agriculture systems (hydroponics).	Meeting celebrated	16	200	3,200.00
Signing of an agreement with grassroots organizations for the construction of water collection systems and precision agriculture systems (hydroponics).	Meetings to sign agreements	2	200	400.00
Meetings with beneficiary organizations of the systems and private companies to maximize hydroponic products in the value chain.	Meeting celebrated	2	200	400.00
Hiring of a consultant for the development of a basic study for the design of rainwater harvesting systems and precision agriculture systems (hydroponics).	Man-days and reimbursable Consultancy	1	8,000	8,000.00
Purchase of construction materials, remuneration of labor, other necessary elements for the construction and operation of water harvesting systems and precision agriculture systems (hydroponics).	Materials, remuneration of laborers, other essential elements for the systems.	8	16,000	128,000.00
TOTAL, COMPONENT 1				140,000.00
Component 2. Women for Water Program through Water Purification Technologies				
Hiring of a consultant for the diagnosis of waterborne diseases and basic sanitation in the districts of Pinogana and Santa Fe, Darién.	Man-days and reimbursable Consultancy	1	4,200	4,200.00
Meetings with the health sector to establish the communities most vulnerable to water diseases.	Meetings celebrated	3	200	600.00

Workshops on the use and maintenance of water filtration technology for selected communities.	Workshops	1	200	200.00
Purchase of filters with their accessories for water filtration.	Filters with their accessories	500	90	45,000.00
TOTAL, COMPONENT 2				50,000.00
Component 3 Knowledge management to capture and Disseminate lessons learned				
Training workshops in water technology and precision agriculture.	Workshops	2	1,000	2,000.00
Consultant for the systematization of the project, design of the dissemination campaign and layout of the display articles.	Man-days and reimbursable Consultancy	1	4,000	4,000.00
Purchase of items for display of Projects.	Flyer	1	175	175.00
	Brochure, folders	200	4	800.00
	T-shirt	500	8	4,000.00
Video development consultant (3 – 6-minute video clips, full project video). A 3-minute video of the systematization of the lessons learned on HD 1920 and 720 (high resolution) A 6-minute video of the systematization of the lessons learned on HD 1920 and 720 (high resolution).	Consultancy	1	2,475	2,475.00
Radio campaign to educate future users.	Radiobroadcast	5	200	1,000.00
Children's, youth program to incorporate faith, art and theater with environmental education and technological innovation.	Event	1	5,970	5,970.00
TOTAL, COMPONENT 3				20,420.00
Total Direct Cost				210,420.00
Total Executing Cost (9.5%)				19,989.90
Total Program Cost (Adaptation Fund)				230,409.90
Total NIE (8,5%)				19,584.84
Amount of requested financing				249,994.74

F. Include a disbursement schedule with time-bound milestones.

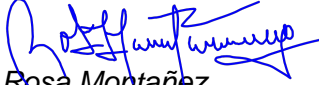
Programmed Disbursement	1er Disbursement	2do. Disbursement	3er Disbursement	Grand Total (USD)
Programmed date	January 2024	July 2024	May 2025	December 2025
Project funds (Components 1-3)	141,980.00	60,970.00	7,470.00	210,420.00
Cost of project execution	9,000.00	6,000.00	4,989.90	19,989.90
Tariff of the implementing entity of the project	8,000.00	8,090.28	3,494.56	19,584.84

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

A. Record of endorsement on behalf of the government⁴ *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:*

<i>Milciades Concepción Ministry of Environment</i>	<i>Date: June 28, 2023</i>
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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*

<p>I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (National Development and Climate Change Strategy, National Climate Change Policy, Provincial Innovation Strategy, Sustainable Development Plan for the province of Darien, Women for Water Program, Agenda 2030 for Sustainable Development, National Development and Climate Change Strategy, National Climate Change Policy, National Development Plan for the province of Darien, Women for Water Program, Agenda 2030 for Sustainable Development) and subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.</p>	
<p> <i>Rosa Montañez</i> Name & Signature Implementing Entity, Executive Director</p>	
<i>Date: August 1, 2023</i>	<i>Tel. and email: +507 6780 7941 rmontanez@naturapanama.org</i>
<p>Project Contact Person: Vilna Cuéllar vcuellar@naturapanama.org</p>	

⁶. 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.

ANNEXE - ENDORSEMENT BY GOVERNMENT



MINISTERIO DE
AMBIENTE



Letter of Endorsement by Government

June 28, 2023
DM-1279-2023

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

Subject: Endorsement for the proposal: Improved livelihoods through access to water, health and food security through innovation and technology transfer to the population in the province of Darién, Republic of Panama.

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

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by Fundación NATURA and executed by Centro Pastoral Red de Vida.

Sincerely,


MILCIADES CONCEPCIÓN
Minister of Environment



MC/AGA/LCDmp/lvm
lvm

cc.: Rosa Montañez- Executive Director of Fundación Natura

Albrook, Calle Broberg, Edificio 804
República de Panamá
Tel.: (507) 500-0855

www.miambiente.gob.pa

August 1, 2023
FN - DE - 042

Mr. Mikko Ollikainen
Manager
Adaptation Fund Board Secretariat
Email: afbsec@adaptation-fund.org
Fax: 202 522 3240/5

Subject: Innovation Small Grant project - Panama

Dear Mr. Ollikainen,

On behalf of Fundación Natura, we present the proposal *Improved livelihoods through access to water, health and food security through innovation and technology transfer to the population of the province of Darién of the Republic of Panama* in the Innovation Small Grant project category.

Sincerely,



Rosa Montañez
Executive Director

