GEF-7 PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: Full-sized Project
TYPE OF TRUST FUND:GEF Trust Fund

PART I: PROJECT INFORMATION

Project Title:	Implementation of the Strategic Action Programmes and the National Strategic Action Plans for the Integrated Water Resources Management in the Puyango-Tumbes, Catamayo-Chira and Zarumilla Transboundary Aquifers and River Basins		
Country(ies):	Ecuador, Peru	GEF Project ID:	10700
GEF Agency(ies):	UNDP	GEF Agency Project ID:	6291
Project Executing Entity(s):	National Water Authority of Peru (ANA), Ministry of Environment and Water of Ecuador (MAAE), Ministry of Environment of Peru (MINAM)	Submission Date:	27 September 2020
GEF Focal Area(s):	International Waters	Project Duration (Months)	60

A. INDICATIVE FOCAL/NON-FOCAL AREA ELEMENTS

Programming Directions	Trust Fund	(in $)	
		GEF Project Financing	Co- financing
International Waters, Objective 3, Programs 5, 6 & 7	GEFTF	8,000,000	40,000,002
Total Project Cost		8,000,000	40,000,002

B. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective: Implement the prioritized investments and activities under the SAP and NSAPs for strengthened Integrated Transboundary Water Resources Management in the Puyango-Tumbes, Catamayo-Chira and Zarumilla transboundary aquifers and river basins between Ecuador and Peru

Project Components	Component Type	Project Outcomes	Project Outputs	Trust Fund	(in $)	
					GEF Project Financing	Co-financing
1. Strengthening of mechanisms and capacities of institutions at the binational level for the integrated management of water resources in the three water basins within an overall governance framework	Technical Assistance	1.1. Mechanisms and capacities of binational institutions at the national, regional and local levels strengthened to improve planning and management in the three basins and the application of IWRM	1.1. At least Three (3) binational institutions strengthened by mechanisms and planning tools, including: 1.1.1. **The three (3) binational coordination mechanisms, the Binational Commission, the Technical Secretariat and the IWRM Committees by Basins** strengthened including the operationalization of the regulatory bodies of the Binational Commission: 1.1.1.1. Define one (1) set of instruments (matrix of roles, responsibilities and competencies) needed to execute actions to implement the binational coordination mechanisms by basin (rules, protocols, and basin committee's set-up) and the IWRM-related commitments. 1.1.1.2. Prepare one (1) Operating Regulations Manual for the IWRM	GEFTF	400,000 (Total) 100,000	2,000,000 (total) 500,000

			Committees and hold binational workshops to review and approve it. 1.1.1.3. Prepare one (1) Action Plan of the Binational Technical Secretariat, and the Action Plans of the three (3) IWRM Committees. 1.1.1.4. Develop and implement one (1) Capacity Building Plan for the operation of binational IWRM Committees.			
			1.1.2. **Develop three (3) Water Resources Management Plans in the binational basins and development of a strategy to mainstream IWRM into national, regional and local planning**, considering its coordination with environmental planning instruments and including the mainstreaming of gender, biodiversity, climate change and disaster risk management approaches in these planning instruments for the three basins. To consider in this plans the Covid-19 effects and actions to support vulnerable groups. This includes: 1.1.2.1. Develop one (1) strategy to mainstream IWRM into territorial planning.[1] 1.1.2.2. Carry out at least three (3) technical roundtables to define, use, and/or elaborate new or existing mechanisms and instruments to articulate territorial planning with water resources planning. 1.1.2.3 Develop one (1) Plan for the involvement of stakeholders and workshops for the dissemination of tools (guides, formats). 1.1.2.4. Include IWRM in the instruments of territorial planning in the three (3) basins, by developing and/or updating the Territorial and Environmental Management Plans, the Concerted Development Plans, the Master Plans of Protected Areas, etc.	GEFTF	200,000	1,000,000
			1.1.3 **Prepare and implement one (1) Gender and Intergenerational Strategy and Plan of Action** for gender mainstreaming and youth participation in national and binational institutions and instances of policy development and implementation, planning and implementation of	GEFTF	100,000	500,000

[1] Urban and territorial planning can be defined as a decision-making process aimed at realizing economic, social, cultural and environmental goals through the development of spatial visions, strategies and plans and the application of a set of policy principles, tools, institutional and participatory mechanisms and regulatory procedures (UN HABITAT).

			IWRM and in the SAP. This includes a gender and intergenerational diagnosis of the binational basins and the **development and implementation of a Training Plan** 1.1.3.1. Develop one (1) **Gender Strategy and Action Plan**. 1.1.3.2. Develop at least two (2) **alliances and coordination mechanisms** between institutions and international cooperation. 1.1.3.3. Develop and implement one (1) **Gender Training Plan**.			
	Technical Assistance	1.2. Improved IWRM through strengthened capacities of the institutions and communities at the national, regional and local levels in the three basins	1.2. Capacities of at least 400 key actors in the three basins strengthened, including: 1.2.1. **Strengthen the capacity of 100 staff of relevant institutions** (ANA, MAAE, MINAM, MINAGRI, MAG, NGOs) in the management, conservation and protection of water resources and natural infrastructure (ecosystems and their components) in the context of climate change, through workshops, courses, and specialized training. Activities include: 1.2.1.1. Develop one (1) training needs diagnosis and of the training modalities to be implemented according to the target audience and the recommendations to minimize exposure to COVID 19 during the activities. 1.2.1.2. Design and implement one (1) Training Program for Water Culture Promoters[2] aimed at 100 institutional stakeholders, including training sessions of the developed modules. A partnership with UNDP CapNet will be pursuit in order to best use the already created resources. 1.2.1.3. Certification of 100 water culture promoters in Peru and with the Technical Secretariat of the National System of Professional Qualifications (SETEC, Ecuador), and develop at least two (2) institutional agreements with strategic allies.	GEFTF	670,000 (Total) 70,000	3,350,000 (Total) 350,000
			1.2.2. **Development of capacities of 300 people of regional and local governments, companies and local beneficiary communities through "Water Schools"**, to raise awareness,	GEFTF	500,000	2,500,000

[2] These promoters are social stakeholders who guide the population on the well use of the water resources, they commonly foster different actions/activities with the population to raise awareness and take care of the resources. Also include the relevant relationship between domestic water use and disease (COVID 19).

			sensitize, and train water users in the management, conservation, and protection of water resources and natural infrastructure (ecosystems and species), taking into account local and traditional knowledge. This includes raising awareness about climate (droughts and floods) and non-climate risks, mitigating and adapting to climate change and climate variability in vulnerable areas by incorporating water culture into the curriculum of the basin's educational institutions. Activities include: 1.2.2.1. Develop one (1) training needs diagnosis, identify and select the target audience, and the training modalities to be implemented according to the target audience and the recommendations to minimize exposure to COVID 19 during the activities. 1.2.2.2. Design one (1) IWRM Training Program aimed at institutional and community stakeholders. 1.2.2.3. Prepare one (1) management and financing model for implementing the programs taught by the Water School. 1.2.2.4. Arrange and coordinate with relevant institutions (Universities and others) in Ecuador and Peru the certification for one (1) IWRM Program and generate institutional agreements. 1.2.2.5. Carry out training sessions for at least 300 people on the IWRM Program modules, carry out the evaluation of continuous training programs, and follow up on learning outcomes and results. 1.2.2.6. Strengthen at least three (3) community providers / irrigation user boards, focusing on their capacities to plan and manage irrigation services with a gender perspective. Formalization and training of irrigation users in the Zarumilla aquifer.			
			1.2.3. Develop and implement one (1) comprehensive **Communication Strategy** at different levels (national, regional and local) to program and implement information campaigns on management, conservation, protection of water resources and ecosystems, formalization of water users and the adaptation and mitigation of climate change at the basin level.	GEFTF	100,000	500,000

2. Improved management, protection and conservation of water sources, and improvement of water use efficiency and quality	Technical Assistance	2.1. Strengthened and improved information and ecosystems management for the protection and conservation of water resources, natural infrastructure and biodiversity to ensure water supply (quantity) and quality of the Zarumilla aquifer	2.1. One (1) water demand and supply management of the Zarumilla aquifer strengthened, which comprises: 2.1.1. **Implement information management processes** for the sustainable use of the Zarumilla aquifer, including: 2.1.1.1. Optimize the binational monitoring network in the Zarumilla basin, carry out piezometric and hydro-geochemical measurement campaigns, and record, process and transfer information. 2.1.1.2. Implement one (1) binational information system and analysis of historical data on exploitation volumes, piezometric levels and hydro-geochemistry. 2.1.1.3. Improve one (1) hydrogeological model to establish recharge, storage, and water balance, including one (1) analysis of the impacts and risk vulnerability to climate change on current and future water balance.	GEFTF	300,000 (total) 200,000	1,500,000 (total) 1,000,000
			2.1.2. Develop one (1) consensus **binational management model for water resources and associated biodiversity of the Zarumilla aquifer to benefit a productive area of at least 11,200 has**, including: 2.1.2.1. Establish one (1) guideline for the binational management model, financing mechanisms, and prepare one (1) technical-administrative document that establishes the aquifer water resource management model. 2.1.2.2. Prepare one (1) Binational Framework Agreement for the management of the aquifer.	GEFTF	100,000	500,000
	Investment	2.2 Protection and conservation of water sources and natural infrastructure strengthened and improved to ensure water supply (quantity) and quality through ecosystem management	2.2. **Develop and implement at least eight (8) interventions for the protection and conservation of at least 4,000 hectares of recharge and catchment areas and natural infrastructure with an ecosystem and climate vulnerability focus** and at least 1,000 meters of river defenses, including areas vulnerable to climate change, in the districts of Paimas, Montero, Jililí and Ayabaca (Peru), and in Minchay, Shirillo and San Cecilia in Macará and Catamayo (Ecuador) and two pilot areas in the Zarumilla basin. This will be achieved through: 2.2.1. **Develop three (3) studies to**	GEFTF	3,135,000 (Total)	15,675,000 (Total)

			define the water resource protection areas (recharge and catchment) of the ecosystems and its components (water protection zones, restriction zones, and hydraulic protection zones), and the result of territorial environmental planning instruments, in coordination with local stakeholders and relevant authorities, including an analysis of the state of ecosystems and landscapes associated with water recharge, and the establishment of the criteria for setting the protection limits.		150,000	750,000
			2.2.2. **Implement at least eight (8) actions and activities** for the management of water resource protection areas (recharge and capture) and natural infrastructure in the pilot areas, with an ecosystem-based adaptation approach, including surveillance and control actions in natural and regional protected areas.		2,715,000	13,575,000
			2.2.3. **Train seven (7) beneficiary communities** and those responsible for maintenance works (350 people, 50 people per community) on ecosystem management of conservation areas that provide water ecosystem services.		50,000	250,000
			2.2.4. Prepare and implement one (1) **ecosystem management plan** per pilot area for water resource protection areas (recharge and catchment), natural infrastructure and ecosystem-based adaptation in the selected intervention areas in coordination with local stakeholders.		100,000 120,000	500,000 600,000
			2.2.5. **Develop three (3) financing strategies (one per basin)** for the conservation, recovery and sustainable use of natural infrastructure (aquatic ecosystems and its components) of vulnerable areas, including support in the formulation (technical files) of an investment portfolio (public and private).			
	Investment	2.3. Improvement of the management and water use efficiency of irrigation systems in low and climate change vulnerable areas in El	2.3. Identification, design and implementation of at least four (4) interventions for **increased efficiency of irrigation systems for productive development** in 700 hectares of rural areas in the provinces of Zarumilla, Ayabaca and Tumbes (Peru) and El Oro (Ecuador), including:	GEFTF	600,000 (Total)	3,000,000 (total)
			2.3.1. Identify, design and implement at least two (2) priority interventions for the rehabilitation and/or expansion of existing and/or new irrigation system infrastructure to improve water		500,000	2,500,000

		Oro (Ecuador) and in the Provinces of Zarumilla, Ayabaca and Tumbes (Peru)	use efficiency in 700 hectares of rural areas vulnerable to climate change. 2.3.2. Engage and train at least 200 irrigation users to operate and maintain new irrigation investments and commit for increased water use efficiency.		100,000	500,000
	Investment	2.4. Reduction of pollution sources of surface and/or groundwater, addressing both primary and emerging pollutants, along the Pacific Ocean source stream	2.4. Implementation of at least two (2) priority interventions for **pollution reduction of surface and/or groundwater from population, agricultural and/or industrial activities (including artisanal mining)** in Zarumilla, Puyango-Tumbes and Catamayo-Chira, including: 2.4.1. **Identify, design and implement at least two (2) priority interventions for pollution reduction** from artisanal mining and/or fertilizers (N, P), pesticides, manure and/or waste water, including the use of water reuse technologies with a circular economy approach. 2.4.2. Develop three (3) **industry and stakeholder round tables** (one per basin) in Water Resources Basin Councils / Water Basin Councils to stimulate the commitment of users (population, agriculture and industry) to increase the reuse and reduction of pollution sources and projects for the treatment, reuse and reduction of wastewater and biosolids, as well as the management of mercury from artisanal mining activities.	GEFTF	600,000 (Total) 500,000 100,000	3,000,000 (total) 2,500,000 500,000
3. Improved monitoring of water quantity and quality and flood risk reduction in the three basins	Investment	3.1. Improved monitoring of water quantity and pollutants and pollution sources along the Pacific Ocean source stream	3.1. **Design one (1) binational system for monitoring and evaluation of surface water quantity and quality** in transboundary basins, characterizing the status of water sources and associated biodiversity, through: 3.1.1. Support the development, approval and implementation of one (1) **binational water quantity and quality monitoring and data sharing protocol**. The protocol should include monitoring hydrological parameters such as water volume and levels in both dry and rainy seasons, emerging contaminants, physical-chemical and microbiological parameters, sediments, hydrobiological and wildlife monitoring.	GEFTF	550,000 (Total) 100,000	2,750,000 (Total) 500,000
			3.1.2. Develop one (1) **Annual Binational Monitoring Plan** for water resource quality and quantity,	GEFTF	200,000	1,000,000

			establishing a sustainable management model, funding sources, implementation and follow-up activities and responsibilities, and strengthening supervision and control capacities at the binational level. This includes identifying potential risks from the use of transnational waters and developing an Intervention Plan.			
			3.1.3. **Design one (1) binational monitoring system** of water quality and quantity and technological resources for its evaluation and monitoring.	GEFTF	250,000	1'250,000
	Investment	3.2. Reduction of impacts from current and future flood risks and mass movements in susceptible areas of the three transboundary basins	3.2. **Design one (1) early warning and water risk management system**, which includes: 3.2.1. Develop two (2) studies (one per country) to identify flood risks and mass movements in the susceptible areas of the three transboundary basins and identification of measures and plans to manage them. 3.2.2. Design one (1) flood and mass movements early warning monitoring system. 3.2.3. Agreed and socialized with the community one (1) binational early warning protocol.	GEFTF	350,000 (Total) 150,000 100,000 100,000	1,750,000 (Total) 750,000 500,000 500,000
4. Monitoring, evaluation and reporting on the implementation of the institutional mechanisms (SAPs, SNAPs and IWRM plans by basin) of the three transboundary basins	Technical Assistance	4.1. Long-term sustainability and socio-economic and environmental outcomes of effective IWRM in the three basins due to effective implementation of mechanisms (SAPs, NSAPs and IWRM plans by basin)	4.1. **One (1) monitoring system to follow up on the implementation progress of the planning instruments (SAPs, NSAPs, IWRM plans by basin) implemented**: 4.1.1. Implement processes for the follow-up and monitoring of SAPs, NSAPs, IWRM Plans for each binational basin, including the updating and adjustment of follow-up and monitoring indicators and the preparation of methodological sheets for those indicators, in coordination with national, local, and sectoral strategies and plans. 4.1.2. Design and implement one (1) Control Panel for the follow-up and monitoring of SAPs, NSAPs, and IWRM Plans by basin. 4.1.3. Conduct testing and training of Control Panel managers for its operation.	GEFTF	1,014,048 (Total) 285,000	5,070,240 (Total) 1,425,000
	Technical Assistance	4.2. Institutional capacity of the authorities strengthened for decision	4.2. Development and implementation one (1) **binational information platform** for water resources management in the three basins (and eventually for the nine binational basins) that allows the exchange,	GEFTF	650,000	3,250,000

		making based on timely and reliable information for integrated / comprehensive water resources management in the three transboundary basins	gathering, integration, dissemination and transmission of information, based on standards and protocols for their interoperability, and in coordination with existing or planned platforms. Activities include: 4.2.1. Update one (1) baseline on water users and IWRM information. 4.2.2. Approve institutional agreements for sharing IWRM information in the three transboundary basins. 4.2.3. Design and implement one (1) information platform to enable the systematization and articulation of information related to IWRM in the three transboundary basins. 4.2.4. Enable the web portal and applications for access to IWRM information.			
	Technical Assistance	4.3. Long-term sustainability of IWRM in the three basins through information and knowledge sharing	4.3. **Knowledge management and sharing**, through: 4.3.1. Develop at least three (3) knowledge products and participate in at least three (3) exchange of experiences at the regional and global level, including through participation in GEF IW:LEARN and allocation of at least 1% of GEF resources to portfolio learning.	GEFTF	79,048	395,240
			Subtotal	GEFTF	7,619,048	38,095,240
			Project Management Cost (PMC)	GEFTF	380,952	1,904,762
			Total Project Cost		8,000,000	40,000,002

C. INDICATIVE SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE, IF AVAILABLE

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount ($)
National Government	MAAE (Ecuador)	In kind	Recurrent expenditure	5,400,000
		Public Investment	Investment mobilized	12,600,000
National Government	ANA, MINAM, MINAGRI (Peru)	In kind	Recurrent expenditure	6,300,000
		Public Investment	Investment mobilized	11,700,000
Local Government	Provincial and local governments in El Oro and Loja (Ecuador)	In kind	Recurrent expenditure	760,000
		Public Investment	Investment mobilized	1,140,000
Local Government	Provincial and local governments in Tumbes, Zarumilla and Ayabaca (Peru)	In kind	Recurrent expenditure	570,000
		Public Investment	Investment mobilized	1,330,000
GEF Agency	UNDP	In kind	Recurrent	100,002

			expenditure	
CSO	IUCN	In kind	Investment mobilized	100,000
Total Co-financing				40,000,002

In the case of the co-financing amounts from the Governments of Ecuador and Peru and other actors, the preliminary co-financing was identified during the consultations for the development of the various NSAP projects. The investment mobilized by the Governments of Ecuador and Peru consists of projects executed by the Ministries in support to priorities relevant to the components in the proposed project. However, these will be officially corroborated by the Ministries and institutions during project formulation or preparation. Other co-financing sources, including international financial institutions related projects, current or planned, in the three basins (e.g. World Bank, Inter-American Development Bank, CAF,), and other related projects (GIZ, EUROCLIMA+, FORAGUA, etc.) will be confirmed during PPG phase.

D. INDICATIVE TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES), FOCAL AREA AND THE PROGRAMMING OF FUNDS

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	(in $)		
					GEF Project Financing (a)	Agency Fee (b)	Total ©=a+b
UNDP	GEFTF	Regional	IW	(select as applicable)	8,000,000	760,000	8,760,000
Total GEF Resources					8,000,000	760,000	8,760,000

E. PROJECT PREPARATION GRANT (PPG)

Is Project Preparation Grant requested? Yes ☒ No If no, skip item E.

PPG AMOUNT REQUESTED BY AGENCY(IES), TRUST FUND, COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

GEF Agency	Trust Fund	Country/ Regional/Global	Focal Area	Programming of Funds	(in $)		
					PPG (a)	Agency Fee (b)	Total c = a + b
UNDP	GEFTF	Regional	IW	(select as applicable)	200,000	19,000	219,000
Total PPG Amount					200,000	19,000	219,000

F. PROJECT'S TARGET CONTRIBUTIONS TO GEF 7 CORE INDICATORS

Provide the relevant sub-indicator values for this project using the methodologies indicated in the Core Indicator Worksheet provided in Annex B and aggregating them in the table below. Progress in programming against these targets is updated at the time of CEO endorsement, at midterm evaluation, and at terminal evaluation. Achieved targets will be aggregated and reported at anytime during the replenishment period. There is no need to complete this table for climate adaptation projects financed solely through LDCF and SCCF.

Project Core Indicators		Expected at PIF
1	**Terrestrial protected areas** created or under improved management for conservation and sustainable use (Hectares)	4,000[3]
2	**Marine protected areas** created or under improved management for conservation and sustainable use (Hectares)	
3	Area of **land restored (**Hectares)	1,200[4]

[4] These 1,200 has represent 1,000 has in Ecuador and 200 has in Peru.

4	Area of **landscapes under improved practices** (excluding protected areas) (Hectares)	10,700[5]
5	Area of **marine habitat under improved practices** (excluding protected areas) (Hectares)	
6	**Greenhouse Gas Emissions Mitigated** (metric tons of CO2e)	
7	**Number of shared water ecosystems** (fresh or marine) under new or improved cooperative management	3
8	Globally over-exploited **marine fisheries** moved to more sustainable levels (metric tons)	
9	**Reduction**, disposal/destruction, phase out, **elimination** and avoidance of **chemicals of global concern** and their waste in the environment and in processes, materials and products (metric tons of toxic chemicals reduced)	
10	Reduction, avoidance of emissions of **POPs to air** from point and non-point sources (grams of toxic equivalent gTEQ)	
11	Number of **direct beneficiaries disaggregated by gender** as co-benefit of GEF investment	55,701 (32,518 F and 23,183 M)

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicators targets are not provided.

G. PROJECT TAXONOMY

Please fill in the table below for the taxonomic information required of this project. Use the GEF Taxonomy Worksheet provided in Annex C to help you select the most relevant keywords/ topics/themes that best describe this project.

Level 1	Level 2	Level 3	Level 4
Influencing Models	Strengthen institutional capacity/decision making Convene multi-stakeholder alliances	(multiple selection)	(multiple selection)
Stakeholders	Private sector Beneficiaries Local communities Civil Society Type of Engagement Communications	Individuals/entrepreneurs Community Based Organization Non-Governmental Organization Academia Information Dissemination Partnership Participation Awareness Raising Education Behavior Change	(multiple selection)
Capacity, Knowledge and Research	Capacity development Learning	 Theory of Change Adaptive Management	(multiple selection)

[5] These 10,700 has represent areas of landscapes under sustainable land management in production systems (10,000 has of productive areas in the Zarumilla aquifer and 700 has of rural areas in the provinces of Zarumilla, Ayabaca and Tumbes – Peru, and El Oro – Ecuador).

		Indicators to Measure Change	
	Knowledge and learning	Knowledge Management Capacity development Learning	
	Stakeholder Engagement Plan		
Gender Equality	Gender Mainstreaming	Beneficiaries Sex-disaggregated indicators	(multiple selection)
	Gender results areas	Participation and leadership Awareness raising	
Focal Area/Theme	International waters	Freshwater	Aquifer River basin
		Pollution	Persistent toxic substances Plastics Nutrient pollution from all sectors except wastewater Nutrient pollution from wastewater
		Strategic Action Plan Implementation	
	Climate Change	Climate Change Adaptation	Disaster Risk Management Climate Resilience Climate Information Ecosystem-based Adaptation
		Climate change mitigation	Agriculture Forestry, and other Land Use
Rio Marker	Climate Change Mitigation Climate Change Adaptation		

PART II: PROJECT JUSTIFICATION

1a. ***Project Description.***

1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description)

1.1. The environmental problem and its socio-economic impacts

Ecuador and Peru share nine transboundary basins of which three (Puyango-Tumbes, Catamayo-Chira and Zarumilla) discharge their waters into the Pacific Ocean and six (Mayo-Chinchipe, Santiago, Morona, Pastaza, Cunambo-Tigre and Napo) into the Amazon River. The three transboundary basins of the Pacific, Zarumilla, Puyango-Tumbes, and Catamayo-Chira, occupy an area of approximately 24,173 km^2, mostly (42 percent) covered by natural tree vegetation and cultivated pastures for cattle (36 percent). The estimated population in 2017 for the three basins was 1,509,600 inhabitants settled mainly in Huaquillas, Catamayo and Macará in the provinces of El Oro and Loja in Ecuador and in Tumbes and Zarumilla in the department of Tumbes, and Sullana in the department of Piura in Peru. The people main

economic activities are productive activities linked to agriculture, aquaculture, livestock, local and international trade, among others. The excessive pressure of these activities is generating certain problems to the water resources and its sustainable management. In the three transboundary basins, the populations of Ecuador and Peru face similar problems of development and management of natural resources, particularly water. The two countries understand that the problem of water resources management in the border areas is common, and therefore must also be managed in a common and coordinated manner.

The water resources management issues in the transboundary basins developed under the Transboundary Diagnostic Analysis (TDA) and the Strategic Action Programmes (SAPs) identified seven (7) common problems in the three transboundary basins. These problems are:

1. Weak institutional management at the transboundary, national and/or binational level.
2. Surface and groundwater pollution.
3. Intervention in the paramos and native forests, loss of soil on slopes and decrease in groundwater recharge.
4. Insufficient water availability and decrease in natural flows over time that affect the balance between supply and demand, and poor availability of water infrastructure for access to water.
5. Overflows and floods.
6. Hydrological droughts and low water flows.
7. Impacts of climate change and climate variability.

At the level of each basin, the problems vary. For example, in the case of the Zarumilla basin, the main problems identified are the deficiency in national, binational and transboundary institutional management; intervention in native forests, loss of soil on slopes and decreased groundwater recharge; and the contamination of surface and groundwater. In the Puyango-Tumbes basin, the main problems are the same as in the Zarumilla basin, but with a different order of priority, with surface and groundwater contamination being the main problem, followed by deficiencies in national, binational, and transboundary institutional management; and intervention in paramos and native forests, loss of soil on slopes, and decreased groundwater recharge. Finally, in the Catamayo-Chira basin, surface and groundwater contamination is the main problem, followed by insufficient water availability and decreased natural flows over time; intervention in paramos and native forests, loss of soil on slopes and decreased groundwater recharge; and deficiency in national, binational and transboundary institutional management. Each of the problems in the three basins is described below.

Deficiency in cross-border, national and/or binational institutional management. Among the common problems in the three basins are deficiency in the transboundary, national or binational institutional management. There is weakness, lack of coordination and articulation, reduced and deficient information, and scarce participation, conditions that have generated and still generate adverse and deficient situations on the availability (quality and quantity) of the water resource and related resources (soils and forests) in the river basins. There are deficiencies in binational actions for planning, administration and integrated management of water resources in the river basin, and little transboundary management. Insufficient and weak institutional management is a common and widespread problem in the three transboundary basins, and is reflected in water resource management problems in the river basins such as intervention in native forests, loss of soil on slopes and decrease in groundwater recharge, contamination of surface and groundwater, insufficient water availability and decrease in natural flows over time, and scarce availability of hydraulic infrastructure for water access.

Surface and groundwater Pollution. In the three basins the presence of harmful elements (chemical, physical and organic) restrict the use or exploitation of water resources in socio-economic activities (domestic, agricultural, industrial, ecological, etc.). The types of pollution found in the three basins include: i) chemical, caused mainly by heavy metals from mining activities and from pesticides and agrochemicals generated in agricultural and livestock activities; ii) physical, due to the high concentration of solid particles (sediments) resulting from erosion processes and waste generated by inadequate solid waste disposal; and iii) organic, from the high presence of organic matter and fecal coliforms generated by wastewater and industrial discharges and decomposition of organic materials in water bodies.

At the basin level, in the Zarumilla basin, the greatest problem is the presence of coliforms and nutrients due to wastewater discharges and discharges from oxidation ponds located in the city of Huaquillas, Aguas Verdes and

Zarumilla. In the Puyango-Tumbes watershed, there are environmental pressures from artisanal mining in the upper watershed (Ecuador), contamination from agricultural and urban activities in the lower-middle watershed (Peru), and contamination from aquaculture activities in the coastal zone (Peru). In the Catamayo-Chira basin, there is artisanal mining in the upper-middle part of the basin on the Peruvian side; there are agricultural discharges in the lower Chira region, and unauthorized discharges near populated urban centers. In the upper and lower parts of the basin there are solid waste disposal sites, which generate water pollution.

Insufficient water availability. There is insufficient water availability and a decrease in natural flows (surface and groundwater) over time, that affect the balance between supply and demand (urban, industrial, irrigation, among others), which is affected by the scarce availability of hydraulic infrastructure for access to water. This is the result of excessive groundwater extraction, lack or deficiency of flow regulation systems, and water pollution. This has been further aggravated by insufficient watershed management practices aimed at soil preservation, and climate variability and climate change adaptation. In the Zarumilla river basin, water demand is 100 percent satisfied during the short-wet season (February-April), while during the other months of the year (May-January) there is a deficit, even without considering the ecological flow. In the Puyango-Tumbes basin, water demand is met 100 percent, with this surplus being considerably lower during the dry period (July-December) compared to the rainy period (January-June). In the Catamayo-Chira basin, there is a large water surplus during the January-July period, while there is a deficit during the dry period (especially in September and November).

Intervention in paramos and native forests, loss of soil on slopes and decrease in groundwater recharge. This issue is associated with the removal of natural herbaceous, shrub and/or tree cover in the upper and middle basin, and with changes in land use, which reduce or eliminate ecosystem services from plant formations, such as water resource capture, recharge and regulation capacity, lack of soil protection and loss of surface horizons with the consequent dragging and depositing of solid material (sediments) in surface water bodies, infrastructure works and agricultural areas, and increased incidence of extreme events (runoff, floods, landslides) and their related effects. Due to the lack of data on deforestation rates and annual erosion rates, the problem has been characterized through data on the percentage of overuse of soil in the basin, that is, the percentages of fragile and protected lands that are being occupied by more intensive uses than the soil can support (crops, pastures), a situation that leads to the generation of an immediate erosive process, the loss of soil and the dragging of sediments into natural channels. In Zarumilla, soil overuse is observed in areas of pastureland that exceed by approximately 12% the area with potential for that use. In the case of Puyango-Tumbes basin, there is 13% overuse of pasture land and 12% overuse of protected land. In Puyango Alto, there is 2% overuse in crops, 23% in pastures and 40% in protected areas. In the mid-Puyango basin, soil overuse is 49% in pastures and 42% in protected areas. In the mid-lower Puyango basin, soil overuse is 7% in crops and 6% in protected areas.

Floods and overflowing of water onto land. This issue is associated with extraordinary river floods cause by high rainfall, which cause the normal load capacity of the riverbed (water and solid elements) to be exceeded and to overflow into surrounding areas, with the consequent effect on people, infrastructure, population centers and associated socio-economic activities. The overflows usually occur in the upper and middle parts of the basins and are seasonal, while in the case of floods, they occur in the lower part, where the water covers the adjacent surfaces for long periods. Of the three basins, the Catamayo-Chira basin is the most susceptible. In the Catamayo-Chira basin there is an area of 508.6 km^2 (63%) with high susceptibility to flooding, 88.5 km^2 (11%) with medium susceptibility, and 209.6 km^2 (26%) with low susceptibility. In the Puyango-Tumbes basin, there are 85 km^2 (43%) with high susceptibility to flooding, 93.1 km^2 (47%) with medium susceptibility, and 21.4 km^2 (10%) with low susceptibility. In the Zarumilla basin there are 13.6 km^2 (14%) with high susceptibility, 26.6 km^2 (26%) with medium susceptibility, and 60.2 km^2 (60%) with low susceptibility.

Hydrological droughts and low water flows. This problem is related to the effect on surface and groundwater availability during the low water period (June-December), caused by climate variability and overexploitation of groundwater resources. In the case of the Zarumilla basin on the Ecuadorian side, the annual water deficit varies between 1000 and 1200 mm per year in the lower section, and 500-700 mm in the middle and upper basins. In the case of the Puyango-Tumbes basin, it is the middle section of the basin (mid-Puyango and mid-lower Puyango sub-basins) that has an average annual water deficit, which varies between 300-500 mm (middle section) and 500-700 mm (lower section). In the Ecuadorian zone of the middle section of the Catamayo-Chira system (Alamor sub-basin and the lower-southern section of Macará) there is a high annual water deficit, which varies between 700 and 900 mm.

Impact of climate change and climate variability. Climate change and variability is evident in historical precipitation and temperature records in the last 100 years, which show a relative intensification of the rainy season (February-April)

and the dry season (May-January). This translates into the possible gradual reduction of surface and groundwater resource availability, along with the likely intensification of the occurrence and severity of hydrometeorological extremes. These impacts affect public health, production, food security, domestic consumption, sanitation, electricity, industry and ecosystem services, and thus socio-economic development. For example, in Peru the 1997-1998 El Niño event cost more than 470 million nuevos soles in the departments of Piura and Tumbes (IGP, 2014), while the 2017 El Niño event affected more than 450,000 people in those departments (PAHO, 2017). Food security is low for the Zarumilla and Tumbes basins, and medium for the Chira basin, considering climate variability (El Niño and La Niña events) and climate change, due to scenarios of increased temperature and reduced precipitation, particularly in the lower sections of the Puyango-Tumbes and Catamayo -Chira basins.

For each of the problems identified, the direct causes, indirect secondary, indirect tertiary (institutional) and the fundamental causes (socio-political and cultural) were established[6]. Below is a summary of indirect tertiary causes:

- Weakness of institutions responsible for planning risk prevention, adaptation to climate change, conservation of ecosystems, control of anthropic activities.
- Deficiencies in the governance and governability of the basin at the binational level; weak political will and absence of a body for joint management. Lack of binational regulations.
- Dispersed and incomplete hydrological, hydrogeological and water quality information, lack of articulation and coordination between institutions. Lack of information and research on the effects of climate change, droughts and floods.
- Weakness of river basin councils to implement management programs. Lack of participation of civil society in decision-making.
- Absence or lack of application of joint binational planning of hydrographic basins.
- Weak presence and coordination of entities responsible for risk management, pollution control, and control of damage to fragile ecosystems in the border area. Insufficient decentralization of decision-making for management.
- Impact of political decisions on technical issues, permanent changes of authorities and technicians in charge of water management.
- Lack of articulation and coordination between municipalities, water managers, managers of natural areas and risks.
- Poor planning and urban and rural land use (occupation of vulnerable areas, lack of sanitation infrastructure, drinking water supply, irrigation, conservation of ecosystems).
- Non-compliance with regulations for the protection of native forests and ecosystems.
- Poor regulation of ecological flows.
- Absence of state plans for soil conservation and erosion control.
- Poor control and sanction by entities of the forestry sector and natural areas.
- Weaknesses in the self-financing of local governments to provide sanitation services.
- Lack of economic incentives for conservation, sustainable production, pollution control, etc.
- Little or no implementation of plans or programs for adaptation to climate change and risks.
- Insufficient technical, logistical and human capacities in the governing entities of cross-border management, risk management, pollution control, urban planning, management of natural areas.

The main barriers to be overcome with the project are:

- Lack of mechanisms and capacities of the institutions at the binational level for the integral management of water resources in the three hydrographic basins within a general governance framework.
- Poor management, protection and conservation of water sources and inefficient use of water.
- Insufficient information to monitor the quantity and quality of water and reduce the risk of flooding in the three basins.
- Lack of monitoring, evaluation and reporting of the implementation of institutional mechanisms (SAPs, SNAPs and IWRM plans by basin) of the three transboundary basins.

[6] The detailed Theory of Change for the project will be constructed during PPG from the information here presented.

Based on the previous, the scheme of theory of change is included in the following figure:

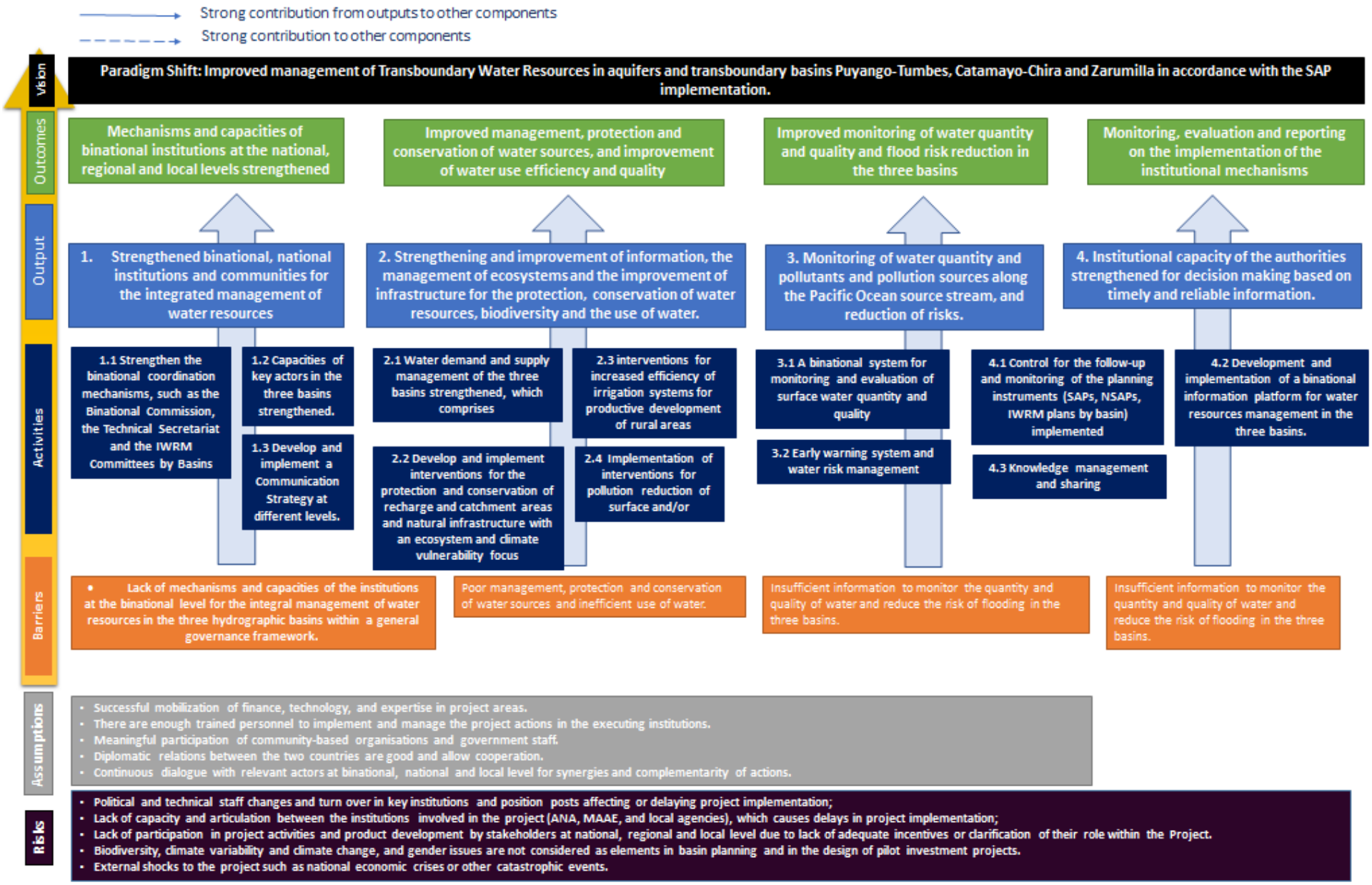


Figure 1 Proposed Theory of Change for the project.

*2) **the baseline scenario and any associated baseline projects***

Endorsed SAPs. The Strategic Action Programmes (SAPs) have been endorsed by both line ministers in Ecuador and Peru. In the case of Ecuador, the SAPs were endorsed by the Minister of Environment and Water (MAAE) on September 20th 2020. The MAAE was created by the fusion of the Ministry of Environment and the National Water Secretariat (SENAGUA) on March 4th 2020. This latter led the SAP preparation in the country and accompanied the implementation of the foundational project. On the other side, in the case of Peru, the SAPs were endorsed by the Minister of Agriculture (MINAGRI) on October 8th 2020. MINAGRI is the line ministry to which the National Water Authority (ANA) is attached. ANA led the SAP preparation in the country and accompanied the implementation of the foundational project.

Institutional capacity. To address institutional deficiencies and limitations at the binational level, in 2017 the two Governments of Ecuador and Peru signed an agreement establishing the Binational Commission for the Integrated Water Resource Management (IWRM) of the transboundary river basins between Ecuador and Peru. The agreement established the Ecuador-Peru IWRM Binational Commission as the space for "binational coordination for the integrated management of transboundary water resources, with a focus on adaptation to climate change. The agreement covers the nine basins between the two countries, three in the Pacific and six in the Amazon basin. The Ecuador-Peru IWRM Binational Commission is made up of five representatives per country. In the case of Peru, by representatives of the Ministry of Agriculture and Irrigation (MINAGRI) through the National Water Authority (ANA), the Ministry for Foreign Affairs (MRE), the Ministry of the Environment (MINAM), and two regional representatives, one from the Hydrographic Regions of the Pacific and one from the Amazon Hydrographic Region. On the Ecuadorian side, it includes representatives of the Water Secretariat (SENAGUA), the Ministry for Foreign Affairs and Human Mobility (MREMH), the Ministry of the Environment (now Ministry of Environment and Water, MAAE), and two regional representatives of the transboundary river basins.

The Binational Commission has a Binational Technical Secretariat and an IWRM Committee for each basin. The Technical Secretariat has powers of articulation and coordination between the IWRM Basin Committees for the implementation of policies and other instruments for planning and managing water resources in each basin. In this respect, it has powers of intra-institutional coordination within the framework of bilateral institutions. The IWRM Basin Committees are responsible for the formulation, execution and implementation of IWRM plans and for coordination with local authorities for the socialization, dissemination, mutual cooperation and awareness actions. They receive recommendations from the Technical Secretariat for the solution of disputes that may arise from the implementation of the plans.

Currently, internal governance of the Binational Commission and the Binational Technical Secretariat requires specifying operational regulations of the respective instances of the Commission, identifying inter-institutional coordination mechanisms that include the development and management of information, as well as mechanisms for monitoring and evaluating compliance with policies and strategies. Governance at the external level implies the coordination and participation of the different social, public and private actors in the construction and application of planning instruments for IWRM. The SAP identifies three areas in which coordination with the different actors should be made effective:

- Development and exercise of strategies to promote IWRM in transboundary basins.
- Preparation and implementation of IWRM plans for each basin.
- Preparation and application of mechanisms for monitoring, joint follow-up and evaluation for the protection and conservation of natural water sources and water ecosystems proposed by the binational Technical Secretariat.

Regarding the institutional and local community capacity, and with the aim of improving the level of knowledge of MAAE, ANA, the Water Basin Councils and Water Resources Basin Councils, Irrigation Boards and Drinking Water Boards (Ecuador), Sanitation Services Administration Boards (JAAS) and Irrigation Users' Boards (Peru) on IWRM and transboundary basin management, during 2016 - 2020 more than 600 stakeholders were trained on IWRM through more than 24 capacity building activities (workshops, training courses, etc.).

However, barriers still persist such as poor environmental education at the formal and community level, insufficient gender-sensitive community knowledge, commitment and participation, weak community organization and lack of

training of a basin approach at the community level. The final evaluation of the Project IWRM Puyango-Tumbes, Catamayo-Chira and Zarumilla Transboundary Aquifers and River Basins (GEF ID 5284) identified that it is important to promote environmental culture for water resources management in transboundary basins based on adequate awareness, environmental education, communication with a gender, intercultural and intergenerational approach that promotes the participation of key stakeholders. Likewise, it is necessary to strengthen stakeholder capacities on conservation of biological diversity and its ecosystem services, with special emphasis on species that are indicators of water and environmental quality.

Data and Information. As described above, both countries count with the Transboundary Diagnostic Analysis (TDA) of the three basins accompanied by a hydrogeological study of the area; Strategic Action Programmes (SAPs) for the three basins, National Strategic Action Plans (NSAPs), pilot demonstration projects for pollution reduction and for improving access to safe water, a gender analysis, among other things. The TDA was developed for the integrated management of transboundary water resources in binational aquifers and basins, including hydrogeological and hydrological studies that provided updated information on water quality and quantity in the three aquifers. The TDA serves as a scientific-technical document on the status and main transboundary problems related to water resources in the three basins and aquifers.

Despite progress with the TDA and SAP, from the previously mentioned terminal evaluation, there are still some limitations in the information used and the adoption of sound interdisciplinary technical and scientific foundations, which need to be reviewed and incorporated in a second phase. These include:

Hydrogeological studies. The lack of these hydro-geological studies have had an impact on the implementation of the baseline project, especially with regard to the consideration of appropriate approaches for the integrated management of surface and groundwater in the plans/instruments (TDA and SAP) produced by the project. Until May 2020, the foundational project developed only one hydrogeological study for the Zarumilla aquifer, with the studies for the other two water basins still not being developed. This was because the available resources were insufficient to carry out a full-scale study of the target hydrogeological units (Alto Piura, Catamayo-Loja and Zarumilla). This is why it is necessary to carry out basic hydrogeological studies in Alto Piura and Catamayo-Loja.

Climate change projections. The TDA did not incorporate climate change projections (projected changes in temperature and precipitation) into the hydrogeological modeling at the basin level. In other words, the hydrological climate characterization of the Zarumilla, Puyango-Tumbes, Catamayo-Chira basins does not include the analysis of climate trends, estimation of future water balance, change in the intensity and frequency of natural flow reduction, droughts and floods associated with climate change. Neither does it include the categorization of risks associated with climate change according to the National Communications of both countries. Nor does it include an analysis of mass movements and floods that should make visible the current and future climate factors associated with climate change. The analysis of problems in each of the basins identifies the "impacts of climate change and climate variability" as a present problem. However, the description of the risks that may be generated should be expanded by considering the physical, social and/or economic components of the basins that affect the attributes of quality, quantity and timeliness of water availability. Secondary information (technical and/or scientific evidence) is required, complementing it with primary information gathering of the local knowledge of the populations.

Institutional commitments and links to ecosystems and climate change. The impacts of climate change and variability were identified as one of the main transboundary problems. The development of SAPs indicated the need to create binational strategies for risk management and/or strategies about adaptation and mitigation of climate change. In the project area, the economic value of the ecosystems and the services they provide is still not properly measured and recognized by the society. Usually, ecosystem services are often given little weight in the decision-making process, e.g. in the course of the development of a grey infrastructure project. So, there is a need to address climate change and variability in the updates of the current TDA/SAPs/NAPs processes in a more precise manner (especially regarding geospatial location, time, magnitude, and frequency of the impact), rooted on scientific evidence, and with proper consideration of environmental, social and economic factors that contribute to risk and exposure of the population. These updates for SAPs and NAPs should be constructed considering possible scenarios that could result from climate change and their impacts on the water resources, ecosystems, people, economy, and institutions.

Project data and information accessibility. The terminal evaluation of the foundational project recommended to make publicly available, especially to universities and research institutions, all data, information, maps and instruments related to hydrogeological studies generated by the project. The 'DA's GIS database is available for public access on a web

page, but the link to it has not yet been widely disseminated (i.e. through the project web page). On the other hand, ANA and MAAE each have a web portal with information for water resources management with data visualization in a geographic information system (geoportal). However, the existing web portals of ANA and MAAE do not consider binational consensus information for water resources management for any of the nine transboundary basins.

Water quality. The results of the chemical parameter analyses show the presence of certain metals, such as lead, iron, arsenic and manganese, which do not comply with the limits allowed by the Environmental Quality Standards (EQS), especially in the low water months. Due to geochemistry or artisanal mining activities, the concentrations of heavy metals in water originate in the upper basin and, due to dilution effects, the decrease becomes more noticeable during low water (November), while in the wet season (April) the concentrations remain more constant (ANA, 2013). As for the biological parameters, the lower basin registers a high level of coliforms that exceeds the limit of 2000 NMP/ 100 ml allowed by ECA. This occurs due to direct discharges without treatment and to waste from agricultural activities in areas close to rivers.

In November 2019, the Governments of Ecuador and Peru, based on the work of the Binational Technical Group on Water Quality in Transboundary Basins, committed themselves to adopt a binational protocol for water quality monitoring for the nine transboundary basins, including, according to the characteristics of each basin, the consensual identification of parameters for the analysis of possible anthropogenic contaminating sources or environmental pressures that will make it possible to establish standardized procedures for the protection of people's health and to have management tools for the ordering, management and development of the nine basins, including the three basins covered by this project.

Early warning systems. The "Plan for the integrated management of the water resources of the Zarumilla river transboundary basin" (ANA, SENAGUA, now MAAE) proposed the project "Integrated study for the control of floods and mass movements in the binational basin of the Zarumilla river". As a background, in 2013 the National Institute of Meteorology and Hydrology of Ecuador (INAMHI) executed the project "Implementation of the early warning system in the Zarumilla River Basin – Ecuador" in Huaquillas and Arenillas. In Peru, the Water Resources Council (HRC) of the Tumbes Basin approved in 2018 the protocol for early warning of floods in the Tumbes and Zarumilla rivers, prepared by the technical working group on risk management. The Puyango Tumbes Special Binational Project (PEBPT) installed two hydrometric stations on the Zarumilla River in the Lajas and Palmales sectors, from which rainfall levels are transmitted in real time.

Baseline by basin. Within the framework of the foundational project, five water management and sanitation models were developed in the pilot project areas: Las Lajas, Limones, Guineo Chico, and Sanguillín in Ecuador and Paimas in Perú. However, the models were not fully implemented, for which the terminal evaluation recommended that in order to promote changes on the ground and ownership by local communities, these technical studies should be carried out by local stakeholders responsible for the operation of water and sanitation systems.

In the process of developing the National Strategic Action Programmes (NSAPs), an analysis of national and binational projects was developed. The results of this analysis show that, despite the advances in management for the **Catamayo-Chira** basin, there are still a lack of projects and actions to strengthen binational IWRM, generate quality information on water resources (monitoring, flow measurements, quality measurements, etc.), those related to risk control that may contribute to flood prevention and training of users. In Ecuador, most of the existing projects focus on drinking water and sanitation infrastructure and on climate change adaptation and mitigation actions that come from concessional (cooperation) and non-concessional (credit) external resources. Some projects have been managed with cooperation, a financing mechanism that could be enhanced by working with different sectors to submit more ambitious proposals in terms of coverage and results. In the case of Peru, there is greater progress on IWRM, with projects for the conservation and recovery of water basins in several districts of the basin. Similarly, at the national level, there is a project for modernizing IWRM that contributes to the generation of information and strengthening institutional capacities. Finally, there is no evidence of projects involving ancestral knowledge for resource conservation or use through *albarradas* or other types of reservoirs.

In the **Puyango-Tumbes** basin, Ecuador's projects focus on drinking water and sanitation infrastructure, remediation (activities related to the impacts of mining), and climate change adaptation and mitigation actions. The quality of water in the Puyango-Tumbes river basin is incompatible with its use for irrigation, so the corrective measures cited in the "*Integral Environmental Management Program of the Puyango River Basin*" must be adapted. The greatest environmental pressure of this river comes from small-scale mining in the upper part of the basin, on the banks of the

main tributaries of the Puyango-Tumbes river (Calera and Amarillo rivers). It is necessary to promote infrastructure projects for monitoring, flow measurements, etc., related to risk control that can help prevent the risks of flooding and other effects in the lower basin with a wider range of action, as well as actions for the conservation of ecosystem services and basin reforestation or protection where there are lower allocations of state budgets and/or cooperation. On the other hand, in Ecuador there is a greater difficulty in the articulation between public institutions and projects involving shared resources. Many small initiatives from several municipalities can have a greater impact by working together. This can be enhanced by the support and management of the Ecuador-Peru Binational Plan, which has the tools to directly access cooperation resources.

In the case of Peru, there is greater progress on IWRM, and the projects are aligned with the objectives of the Tumbes Basin water resources management plan (2015). This plan emphasizes the coordination and joint work of all the institutions that belong to the Water Resources Council. There is experience and progress with the monitoring and early warning system, as well as the protocol for response to flood events and possible floods. There are no projects focused on ancestral knowledge for the conservation of the resource or its use through *albarradas* or other types of reservoirs, nor are they consider gender projects, with the advantages that women's participation in the management of the resource can bring in aspects of health and well-being of families.

There are fewer projects in the **Zarumilla** river basin than in the Puyango-Tumbes and Catamayo-Chira basins, probably influenced by the smaller territorial coverage. However, it is important to consider the basin's aquifer on which there are few projects, the most significant being the "hydrogeological study of the Zarumilla basin and aquifer" which is currently being executed. As in the basins previously analyzed, there is no evidence of projects involving ancestral knowledge for the conservation of the resource or use through albarradas or other types of reservoirs.

Scale of investments and current sources of funding. According to the final evaluation of the foundational project, the TDA and SAP include actions that go beyond the mandate of ANA and MAAE. Therefore, their implementation must be done in close coordination with the other financial agents of the basins, including the relevant ministries (Ministry of Environment of Peru (MINAM), Ministry of Agriculture and Irrigation of Peru (MINAGRI), Ministry of Environment and Water (MAAE), Ministry of Agriculture and Livestock (MAG)), regional and local governments (Loja Provincial Decentralized Autonomous Government (GAD) and Cantonal GADs, Regional Government of Piura and Provinces) and the private sector. It is very likely that the scale of the necessary resources and the economic limitation of the governments and private parties involved in the basin will force them to seek external resources. For example, the estimated planned irrigation investments funding required is USD 35 million. Thus, the scale of resources needed for IWRM in these basins is far beyond the capacity/mandate of the GEF to support these investments, so it is necessary to identify possible national sources of funding needed for the implementation of the SAP and the National Strategic Action Plans (NSAPs) and to start the articulation and commitment of these actors who provide commitments for their implementation. External sources of financing should also be explored, such as the development banks active in the region (the Interamerican Development Bank (IDB), the Development Bank of Latin America (CAF), World Bank) and/or climate funds such as the Green Climate Fund (GCF).

Existing or planned associated projects. During the development of the National Strategic Action Plans (NSAPs), several projects were identified at the binational, national and sub-national levels in Ecuador and Peru. Binational projects in execution, which are relevant to this project, include:

- The IUCN BRIDGE Andes project "Strengthening Water Governance Mechanisms in Transboundary Basins" in its fourth phase (2019-2021) has two priorities: i) To consolidate multi-level governance systems and demonstrate the economic, social and environmental benefits of cooperation for territorial water management; and ii) To incorporate new thematic approaches to the portfolio of activities, including new financial mechanisms to promote natural and hybrid (green/grey) infrastructure in water-related investments and the financial sustainability of transboundary cooperation mechanisms. The Project has provided technical and legal support for the strengthening of water cooperation frameworks between Ecuador and Peru, as well as capacity building for government institutions, sub-national governments and local stakeholders. One of the main achievements has been the facilitation and advice for the process of forming the Binational Commission for the management of the nine basins shared between Ecuador and Peru. The experience of the BRIDGE project in strengthening the governance of transboundary basins, and the policy documents for the formation and operation of the binational bodies will serve as a support the implementation of this project. The project is financed by the Swiss Agency for Development and Cooperation (SDC).

- The bi-national project for the "reduction of the vulnerability of the population and its livelihoods to the threats of drought and flooding in the border territories of Ecuador and Peru" (2020-2022) seeks to reduce the vulnerability of the Catamayo-Chira transboundary basin, through: i) strengthening public institutions for governance in risk management; ii) preparing the border civil population for risk reduction in the face of natural events such as droughts and floods; and iii) implementing Early Warning Systems for floods, with information technology to prevent floods and droughts. The project is financed by the European Union through EUROCLIMA+ (€ 1 million) and local resources, and implemented by the Regional Government of Piura.
- The project "Strengthening Resilience to Climate Change through the Protection and Sustainable Use of Fragile Ecosystems" ProCamBio II is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and supported by GIZ. This project aims to enable populations in fragile ecosystems to strengthen their resilience to ecological risks or those caused by climate change, to react in time to changes and to preserve their standard of living in the long term.
- The Regional Water Fund (FORAGUA) is an environmental and water fund that acts as a financial mechanism for municipalities in southern Ecuador (Loja and Zamora Chinchipe Provinces) to invest in actions and measures that allow for the integrated management of water sources, in order to conserve, protect, restore and recover the environmental services and biodiversity of fragile and threatened ecosystems in the municipalities. FORAGUA administers resources from the environmental tax on drinking water consumption, private contributions and national and international cooperation.
- In Peru, until 2018, two mechanisms of remuneration for ecosystem services were registered in the Department of Piura, whose management model contemplates the direct contribution of the Users' Boards. The first is the Quiroz Chira Water Fund (FAQCH), which is a mechanism that began in 2014 and is financed by an annual voluntary contribution from the San Lorenzo Users' Board corresponding to 1 percent of the tariff collected. In addition, a fixed annual contribution is received from the Chira River Basin User's Board and the contribution from the Provincial Municipality of Ayabaca and the District Municipality of Pacaipampa. The second mechanism is the Regional Water Fund (FORASAN) that started in 2017 as an initiative of the Regional Government of Piura and ANA, to contribute financially to integrated water management in the Chira-Piura basin, based on the Water Resources Council's Water Resources Management Plan for the Chira-Piura basin. At present, it has incorporated into its management the contributions of private companies (such as The Central America Bottling Corporation), international cooperation (through a project implemented by The Nature Conservancy, TNC), and a fixed annual contribution from the Board of Users of the Middle and Lower Piura and the Board of Users of the Sechura.
- In 2016, Ecuador launched the Continuous Training Program "Water School" (*Escuela del Agua*), which seeks to strengthen the capacities of drinking water and irrigation service providers, other users, and other institutions linked to water management. This initiative is led by SENAGUA and is supported by FORAGUA, Naturaleza y Cultura Internacional (NCI), the Fund for the Conservation of the Paute River Basin (FONAPA), and the Private Technical University of Loja (UTPL). In the case of Peru, 'NA's Project for the Modernization of Water Resources Management (PMGRH) was created with the purpose of improving water resources management at national level, in six (6) pilot basins, including the Tumbes and Chira-Piura basins, as well as four (4) non pilot basins on the Pacific side of Peru. Similarly, there are ANA resources focused on water culture and the promotion of IWRM.
- The binational project between Peru and Costa Rica on Forests, Biodiversity and Ecosystems is currently being implemented until February 2021. It focuses on planting and harvesting water, charging for water services and recognizing payment for environmental services, within the framework of South-South cooperation. The project is implemented in Piura and Ayacucho, financed by the EUROCLIMA+ program, through the Association for Research and Integral Development (AIDER) and the National Forestry Financing Fund (FONAFIFO) of Costa Rica. The overall amount of the project is 983,431 euros, of which 79 percent is a grant from the European Union through EUROCLIMA+21. The objective of the project is to protect, improve and restore watersheds through a system of payment for ecosystem services and water charges/fees in Peru.

3) the proposed alternative scenario with a brief description of expected outcomes and components of the project

Based on the indicated baseline, the SAPs and NSAPs implementation for the three transboundary basins of the Pacific between Ecuador and Peru proposes the following components, outcomes, outputs and activities:

Component 1. Strengthening of mechanisms and capacities of institutions at the binational level for the integrated management of water resources in the three water basins of Puyango-Tumbes, Catamayo-Chira and Zarumilla within an overall governance framework

Outcome 1.1. Mechanisms and capacities of binational institutions at the national, regional and local levels strengthened to improve planning and management in the three basins and the application of IWRM.

Output 1.1. At least three (3) binational institutions strengthened by mechanisms and planning tools, including:

Activity 1.1.1. **The three (3) binational coordination mechanisms, the Binational Commission, the Technical Secretariat and the IWRM Committees by Basins strengthened**, including the operationalization of the regulatory bodies of the Binational Commission and the strengthening of the technical roundtables. This activity will be coordinated with the BRIDGE project, taking advantage of its experience in international regulations and the alliances they have generated in the territory. This would support the approach with actors involved in territorial planning for activity 1.1.2 and could support the processes of conformation of the IWRM Committee of the Catamayo-Chira, Puyango-Tumbes and Zarumilla basins. This includes the following activities:

- 1.1.1.1. Define one (1) set of instruments (matrix of roles, responsibilities and competencies) and execute actions to implement the binational instances by basin, including the absorption of the current binational instances established in the Agreement, and set up of rules, protocols, and basin committees, and the IWRM-related commitments.
- 1.1.1.2. Prepare one (1) Operating Regulations Manual for the IWRM Committees for the Puyango-Tumbes, Catamayo-Chira and Zarumilla basins and for the Binational Technical Secretariat. Hold binational workshops to review and approve the Operating Regulations.
- 1.1.1.3. Prepare one (1) Action Plan of the Binational Technical Secretariat, and the Action Plans of the three (3) IWRM Committees (Puyango-Tumbes, Catamayo-Chira and Zarumilla)
- 1.1.1.4. Develop and implement one (1) Capacity Building Plan for the operation of binational IWRM Committees.

Activity 1.1.2. **Develop three (3) Water Resources Management Plans in the binational basins and development of a strategy to mainstream IWRM into national, regional and local planning**, that include gender, youth, ecosystems and ecosystem-based adaptation, nature-based solutions, climate change and disaster risk management approaches in these planning instruments. Specific activities include:

- 1.1.2.1. Develop one (1) strategy to mainstream IWRM into territorial planning, linking territorial planning areas with IWRM planning areas. Production of a toolbox to link territorial plans to IWRM planning.
- 1.1.2.2. Carry out at least three (3) technical roundtables to define, use, and/or elaborate new or existing mechanisms and instruments to articulate territorial planning with water resources planning at the level of river basins.
- 1.1.2.3 Develop one (1) Plan for the involvement of stakeholders and workshops for the dissemination of tools (guides, formats) to articulate territorial planning with water resources planning at the level of river basins.
- 1.1.2.4 Include IWRM in the instruments of territorial planning in the three (3) basins, by developing and/or updating the Territorial and Environmental Management Plans, the Concerted Development Plans, the Master Plans of Protected Areas, etc.

Activity 1.1.3 Prepare and implement one (1) **Gender and Intergenerational Strategy and Plan of Action** for gender mainstreaming and youth participation in national and binational institutions and instances of policy development and implementation, planning and implementation of IWRM and in the SAP. This includes a gender and intergenerational diagnosis of the binational basins and the **development and implementation of a Training Plan**. It is necessary to support the development and strengthening of a structure or mechanism that assumes the management of the gender policy in the institutional framework, including coordination among units and its follow-up and monitoring.

- 1.1.3.1. Develop one (1) **Gender and Intergenerational Strategy and Action Plan** which, depending on the context of each country, can be improved and adapted to institutional conditions with the support of specialized gender personnel. The basis of this process will be the Gender Mainstreaming Strategy for IWRM, prepared during the foundational project. The development of this Strategy and Action Plan will have the support of a specialist who is in charge of implementing the Gender and Intergenerational Strategy, and that will provide technical and methodological support to the project team and will coordinate the implementation of the Strategy with the technical gender bodies of the governing institutions such as ANA and MAAE.
- 1.1.3.2. Develop at least two (2) **alliances and coordination mechanisms** between institutions and international cooperation, for which agencies that are working on gender issues will be identified to coordinate and establish synergies. These alliances with the institutions in charge of implementing gender policies at the national level, including the Gender Equality Council and the Human Rights Secretariat in Ecuador and the Ministry of Women and Vulnerable Populations of Peru¸ and other organizations with expertise in gender such as UN Women, UNDP, GIZ, IUCN, the Global Water Partnership (GWP), the Conference of Ibero-American Water Directors (CODIA), among others.
- 1.1.3.3. Develop and implement one (1) **Gender and Intergenerational Training Plan**. Development of workshops and training activities at the level of IWRM governing bodies and with communities and local stakeholders in each of the water basins to strengthen the operational implementation of gender policies. Training topics will include among others: i) Gender, intergenerational and IWRM; ii) Gender and intergenerational mainstreaming in the project cycle; iii) Tools for gender and youth mainstreaming; iv) Mainstreaming gender and youth in organizations and policy process; v) Gender indicators; vi) Masculinities workshops, among others.

Outcome 1.2: Improved IWRM through strengthened capacities of institutions and communities at national, regional and local levels in the three basins.

Output 1.2. **Capacities of at least 400 key actors in the three basins strengthened**. The objective of this output is to increase the technical capacities of stakeholders in the three basins for active participation in IWRM that is sensitive to biodiversity, climate change and gender. This will be developed through two training programs implemented in the **Binational Water School**, the first one directed to institutional stakeholders to train water culture promoters and improve negotiation capacity on international waters at the level of Foreign Affairs, and a second training program on IWRM directed to water stakeholders and users (general public, local communities and private sector), including drinking water and sanitation service providers and community providers / irrigation user organizations. These two training programs will be complemented by a Communication Strategy for planning and implementing IWRM information campaigns.

In the case of the two programs, a methodological and pedagogical design (modules, technological and pedagogical resources) of the Binational Water School will be developed and agreed upon. Likewise, a financial model of the Binational Water School will be developed for its long-term sustainability. Also, agreements with strategic allies (NGOs, Water Funds, Institutes and Universities) will be signed and agreed upon for the use of physical and/or virtual facilities, and especially the academic endorsement of the Universities. This will support the successful implementation of the training activities and its sustainability over time.

The activities of the two programs and the Communication Strategy include:

Activity 1.2.1. **Strengthen the capacity of 100 staff of relevant institutions** (ANA, MAAE, MINAM, MINAGRI, MAG, SERNANP, GOREs, NGOs) in the management, conservation and protection of water resources and natural infrastructure (ecosystems and their components) in the context of climate change, through the development and implementation of a program to train promoters of a water culture. Workshops, courses and diplomas will be developed in specialties related to IWRM, biodiversity and climate change.

- 1.2.1.1. Develop one (1) training diagnosis and of the training modalities to be implemented according to the target audience;
- 1.2.1.2. Design and implement one (1) Training Program for Water Culture Promoters aimed at 100 institutional stakeholders (considering existing resources), its training modules, and the model for evaluating the program; Implement the training of Water Culture Promoters program, deliver certificates of approval, carry out the evaluation of the continuous training programs and the follow-up of the implementation of the learning results. A

partnership with UNDP CapNet will be pursuit in order to best use the already created resources.

- 1.2.1.3. Certification for 100 water culture promoters in Peru and with the Technical Secretariat of the National System of Professional Qualifications (SETEC) (Ecuador). Develop at least two (2) institutional agreements with strategic allies for the use of physical and virtual spaces.

Activity 1.2.2. Development of **capacities of 300 people of regional and local governments, companies and beneficiary local communities** through the "Water Schools" to raise awareness, sensitize and train water users in management, conservation, and protection of water resources and natural infrastructure (ecosystems and species), taking into account local and traditional knowledge. This includes raising awareness about natural risks (droughts and floods) and non-climate risks, mitigating and adapting to climate change and climate variability in vulnerable areas by incorporating water culture into the curriculum of the basin's educational institutions. Water stakeholders and users are divided into six (6) preliminary interest groups: Municipal/District GADs, Water Boards/JASS and Irrigation Boards, Basin Councils, Water Resources Basin Councils, professional technicians from IWRM institutions, and the private sector. This activity is coordinated with Component 2 (Activity 2.3) focused on the sustainability of irrigation services in El Oro (Ecuador) and Zarumilla, Ayabaca and Tumbes (Peru).

- 1.2.2.1. Develop one (1) training needs assessment and diagnosis, identify and select the target audience, and the training modalities to be implemented according to the target audience.
- 1.2.2.2. Design one (1) IWRM Training Program aimed at institutional and community stakeholders (considering existing resources), to develop training modules. In the case of drinking water and sanitation service providers and community providers/irrigation user organizations, programs will focus on applying the existing regulations regarding assessment, diagnosis, improvement plans, and tariffs for irrigation services, and the operation and maintenance of irrigation systems.
- 1.2.2.3. Prepare one (1) management and financing model for implementing the programs taught by the Water School, including budgets preparation with information from previous activities.
- 1.2.2.4. Arrange and coordinate with relevant institutions (Universities and others) in Ecuador and Peru the certification for one (1) IWRM Program and generate institutional agreements with these strategic allies for the use of physical and virtual spaces.
- 1.2.2.5. Carry out training sessions for at least 300 people on the IWRM Program modules for water stakeholders, irrigation service providers, to deliver certificates of approval, carry out the evaluation of continuous training programs, and follow up on learning outcomes and results.
- 1.2.2.6. **Strengthen at least three (3) community providers / irrigation user boards** in rural areas of El Oro, and in Districts of the Provinces of Zarumilla, Ayabaca and Tumbes, focusing on their capacities to plan and manage irrigation services with a gender perspective. This will comprise a formalization and training of Zarumilla aquifer irrigation users, by designing and implementing a formalization strategy, including socialization campaigns, to encourage the formalization of irrigation users, with the support of local stakeholders. This activity will be developed in coordination with Activity 1.2.3 (Communication strategy), the Activity 1.1.3 (Gender and Intergenerational Action Plan) and Activity 2.3.3 (irrigation users' engagement).

Activity 1.2.3. Develop and implement one (1) **Communication Strategy** at different levels (national, regional and local) to program and implement information campaigns on management, conservation, and protection of water resources and ecosystems, formalization of water users, gender and water resources, and adaptation and mitigation of climate change at the basin level.

Component 2. Improved management, protection and conservation of water sources, and improvement of water use efficiency and quality *Outcome 2.1 Strengthened and improved information and ecosystem management for the protection and conservation of water sources, natural infrastructure and biodiversity to ensure water supply (quantity) and quality in the Zarumilla aquifer.*

Output 2.1: One (1) water demand and supply management plan of the Zarumilla aquifer strengthened. Specifically, this output seeks to generate continuous binational information on the quantity and quality of the aquifer, develop a binational management model (including a financing model), manage the risk of contamination and overexploitation of the aquifer by

implementing measures to protect the recharge and catchment areas, and promote the formalization of irrigation users. The project will support demand management (uses and exploitation, recharge and water quality) and supply management (management of risks associated with pollution and overexploitation through protection of recharge zones and an action plan). The planned activities are:

Activity 2.1.1. Implement **information management processes** for the sustainable use of Zarumilla aquifer, including:

- 2.1.1.1. Optimize the binational monitoring network in the Zarumilla basin, carry out piezometric and hydro-geochemical measurement campaigns, and record, process and transfer information.
- 2.1.1.2. Implement one (1) binational information system and analysis of historical data on exploitation volumes, piezometric levels and hydro-geochemistry.
- 2.1.1.3. Improve one (1) hydrogeological model to establish recharge, storage, and water balance, including one (1) analysis of the impacts and risk vulnerability to climate change on current and future water balance (based on the information collected in the hydrogeological study 2019-2020 of the Zarumilla aquifer and the information resulting from Activities 2.1.1.1);

Activity 2.1.2. **Develop one (1) consensus binational management model for water resources and associated biodiversity of the Zarumilla aquifer to benefit a productive area of at least 11,200 has**. This will include:

- 2.1.2.1. Establish one (1) guideline for the binational management model of the Zarumilla aquifer (governance agreements, management instruments, implementation, monitoring, financing), including financing mechanisms (tariffs, water funds, cooperation, taxes -environmental and non-environmental-, retribution mechanisms for ecosystem services, etc.); and prepare one (1) technical-administrative document that establishes the aquifer water resource management model, including the financing mechanisms to be implemented, processes flowchart, roles, responsibilities, etc.;
- 2.1.2.2. Prepare one (1) binational Framework Agreement for the management of the aquifer (based on the technical-administrative document).

Outcome 2.2. Protection and conservation of water sources and natural infrastructure strengthened and improved to ensure water supply (quantity) and quality through ecosystem management

Output 2.2. Develop and implement at least eight (8) interventions for the protection and conservation of at least 4,000 hectares of recharge and catchment areas and natural infrastructure with an ecosystem and climate vulnerability focus and at least 1,000 meters of river defenses, including areas vulnerable to climate change, considering ecosystems and ecosystem based adaptation, nature based solutions and climate change approaches (adaptation and mitigation). This seeks to promote the protection, conservation and recovery of ecosystem and improve the supply of ecosystem services in selected pilot areas in the three basins: two pilot areas in the Zarumilla basin (one in each country), three pilot areas in the Puyango basin in Ecuador (Shirillo, Quebrada Machay and Santa Cecilia) and in the priority micro-basins of the Chira river, in the Districts of Paimas, Montero, Jililí and Ayabaca in Peru. At least 2,000 hectares of basin heads will have their ecosystem services protected and recovered and 10 hectares of degraded areas will be restored. For this purpose, alliances will be formed with public and community organizations to reduce water risks such as floods. Activities include:

Activity 2.2.1. **Develop three (3) studies to define the water resource protection areas** (recharge and catchment) of the ecosystems and its components, including water protection zones, restriction zones, and hydraulic protection zones, and the result of territorial environmental planning instruments, in coordination with local stakeholders (GADs, water users, water and irrigation boards, and other relevant entities) including an analysis of the state of ecosystems and landscapes associated with water recharge, and the establishment of the criteria for setting the protection limits. This includes the preparation of the technical profile for the establishment of a water protection zone and the signaling and physical delimitation of the areas of water importance. The process will establish a criterion for setting the protection limits recharge and catchment areas, in coordination with relevant entities. It will develop studies to inform protection and conservation actions of ecosystems and its components, including:

- 2.2.1.1. Develop a diagnosis of the state of ecosystems and landscapes associated with water recharge and zoning of degraded surfaces in the area of influence of the selected water sources to identify and quantify areas for restoration of degraded ecosystems or those in the process of degradation that are vulnerable to climate change.

This will use the results of the process of identification, categorization and prioritization of degraded areas for recovery and the results of Activity 1.1.2 on territorial environmental planning.

- 2.2.1.2. Prepare feasibility studies and technical profiles for projects to conserve and recover water ecosystems and ecosystem services according to corresponding typologies, and for works to channel priority sectors of rivers and riparian defenses complemented with afforestation and other natural infrastructure measures on riverbanks in the districts of Paimas, Montero, Jililí and Ayabaca in Peru.

Activity 2.2.2. **Implement at least eight (8) actions and activities** for the management of water resource protection areas (recharge and capture) and natural infrastructure in the pilot areas, with an ecosystem-based adaptation approach, including surveillance and control actions in natural and regional protected areas. These action and activities include:

- Restoring degraded areas and recovering riparian strips in the areas of influence;
- Water harvesting systems (*albarradas*), infiltration ditches, water springs protection and reforestation areas as a measure of climate change adaptation;
- Agroforestry systems (live fences), silvopastoralism (fodder bank) and other mitigation activities (reforestation/forestation) proposed in the environmental management plan (EMP);
- Sustainable economic activities such as agro-ecological home gardens and melipona gardens, management of non-wood resources in the buffer areas of natural protected areas and areas of influence.
- Joint actions between the protected area systems of Peru and Ecuador for surveillance and timely control of protected areas for the provision and regulation of water resources.

Activity 2.2.3. **Train seven (7) beneficiary communities** (three pilot sites in Ecuador and four districts in Peru and those responsible for maintenance works for the management of conservation areas of water ecosystems and associated ecosystem services (350 people, 50 people per community). This includes the development and implementation of modules for technical assistance and promotion of the sustainable use and conservation of natural infrastructure in the recharge and catchment areas.

Activity 2.2.4. **Prepare and implement one (1) ecosystem management plan per pilot area** for the water resource protection areas (recharge and capture), natural infrastructure and ecosystem-based adaptation in the selected intervention areas in coordination with local stakeholders.

Activity 2.2.5. Develop three (3) **financing strategies (one per basin)** for the conservation, recovery and sustainable use of natural infrastructure (aquatic ecosystems and its components) of vulnerable areas, including support in the formulation (technical files) of an investment portfolio. The financing strategy will consider innovative instruments to attract public and private sector investment in natural capital, and will be coordinated with other biodiversity, ecosystems, and climate change financing strategies. Carry out six workshops for **prioritizing investments** (two per basin) and development of the technical profiles for this investment portfolio (public and private). During the NPAS, infrastructure investment projects have been identified that could be financed by international banks, there are also natural resource conservation projects that can be financed with the payment of drinking water supply or irrigation services (local environmental funds) . Some of these projects require the preparation of feasibility files and final design.

Outcome 2.3. Improvement of the management and water use efficiency of irrigation systems in low and climate change vulnerable areas in El Oro (Ecuador) and in the Provinces of Zarumilla, Ayabaca and Tumbes (Peru)

Output 2.3. Identification, design and implementation of at least four (4) interventions for **increased efficiency of irrigation systems for productive development** in 700 hectares of rural areas of the provinces of Zarumilla, Ayabaca and Tumbes in Peru and El Oro province (Ecuador) located within the Catamayo-Chira, Puyango-Tumbes and Zarumilla basins. This product seeks to improve the management of irrigation systems in rural areas and to support the rehabilitation of existing irrigation infrastructure to improve its efficiency and the optimization of new irrigation systems that incorporate technical innovation in efficient management, as well as reduce the vulnerability to climate change. Planned activities include:

Activity 2.3.1. **Identify, design and implement at least four (4) priority investments for the rehabilitation and/or expansion of existing and/or new irrigation system infrastructure** to optimize their capacity and improve water use efficiency in 700 hectares of rural areas vulnerable to climate change of the Tumbes and Piura departments in Peru and El

Oro province in Ecuador. This will be done according to the potential of the irrigation systems infrastructure and existing crops, considering for each case a cost/benefit analysis.

- 2.3.1.1. Develop an inventory and diagnosis of existing irrigation infrastructure, to identify/prioritize projects for intervention, improve efficiency and optimize the capacity of prioritized irrigation systems, including the preparation of the technical profiles of the prioritized projects for the rehabilitation of irrigation infrastructures. As part of this diagnosis, the project will: i) analyze the state of the art of the technologies currently applied to identify good practices and traditional techniques; and ii) Develop a study of delimitation, updating, water allocation and identification of properties in the irrigation blocks/sectors.
- 2.3.1.2. Implement at least two (2) interventions for increased irrigation efficiency and water management techniques on 700 hectares in rural areas of provinces of Zarumilla, Ayabaca and Tumbes (Peru) and El Oro (Ecuador).

Activity 2.3.2. **Engage and train at least 200 irrigation users to operate and maintain irrigation investments** and commit for increased water use efficiency, including:

- 2.3.2.1. Identify the community providers / irrigation user organizations located in the project areas to promote farmer's commitment for increased water use efficiency through stakeholder round tables. Evaluate service provision based on the current regulations and formulate an Irrigation Improvement Plan, including a tariff study for the irrigation services from selected community providers.
- 2.3.2.2. Develop a Maintenance Manual incorporating techniques to improve efficiency in the use of water resources (good practices, local traditional knowledge and technological innovation) for existing non-prioritized irrigation works.

Outcome 2.4: Reduction of pollution sources of surface and/or groundwater, addressing both primary and emerging pollutants, along the Pacific Ocean source stream

Output 2.4. Implementation of at least two (2) priority interventions for **pollution reduction of surface and/or groundwater from population, agricultural and/or industrial activities (including artisanal mining)** in Zarumilla, Puyango Tumbes and Catamayo-Chira, including:

Activity 2.4.1. **Identify, design and implement at least two (2) priority interventions for pollution reduction** of groundwater and/or surface water from artisanal mining and/or fertilizers (N, P), pesticides, manure and/or wastewater, including piloting technologies for water reuse technologies with a circular economy approach in transboundary rural locations. This will include:

- 2.4.1.1. Identify and prioritize main existing pollution sources (in coordination with Activity 3.1), and develop a plan for intervention to reduce pollution, including the preparation of the technical profiles of the prioritized projects.
- 2.4.1.2. Implement at least two (2) of the prioritized interventions in the Zarumilla, Puyango-Tumbes and Catamayo-Chira basins.

Activity 2.4.2. Develop three (3) **industry and stakeholder round tables** (one per basin) in Water Resources Basin Councils / Water Basin Councils to stimulate the commitment of users (population, agriculture and industry) to increase reuse and reduce pollution sources and projects for treatment, reuse and reduction of wastewater and biosolids, as well as the management of mercury from artisanal mining activities. Planned activities include:

- 2.4.2.1. Development of 16 bi-national round tables (4 per basin, one per year) among industry stakeholders and interest groups to establish agreements and consensual mechanisms for more efficient management of resources and reduction of contamination, including the safe disposal of agricultural plastics contaminated by persistent organic pollutants (POPs) and mercury from artisanal mining activities.
- 2.4.2.2. Establishment of a permanent mechanism for consultation with industry and stakeholders as part of IWRM Basin Committees.

Component 3. Improved monitoring of water quantity and quality and flood risk reduction in the three basins

Outcome 3.1: Improved monitoring of water quantity and pollutants and pollution sources along the Pacific Ocean source stream

Output 3.1. Design one (1) **binational system for monitoring and evaluation** of surface water quantity and quality in transboundary basins, characterizing the status of water sources and associated biodiversity. This includes the monitoring of surface water and sediment monitoring, hydrobiological and wildlife monitoring. The specific objectives are to establish a binational monitoring protocol, an Annual Binational Monitoring Plan, and to establish a network of water quality and quantity stations (automatic and conventional) and technological resources for their evaluation and monitoring. Specific activities include:

Activity 3.1.1. Support the development, approval and implementation of one (1) **binational monitoring and data sharing protocol of water quantity (ecological flow) and quality**. The protocol should include monitoring hydrological parameters such as water volume and levels in both dry and rainy seasons, emerging contaminants, physical-chemical and microbiological parameters, sediments, and hydrobiological and wildlife monitoring. This activity includes the following actions:

- 3.1.1.1. Compile existing baseline information, maps, hydrogeological studies, water quality monitoring reports and identification of point and non-point sources of surface and underground pollution, diagnostic studies of water quality in the three basins, estimation of ecological flow, speciation of heavy metals and metalloids in water and sediments, geochemical characterization at basin level, among others.
- 3.1.1.2. Carry out 12 technical workshops (four per basin) among binational stakeholders to standardize and make official the methodology and procedures for evaluating and monitoring water quality and quantity and where agreed upon, the parameters to be evaluated according to the characterization and current use of the resource, sampling points in each basin, monitoring frequency, field procedures, sample management, laboratory analysis methods, systematization of results and the generation of reports.
- 3.1.1.3. Generate agreements with the institutions and entities involved in water resource management for the implementation of the protocol

Activity 3.1.2. Develop one (1) **Annual Binational Monitoring Plan** for water resource quality and quantity, establishing a sustainable management model, funding sources, implementation and follow up activities and responsibilities, and strengthening supervision and control capacities at the binational level. This includes identifying potential risks from the use of transnational waters and developing an Intervention Plan.

- 3.1.2.1. Prepare the Annual Binational Water Resource Quality and Quantity Monitoring Plan in the transboundary basins to be implemented once the binational monitoring network has been established, approved and becomes operational.
- 3.1.2.2. Identify potential risks for the use of Ecuador-Peru transboundary waters and development of an Intervention Plan.
- 3.1.2.3. Follow up on the implementation of the Annual Water Quality and Quantity Evaluation and Monitoring Plan and issue quarterly water resource quality and quantity reports (for two years).
- 3.1.2.4. Socialize the meetings of the reports on the quality and quantity of the water resource issued and coordinate with the stakeholders of water resource management, generate action plans resulting from that socialization during the plan implementation.
- 3.1.2.5. Strengthen the supervision and control capacities at the binational level through training of officials from monitoring and control entities; Strengthen capacities to reduce mercury emissions and releases from transboundary areas with identified small-scale mining activities.

Activity 3.1.3. **Design one (1) binational monitoring system of the quality and quantity of water resources and technological resources for its evaluation and monitoring.**

- 3.1.3.1. Prepare a diagnosis and evaluation of the status of existing monitoring infrastructure, number of operational and available hydrological stations, location, measurement parameters, equipment status, licenses and facilities, and requirements for updating, repowering, optimizing, or renewing facilities and equipment.

- 3.1.3.2. Design the Binational System for the Evaluation and Control of Water Quantity and Quality. .
- 3.1.3.3. Coordinate and generate agreements and commitments with technical and sectional organizations to guarantee the operation and maintenance of the system. This includes the exchange of information regarding accidents involving chemicals that may cause transboundary damage.

Outcome 3.2. Reduction of impacts from current and future flood risks and mass movements in susceptible areas of the three transboundary basins.

Output 3.2. **Design one (1) early warning and water risk management system** in the Zarumilla, Puyango Tumbes and Catamayo Chira transboundary basins. The objectives of the binational early warning system (EWS) are to link the systems of Ecuador and Peru and to modernize the existing hydro-meteorological network to timely alert the population to flood risks caused by extreme hydro-meteorological events in the vulnerable areas of the three transboundary basins. The specific objectives include: i) Identify the risks of flooding and mass movements in the susceptible areas of the three transboundary basins and establish the plans of measures to manage them; ii) Strengthen the network of water and meteorological stations and modernize the existing technological resources to establish the binational early warning monitoring system in the three transboundary basins; and iii) Establish a binational EWS protocol by consensus. The planned activities are described below:

Activity 3.2.1. **Develop two (2) studies (one per country) to identify flood risks and mass movements in the susceptible areas** of the three transboundary basins and identification of measures and plans to manage them. Identification and mapping of risks associated with climatic events such as floods.

- 3.2.1.1. Prepare diagnosis and evaluation of the status of water risk management in transboundary basins and prioritization of vulnerable areas to be assessed;
- 3.2.1.2. Prepare a study and integral plan for the management of risks due to floods and mass movements in the areas identified as susceptible to floods in the transboundary basins that incorporate the natural infrastructure in the disaster risk management of the three basins, applying methodologies such as the Rapid Identification of Measures for Action (IRMA) used by MINAM. This includes:
    - Topographical and bathymetric survey Lidar of identified vulnerable areas in each basin;
    - Hydrological and hydraulic study (current and future).
    - Binational hydraulic and hydrological modeling to establish water risks in each basin.
    - Identification of measures for the incorporation of natural infrastructure in disaster risk management (according to IRMA). Analysis and preparation of alternatives at the pre-investment profile level.
- 3.2.1.3. Prepare and implement a plan to raise the awareness of the basin population on issues related to climate variability and change (coordinated with Activity 1.2.3, Communication Strategy).

Activity 3.2.2. **Design one (1) flood and mass movements early warning monitoring system**. This includes:

- 3.2.2.1. Design a system, which includes a diagnosis and evaluation of the baseline and the system design:
    - Prepare a diagnosis and evaluation of the state of the existing hydrometeorological monitoring infrastructure in each basin, number of hydrometeorological stations, location, equipment condition, technological licenses, installations, and requirements for updating, repowering, optimizing or renewing equipment and/or stations and risk control centers.
    - Design and integrate the binational early warning system in the three transboundary basins.

Activity 3.2.3. **Agreed and socialized with the community one (1) binational early warning protocol.**

- 3.2.3.1. Coordinate / execute 12 binational workshops (three per basin) among stakeholders (technical-scientific institutions, entities responsible for risk management in each country and local governments) to standardize and establish procedures and coordination mechanisms, agree on procedures for risk management and binational warning information, and determine response actions.

- 3.2.3.2. Develop and implement a community outreach plan that includes communication methods and means to effectively convey situation and emergency information to the population.
- 3.2.3.3. Strengthen and train local institutions and communities to prepare and respond through local response plans and application of standardized procedures to emergencies in each country.

Component 4. Monitoring, evaluation and reporting on the implementation of the institutional mechanisms (SAPs, SNAPs and IWRM plans by basin) of the three transboundary basins

Outcome 4.1. Long-term sustainability and socio-economic and environmental outcomes of effective IWRM in the three basins due to effective implementation of mechanisms (SAPs, NSAPs and IWRM plans by basin)

Output 4.1. **One (1) monitoring system to follow up on the implementation progress of the planning instruments (SAPs, NSAPs, IWRM plans by basin) implemented**. This product seeks to establish monitoring and control mechanisms for IWRM planning instruments in the Catamayo-Chira, Puyango-Tumbes and Zarumilla basins, with a control panel that makes this monitoring visible in an articulated, continuous and permanent manner. This will be coordinated with the Binational Information Platform (Output 4.2), to guarantee that the control panel is within the Binational Information Platform. Planned activities include:

- 4.1.1. Implement processes for the follow-up and monitoring of SAPs, NSAPs, IWRM Plans for each river basin, including the updating and adjustment of follow-up and monitoring indicators and the preparation of methodological sheets for these indicators. These indicators will include related indicators on biodiversity, climate change and gender, and coordinate with indicators for national, local and sectoral strategies and plans;
- 4.1.2. Design and implement one (1) Control Panel for the follow-up and monitoring of SAPs, NSAPs, and IWRM Plans by basin, articulated to the Binational Platform (Product 4.2);
- 4.1.3. Conduct testing and training of Control Panel managers for its operation.

Outcome 4.2. Institutional capacity of the authorities strengthened for decision making based on timely and reliable information for integrated / comprehensive water resources management in the three transboundary basins

Output 4.2. Development and implementation of one (1) **binational information platform** for water resources management in the three basins (and eventually for the nine binational basins) that allows the exchange, gathering, integration, dissemination and transmission of information, based on standards and protocols for their interoperability. The platform and its information will be coordinated and fed from other similar experiences in Ecuador, Peru and at the regional level, such as the information platform for the Amazon basin and in coordination with existing or planned platforms in each country.

Activity 4.2.1. **Update the one (1) baseline on water users and IWRM information**.

- 4.2.1.1. Update information on water users, information and data management needs for IWRM on the three basins. The scope of this baseline covers:
    - Data generation and management and use of information, existing/ missing and future information needs.
    - Analysis of existing software and hardware for data processing.
    - Inventory of existing and desired data sources (metadata catalogues, IWRM documents such as TDA, SAP, legal framework, etc.).
    - Define and determine protocols and standards for data production and access (level of confidentiality), information flows, etc.
- 4.2.1.2. Acquire hardware and/or software for the generation or improvement of the reliability of IWRM input data to be integrated into the platform.

Activity 4.2.2. Approve **institutional agreements** for sharing IWRM information in the three transboundary basins, including:

- 4.2.2.1. Develop and approve institutional agreements for the collection, exchange, standardization, integration, dissemination and transmission of IWRM-related information in the three transboundary basins.
- 4.2.2.2. Coordinate the exchange of IWRM information according to the institutional agreements.

Activity 4.2.3. **Design and implement one (1) information platform to enable the systematization and articulation of information related to IWRM in the three transboundary basins**.

- 4.2.3.1. Implement the design of a bi-national information platform for IWRM. The scope includes:
  - Determine the databases and geographic information system that stores, organizes and classifies input data and information in the thematic databases. Establish a network of nodes for information gathering and consolidating IWRM data at the basin level.
  - Design and develop management tools of on-line catalogues of data sources, levels of information access, reference frameworks and data procedures for technical operation, information quality control, dictionaries, common language, models, consultation and exchange with the different users, etc.
  - Design and develop the website for the exchange, dissemination of information, as well as the geoportal, viewer, metadata catalogue. The design and development should contemplate modules for future applications (early warning systems, Water School, water quality and quantity monitoring) that will be incorporated into the platform.
- 4.2.3.2. Acquire hardware and software for the binational information platform.
- 4.2.3.3. Implement the binational information platform according to the approved design. This includes developing test runs and moving to production of the platform that links databases and information at the transboundary basin level.
- 4.2.3.4. Train technical personnel of the Binational Commission (ANA and the Ministry of the Environment and Water and others) who will manage the platform.

Activity 4.2.4. **Enable the web portal and applications for access to IWRM information in the three transboundary basins**.

- 4.2.4.1. Enable a web portal linking existing databases for information exchange through a node system and interface with GIS;
- 4.2.4.2. Develop web portal applications or modules to incorporate data from new IWRM projects on water monitoring, early warning system, Water Schools, etc.
- 4.2.4.3 Training of water users on the use of applications or new portal modules.

Outcome 4.3. Long-term sustainability of IWRM in the three basins through information and knowledge sharing

Output 4.3. Knowledge management and sharing. This output includes the development of knowledge products for International Waters Learning Exchange and Resource Network (IW:LEARN) and exchanges and sharing of experiences with other GEF international waters projects, including participation in the GEF biennial conferences and regional international waters workshops. Specifically, the following activities will be carried out

Activity 4.3.1. Develop at least three (3) knowledge products and participate in at least three (3) exchange of experiences at the regional and global level, including through participation in GEF IW:LEARN and allocation of at least 1% of GEF resources to portfolio learning.

- 4.3.1.1. Develop at least three (3) knowledge products (case studies) for dissemination on the IW:LEARN portal. Project support for hands-on training in project communications and visualization, including support for the production of the case studies, improve project narrative, data presentation and publications for thematic review of the focal areas;
- 4.3.1.2. Participate in at least three (3) GEF regional international waters conferences and workshops and other global and regional dialogue processes to showcase project results; participate in experience exchange programs with other projects and institutions of demonstrated excellence to build partnerships and facilitate cooperation

between countries on international waters issues.

4) <u>alignment with GEF focal area and/or Impact Program strategies</u>

The strategic actions outlined in the project focus on promoting the sustainable management of transboundary water systems. The project is aligned with Objective 3 of the International Waters focal area which focuses on "enhance water security in freshwater ecosystems", and with each of the strategic action areas under that objective. Specifically, the project is aligned with the strategic areas of International Waters Objective 3 as follows:

- **Advanced information exchange and early warning**. The project will establish a bi-national information platform (Output 4.2) that will serve for improved information exchange among the three water basins and will serve as the basis for an information platform for the nine basins shared by Peru and Ecuador. In the case of early warning, the project will design and implement an early warning and water risk management system (floods and droughts) for the three basins (Output 3.2).
- **Improved regional and national cooperation in transboundary basins**. The project will strengthen binational institutions, such as the Binational Commission, the Technical Secretariat and the IWRM Committees by Basins (Output 1.1), and will strengthen institutional capacities in the three basins (Output 1.2). The project will also develop a consensus model for binational management of the water resource and associated biodiversity of the Zarumilla aquifer (Activity 2.1.2), and a system for binational assessment and monitoring of surface water quantity and quality in the transboundary basins (Output 3.1). The generation of information on the Zarumilla aquifer (Activity 2.1.1) will make it possible to update the transboundary diagnostic analysis (TDA) and the NSAPs, and to support better decision-making on policies such as the definition of water use tariffs (Output 2.3). Knowledge exchange at regional and global level with participation in conferences and generation of products for IW:LEARN (Output 4.3) will allow increased collaboration with regional and global actors on international waters.
- **Investment in water, food, energy and environmental security**. The project will support, through Component 2, investments in water, food and environmental security. Specifically, it will strengthen water demand and supply management in the three transboundary basins (Output 2.1) through a model of bi-national management of the Zarumilla aquifer (Activity 2.1.2) and the protection and conservation of recharge and catchment areas in the three basins, for water quantity and quality management, considering biodiversity and climate change approaches (adaptation and mitigation) (Output 2.2). It will support water and food security by improving the efficiency of irrigation systems for productive development (Output 2.3), and the monitoring system for surface water quality and quantity (Output 3.1). Output 2.3 will reduce the risk of innovative technologies by designing pilots to scale up efficiency measures in the use of water for irrigation.

The alignment with other GEF focal areas is presented in the following table:

GEF focal area	**Components, Products and Activities**
International Waters Objective 3: *Enhance water security in freshwater ecosystems*	• Component 1. Institutions capacity strengthening at the binational level for integrated water resources management; • Component 2. Improved management, protection and conservation of water sources, and improvement of water use efficiency • Component 3. Improved monitoring of water quantity and quality and flood risk reduction in the three basins • Component 4. Monitoring, evaluation and reporting on the progress of the implementation of the institutional mechanisms (SAPs, NSAPs and IWRM plans by basin) of the three transboundary basins
Chemicals and waste	• Component 1 (Output 1.2): Capacity development and strengthening of key actors in the three basins • Component 2 (Output 2.4): Implementation of at least two (2) priority interventions for pollution reduction of surface and/or subterranean water from population activities,

	agricultural and/or industrial activities • Component 3 (Output 3.1): Binational monitoring and evaluation system of water quantity and quality
Biodiversity	• Component 2 (Output 2.2): Develop and implement at least eight (8) interventions for the protection and conservation of recharge and catchment areas and natural infrastructure with an ecosystem focus
Climate change	• Component 1 (Activities 1.1.2 y 1.2.2): Development of IWRM Plans in Basins and development of a strategy to insert IWRM in planning, and capacity building of regional and local governments, private sector and local communities. • Component 2 (Output 2.2): Develop and implement at least eight (8) interventions for the protection and conservation of recharge and catchment areas and natural infrastructure with an ecosystem focus. • Component 2 (Output 2.3): Identification, design and implementation of at least four (4) interventions for increased efficiency of irrigation systems for productive development • Component 3 (Output 3.2): Early warning system and water risk management.
Land degradation	• Component 2 (Output 2.2): Develop and implement at least eight (8) interventions for the protection and conservation of recharge and catchment areas and natural infrastructure with an ecosystem focus (including restoration of degraded lands).
Private sector participation	• Component 1 (Activity 1.2.2): Capacity building of local governments, private sector and local communities. • Component 2 (Output 2.3.3): Engage with irrigation users to maintain new irrigation investments and commit for increased water use efficiency. • Component 2 (Activity 2.4.2): Development of industry and stakeholder round tables to reduce pollution.

5) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing

The implementation of the foundational binational project of transboundary basins between Ecuador and Peru is the first binational experience between the two countries, which will allow to establish the bases of cooperation to scale up this experience to the nine transboundary basins. GEF funds will strengthen further the organizational and institutional capacity of Ecuador and Peru at various levels such as the Binational Commission, the Technical Secretariat and the IWRM Committees per basin that have been supported with the foundational project. In this case, the incremental cost requested to the GEF is necessary to take advantage of the transboundary benefits that can only materialize through coordinated and joint management and field implementation of these plans; this incremental cost helps catalyze funding by national governments. The Governments of Ecuador and Peru have responsibility under their respective national laws to monitor the quality of water resources. However, in a transboundary basin this cannot be done effectively without creating a basin-wide implementation regime. For example, the water quantity and quality monitoring system, which does not yet have an agreed set of parameters for monitoring water quality, will benefit from the GEF project by providing a space for such consensus. The foundational project will contribute with information that will set the basis for the development of activities during the implementation of the SAPs and NSAPs. For example, the 2019-2020 hydrogeological study for the Zarumilla Basin will enable the optimization of the binational piezometric network in the basin, thus allowing the development of a consensual model for binational water resource management in the basin.

The measures proposed in the project will allow the coordinated implementation of the NSAPs to support the long-term integrated management of the three basins. Consultation with the various stakeholders is essential to jointly develop harmonized and compatible governance mechanisms at all levels. This project will continue to support this key dialogue

at basin level and will involve all sectors of the population, including the private sector and NGOs, local universities and government authorities. This active participation is a key component of the GEF's incremental cost for this project. On the other hand, the execution of technical studies related to water quality and quantity requires advanced technologies, which is a limitation in countries with limited resources and technical capacities that face multiple basic priorities with little availability for public investment as is the case in Ecuador and Peru.

6) global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

The project is aligned with the Sustainable Development Objectives 2030 (ODS), including

- Goal 6: Clean Water and Sanitation. Ensure water availability and sustainable management and sanitation for all: Increase access to WASH (ODS 6.1 and 6.2), Water Quality (ODS 6.3), Water use efficiency (ODS 6.4), Implement IWRM at all levels (ODS 6.5) and Protection and restoration of ecosystems (ODS 6.6).
- Objective 5: Gender Equality. End all forms of discrimination against all women and girls worldwide (ODS 5.1); Ensure women's full and effective participation and equal opportunity to leadership at all decision-making levels in political, economic and public life (ODS 5.5).
- Goal 9: Industry, innovation and infrastructure. Develop reliable, sustainable, resilient and high-quality infrastructure, including regional and cross-border infrastructure, to support economic development and human well-being, with particular emphasis on affordable and equitable access for all (ODS 9.1).
- Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable. Water-related disaster management (ODS 11.5).
- Goal 12: Responsible consumption and production. Ensure sustainable consumption and production patterns: Achieve sustainable management and efficient use of natural resources (ODS 12.2.); Sustainable Production (ODS 12.4); Ensure that people everywhere have the information and knowledge relevant to sustainable development and lifestyles in harmony with nature (ODS 12.8).
- Goal 13: Take urgent action to combat climate change and its impacts. Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries (ODS 13.1).

In the GEF **International Waters** focal area, the project is aligned with the following global environmental benefits and co-benefits, including: i) cooperation between Ecuador and Peru to reduce threats in the three transboundary basins (Component 1); ii) reduction of the pollution load in the waters of the three transboundary basins from mining, agriculture and waste water (Component 2); iii) ecosystem goods and services of the three basins restored and sustained (Component 2); iv) reduction of vulnerability to climate variability and climate-related risks, and increased ecosystem resilience (Components 1, 2, and 3).

On the other hand, the project has important **co-benefits for climate change adaptation and mitigation**, given the focus of the SAP and the NSAPs that include climate change as one of the strategic lines. On the one hand, there are adaptation co-benefits given that the project supports capacity building for water resource management, conservation and protection, which has improved the resilience of local communities to the increased impact and frequency of extreme events. Similarly, the **inclusion of climate models in the development of hydrogeological models** (Component 2) to establish recharge, storage, water balance and vulnerability of the aquifer will allow for adequate accounting of expected changes in temperature and precipitation due to climate change. Mitigation co-benefits are provided from supporting the delimitation of water resource protection areas and the protection and conservation of recharge and catchment areas. Additionally, the project will support conservation, sustainable forest management (reduction in forest loss and forest degradation) and enhancement of carbon sinks at the watershed level.

With the development of Water Risk Management Plans for the three basins (Component 1) and the design and subsequent implementation of a bi-national early warning system (Component 3), the project is also aligned with the Sendai Framework, which has as its guiding principle that "each State has primary responsibility for preventing and reducing disaster risk, including through international, regional, sub-regional, transboundary and bilateral cooperation".

*7) **innovation, sustainability and potential for scaling up***

The implementation of the binational project between Ecuador and Peru is the first binational experience of transboundary basin management between the two countries, which will allow setting the bases of cooperation to scale up for the other transboundary basins. In the case of Component 1, capacity building has a long-term multiplying effect on IWRM, since it provides a knowledge base that generates efficient processes, procedures, projects and actions that are implemented at the institutional level. In the case of the project, the IWRM Committees by basin will be left with efficient processes for their functions that can be replicated in the other six transboundary basins between Ecuador and Peru.

In the case of **local stakeholder training and capacity building**, the consideration of participatory processes with local stakeholders, in all components, for the involvement and empowerment of final beneficiaries will ensure the sustainability of the processes. Agreements will be developed with strategic partners (Universities, NGOs, etc.) for the implementation of the Binational Water School, and the future reviews that will be developed after the project is concluded, so that it becomes a permanent training platform for the stakeholders of the three transboundary basins. The Binational Water School has the potential to be replicated in the other six (6) transboundary Ecuador-Peru basins on the Atlantic side, since the educational and technological resources developed can be used in the other basins.

Access to technical information and knowledge of the water resources of the three transboundary basins through the **binational information platform**, will contribute to ensure that information is available for decision-making. This will be complemented with an active participation of the water users and authorities in the production and dissemination of data. This improved information will enhance the sustainability of actions to promote IWRM in the three transboundary basins. The implementation of the activities of the binational information platform should generate early wins to encourage the continuity of the project and involve new stakeholders in integrated water resources management. The implementation of the platform will contribute to mitigate water conflicts and increase resilience to face climate change risks. The implementation of this project will allow for the accumulation of experience and lessons learned that can be replicated in other Latin American and Caribbean countries and even in other regions with similar backgrounds.

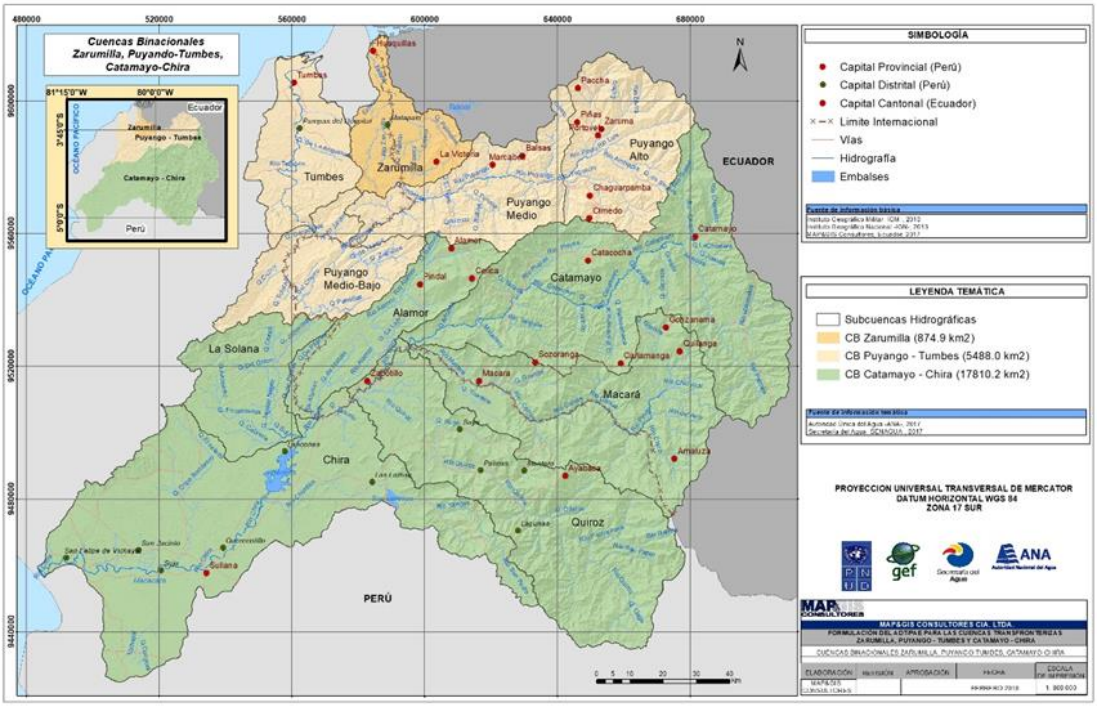
The **monitoring system for surface water quality and quantity** is a key intervention for both countries. The successful implementation of the strategy outlined in this document depends on the successful cooperation and information sharing between Ecuador and Peru, with the support of cooperating agencies. The data collected (water use, water quality, and/or water levels) and the resulting scientific studies should be public and available for the knowledge of the actors involved for their use and development. The exchange of information and transfer of technical experience through international and binational cooperation will contribute to optimizing IWRM in the Zarumilla, Puyango-Tumbes, and Catamayo Chira transboundary basins.

The development of a **financing strategy for natural capital projects**, which seeks a combination of national funds with the participation of multilateral development agencies and international donors, can catalyze the projects by providing start-up resources that, combined with local technical and financial resources, will facilitate the work of modernizing data collection systems and optimize operating and maintenance costs once the project is completed. Similarly, the support of international partners will help to strengthen bi-national relations, which can be difficult in some instances and require international diplomacy to establish consensus and commitments for the effective management of transboundary water resources between the two countries.

In the case of the **early warning system**, the exchange of information and transfer of technical experience through international and binational cooperation will contribute to optimize flood disaster risk management in transboundary basins. In terms of sustainability, the project will promote a shared early warning approach, which will help strengthen border cooperation beyond the duration of the project. To generate effective actions, agreements and arrangements are needed between the different agencies: bi-national, national, regional and local authorities, entities responsible for risk management in each country (provincial, regional and municipal governments in the area of their competence) and technical-scientific institutes. In terms of replicability, empowered communities and institutions will also be able to take timely and urgent prevention measures in the face of water risks and generate better practices and learning that can be replicated in other binational basins. In terms of innovation, new communication systems and technologies, as well as observation, modeling and forecasting capabilities are increasingly efficient and can be linked to accessible platforms to provide public information, more sophisticated commercial meteorological products and not just disaster warnings.

In the case of pilot **interventions for the protection and conservation of water sources**, sustainability is based on compliance with and the operationalization of existing national legal and regulatory frameworks for the protection, conservation and recovery of ecosystems with an emphasis on water resources. On the other hand, the project incorporates in the implementation phase the authorities and technicians of the Decentralized Autonomous Governments (GADs)/Regional and local governments, as well as the other actors belonging to the Basin Council/Water Resources Basin Councils, which, through participatory processes, incorporate their contributions and experience. These actors include, in the case of ecosystems in natural protected areas, the National Service of Natural Protected Areas (SERNAP) and MINAM in the case of Peru, and the System of Protected Areas under the MAAE in the case of Ecuador. The innovative basis of the project is the direct implementation of the project by the ANA and the Water Secretariat (SENAGUA, now MAAE) in close coordination with the local stakeholders represented in the Basin Council/Water Resources Basin Councils, which at the end of project will have the capacity to mobilize economic resources and the management of projects designed and implemented under a territorial view.

1b. Project Map and Coordinates. Please provide geo-referenced information and map where the project interventions will take place.



2. Stakeholders. Select the stakeholders that have participated in consultations during the project identification phase:

☐ ☒ Indigenous Peoples and Local Communities;
☐ ☒ Civil Society Organizations;
☐ ☒ Private Sector Entities;
☐ If None of the above, please explain why.

In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement.

Local communities and civil society groups, including farmers, miners, water user organizations, local and international NGOs, and universities, have been actively involved in the development of the TDA, SAP and NSAPs.[7] For each of these instruments, a validation and prioritization process were carried out with the active participation of stakeholders identified in each transboundary basin. In the first semester of 2020, the NSAPs were developed and

[7] There are no indigenous populations in the three basins.

validated with national, regional and local stakeholders in parallel with the development of the PIF. Due to the emergence of COVID-19, PIF consultations were carried out remotely with interested parties between April and June 2020. During project preparation, the mechanisms and dialogue spaces developed during the foundational project will be used to carry out a socialization and consultation process in a participatory manner with the different actors associated with the project to ensure a participatory process. It is expected that, as part of the strengthening of institutions at the binational level, there will be active participation by local governments (Regional Government of Piura and Tumbes in Peru and the municipal governments of the provinces of Loja and El Oro in Ecuador) because of their role in planning regional and local development and formulating the corresponding land use plans, with competencies in the drinking water and environmental sanitation services. Universities (University of Piura, Technical Private University of Loja, etc.) will generate and transfer knowledge on water resources issues and will serve as a space to facilitate the exchange of ideas and experiences. Other stakeholders are the Water Funds in the two countries (FORAGUA in Ecuador, and FORASAN and FAQCH in Peru), which can support the implementation of actions for the conservation and protection of water sources and support the project with physical and educational resources.

3. Gender Equality and Women's Empowerment. Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis). Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes ☒ /no ☐ / tbd ☐ ; If possible, indicate in which results area(s) the project is expected to contribute to gender equality:

☒ closing gender gaps in access to and control over naturalresources;
☒ improving women's participation and decision-making; and/or
☒ generating socio-economic benefits or services for women.
Will the project's results framework or logical framework include gender-sensitive indicators? Yes ☒ /no ☐ / tbd ☐

The diagnosis of women's issues and gender relations in the three intervention basins carried out during the foundational project shows a low participation and representation of women in IWRM. In the case of Ecuador, in the Puyango Catamayo basin, only 9% and 6% of the presidents of the Water and Sanitation Administrative Boards (JAAPyS) and of the Irrigation Boards are women, respectively. As for their participation, approximately 20 percent are in the Local Hydrological Planning Units (UPHL) and only one woman chairs the Puyango Catamayo Basin Council. In Peru, at the national level, less than 2% are presidents of the Users' Boards, and in the rural area, only 5% of the Sanitation Services Administrative Boards (JASS) are headed by women (even though the board of directors must conform to at least 25% female participation), while in the case of the Basin Water Resources Councils (CRHC), there is minimum participation or representation of women.

Among the main barriers and factors that limit women's participation at the community level, there is low participation of women in the user registers (very few are recorded in them) and the lack of positive action measures to promote their participation. This is compounded by low empowerment, lack of knowledge of their rights, little access to training facilities, low self-esteem, low level of schooling, gender-based violence, their overall workload, and the lack of support of their partners and families for home tasks that are traditionally assigned to women.

Ecuador and Peru have regulatory frameworks on gender issues, where the Water Secretariat (SENAGUA, now MAAE) and ANA have developed mechanisms for the inclusion of gender perspective in IWRM, as well as initiatives to promote women's participation. Ecuador's National Biodiversity Strategy 2013-2020 also includes an analysis of gender and intercultural mainstreaming. In the case of Peru, the Gender and Climate Change Action Plan (PAGCC) (2015), which seeks to guide, within the framework of its competencies linked to the management of greenhouse gas (GHG) emissions and adaptation to climate change, the reduction of gender inequalities. However, it is necessary to strengthen capacities in gender and IWRM, to disseminate existing regulations (laws, policies), to incorporate the gender perspective in planning and monitoring and to create gender mechanisms with specialized personnel to ensure its mainstreaming, implementing measures that make it operational within the main actors and institutions involved in IWRM in the three water basins.

The foundational project developed a **Strategy for Mainstreaming the Gender Approach**. This strategy was developed to guarantee that the project's priority actions respond to the differentiated interests and needs of men and women and to the impacts of the project on gender-based relations, including strengthening the institutional capacities of the project's key actors. The strategy proposes three lines of action for gender mainstreaming in the IWRM project and strengthening of institutional capital that will be developed during the present project: 1) Strengthening of internal and external institutional capacities; 2) Specific actions for the empowerment and participation of women in IWRM decision-making spaces; and 3)

Mainstreaming actions, with objectives and activities included in an Action Plan.

4. ***Private sector engagement. Will there be private sector engagement in the project? (yes☒/no). Please briefly explain the rationale behind your answer.***

One of the policy guidelines for IWRM is the strengthening of bi-national institutions, which anticipates the participation of water resource users and the community at large. The private sector and civil society groups, including farmers, miners, local and international NGOs, have actively participated in the development of the TDA, SAP and NSAP. For each of these instruments, a validation and prioritization process were carried out with the active participation of stakeholders identified in each transboundary basin, leading to a joint vision approach in each of the three basins. The SAP identifies as a line of action (1.1.5) the "strengthening and promoting the participation of the civil society in water pollution monitoring and control". In this sense, for the implementation of the project, the private sector, local communities, non-governmental organizations and academia will be actively involved. As such, Activity 2.4.2 seeks the development of **industry and interest groups round tables** to stimulate the commitment of users (agriculture, industry, and other end users) to increase reuse and reduction of pollution sources. This will actively involve the private sector and other stakeholders in the conservation and sustainable management of water resources.

5. ***Risks. Indicate risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved or may be resulting from project implementation, and, if possible, propose measures that address these risks to be further developed during the project design (table format acceptable).***

Project risks that have been preliminarily identified, their probability of occurrence, impact on project implementation and mitigation mechanisms include:

Risks	Probability of occurrence	Impact	Mitigation mechanism
Lack of capacity and articulation between the institutions involved in the project (ANA, MAAE, and local agencies), which causes delays in project implementation. This includes articulation with institutions at the sectoral level such as the Ministries of Environment (MINAM and MAAE) on biodiversity and climate change issues, and with Ministries of Agriculture (MAG and MINAGRI) on irrigation	Medium	High	Establishment of official coordination mechanisms (e.g. Steering Committee at the Vice-Minister level and/or an Advisory Committee) with other institutions in addition to ANA and MAAE, such as the Ministry of Environment of Peru (MINAM), the Ministries of Foreign Affairs, the Ministry of Agriculture and Irrigation of Peru (MINAGRI), and the Ministry of Agriculture and Livestock of Ecuador (MAG), to create a dynamic coordination space between the ministries involved. Based on the recommendations of the foundational project terminal evaluation, an initial project initiation phase will be established to create a favorable environment for cooperation and teamwork among the institutions, which will reduce the possibility of delays at the beginning of the project. Rules of procedure of the Steering Committee and the Advisory Committee will be developed during PPG phase to define review processes and participation of representatives in the committees.
Political and technical staff changes and turn over in key institutions and position posts (ANA and MAAE) affecting or delaying project implementation such as general or local elections (general elections in Ecuador and Peru will be held in	Medium	Medium	The Project Management Unit will fully socialize the project with the new governmental actors in case of changes in the political administrations to reduce the learning curve of new personnel and reduce any delays as a result of those changes in key staff, and will keep key project stakeholders informed of project progress, to ensure the continuity of the

February and April 2021)			project's institutional memory. It will involve not only senior officials but also specialists who are less likely to rotate.
Lack of participation in project activities and product development by stakeholders at national, regional and local level due to lack of adequate incentives or clarification of their role within the Project	Low	Medium	During the PPG phase a Stakeholders Analysis and Engagement Plan will be prepared including the identification of actors with their respective roles and responsibilities identified and partnership agreements agreed and established prior to approval to or during the project inception phase. Motivate and mobilize the actors in an appropriate manner through calls for proposals and participatory approaches and keep them informed of the project status. Empowerment of stakeholders and their ownership of the activities and products developed by the project
Biodiversity, climate variability and climate change, and gender issues are not considered as elements in basin planning and in the design of pilot investment projects	Low	Low	The Project will develop activities and products (studies) aimed at including biodiversity, climate variability and climate change, and gender issues as elements for updating the TDA and SAP
External shocks to the project such as national economic crises or other catastrophic events (earthquakes, floods, pandemics as current covid-19) affecting project implementation and/or government co-financing commitments	Medium	Medium	Develop Standard Operating Procedures (SOPs) from the project beginning to be activated in cases of catastrophic events, and currently for COVID-19. Ensure the political and economic commitment of government actors to the project prior and during inception phase. In particular, proactively develop a mitigation plan for potential slowdowns, shutdowns, and project restarts, including a project startup plan before slowing or shutting down, documenting work that has been completed and remains to be completed; review project activities to identify what work may need to be mothballed and how to strategically do so; assess what activities can be continued offsite to limit schedule delays; review contracts, consult with counsel, and maintain open communication channels with project stakeholders; refresh risk analysis and consider using simulation tools to assess potential cost and schedule outcomes at various confidence levels.

6. ***Coordination. Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.***

Institutional structure. The project will be implemented during a period of five (5) years, under the national execution modality (NIM), in accordance with UNDP rules and regulations. The National Water Authority (ANA) and the Ministry of Environment and Water of Ecuador (MAAE) will be the Executing Agencies (also known as Implementation Partners) in Peru and Ecuador, respectively, with ANA in charge of bi-national coordination. The UNDP-Peru office will assume the supervision of the binational components (including supervision of the development of studies, knowledge management). As national water authorities and project executing agencies, ANA and MAAE will assume responsibility for supervision/administration of the project, including monitoring and evaluation of project interventions, achievement of project results and ensuring effective use of GEF resources.

Given the cross-cutting nature of the project into areas beyond the mandate of ANA and the Water Secretariat (now MAAE),

a Project Steering Committee (PSC) will be formed, comprising ANA, the Ministries of Environment (MAAE and MINAM), the Ministries of Foreign Affairs, and the Ministries of Agriculture (MAG and MINAGRI) of both countries. The representation of each one of the Ministries will be at the level of Vice-Minister, to assure the effective coordination between institutions. The main role of the PSC is to guide the implementation of the project, to verify and approve the annual operational plan, and to provide strategic guidance to the overall project management. The PSC will discuss the results of the mid-term project evaluation (MTE) and the corresponding management response. It will assess the level of progress in achieving the project results and identify the risks and challenges faced in the implementation of the project, including risks to sustainability after the project is completed. The PSC will take the necessary corrective actions to ensure that the project meets the goals set and achieves the expected project results. In the final year of the project, the PSC will conduct an end-of-project review to identify lessons learned and analyze opportunities to scale up or replicate project results and disseminate lessons learned to relevant audiences. This final review meeting will also discuss the findings detailed in the final project evaluation (TE) report and the corresponding management response. The project will have a Project Execution Unit (PEU) and Regional Execution Units (REU) will be set up in each basin to facilitate local project implementation and monitoring.

The Binational Project Coordinator (PC) is the overall coordinator of the project and will be responsible for the day-to-day management and supervision and regular monitoring of the project results and risks, including social and environmental risks. The PC will ensure that all project personnel maintain a high level of transparency, responsibility and accountability in monitoring, evaluating and reporting project results. The PC will report to the Steering Committee on the progress and results of monitoring and evaluation at least once a year, in follow-up to the M&E Plan and its indicators, with the assistance of an M&E specialist. The PC will prepare annual work plans based on the multi-year work plan, including annual targets for results, to ensure efficient implementation of the project. The project will have National Project Directors in each country, who will support the PC in the implementation of the project and activities at the country level. The PC will maintain close coordination and report to the National Project Directors in each country in order to comply with the approved annual work plan and budget.

In support of the PSC, a Binational Technical Committee (BTC) will be established to provide technical support and facilitate the achievement of results. The BTC will promote and facilitate binational cooperation and coordination for project implementation, as well as the dissemination and replication of the lessons learned from the pilot projects, among others. The BTC will be integrated by the National Coordinators of Peru and Ecuador and by the technical delegates of the institutions of both countries, MINAM, ANA and SERNANP (Peru) and MAAE (Ecuador).

Monitoring and Evaluation (M&E). Project M&E will be carried out in accordance with the procedures established by UNDP and the GEF and will be conducted by the project team and the UNDP Office with support from the UNDP/GEF Regional Coordination Unit (RCU) in Panama City. A Results Framework will be developed, including performance and impact indicators that are SMART for project execution along with their corresponding means of verification, and aligned with the International Waters focal area (see Section F). The monitoring and evaluation plan includes an inception report, project implementation reviews (PIRs), annual work plan (AWP), quarterly and annual progress reports (QPRs and APRs), a mid-term evaluation (MTE), a final evaluation (TE) and audits. The Project Coordinator (PC) will report to the Steering Committee on the progress and results of monitoring and evaluation at least once a year, be responsible for the daily monitoring and follow-up of the M&E Plan and its indicators, with the assistance of an M&E specialist. The PC, together with the extended UNDP-GEF team, will be responsible for the preparation and submission of PIRs, AWPs, APRs and QPRs. The UNDP Country Office in Peru will be responsible for the regular monitoring of the project progress through monthly meetings with the project implementation team. The project Steering Committee will be in charge of the annual project progress reports.

The PC will inform the Country Directors, the Steering Committee, the UNDP Peru Country Office, UNDP-GEF Regional Technical Advisor and the GEF Operational Focal Point in Peru of any delays or difficulties as they arise during implementation, so that appropriate support and corrective actions can be taken. The PC should ensure that UNDP and GEF monitoring and evaluation requirements are met to the highest standard. This includes, but is not limited to: ensuring that the results framework indicators are monitored annually in time for evidence-based reporting in the PIR, and ensuring that risks and the various plans/strategies developed to support project implementation (e.g. communication strategy) are regularly monitored. The PC will ensure that the project's target groups and key stakeholders, including the GEF operational focal points in Ecuador and Peru, are involved as much as possible in the project's monitoring and evaluation actions.

In addition to the mandatory monitoring and evaluation requirements of UNDP and the GEF, other monitoring and evaluation activities deemed necessary to support adaptive project management will be agreed during the kick-off workshop

and detailed in the kick-off report. These will include the specific role of project target groups and other key stakeholders in project monitoring and evaluation activities, including the GEF operational focal point in each country, and other national/regional entities to which project monitoring actions are assigned. The GEF Operational Focal Points in Ecuador and Peru will ensure consistency in the approach taken with respect to specific GEF monitoring and evaluation requirements (especially relevant monitoring tools) in all GEF-funded projects in the country.

An Operational Manual will be developed prior to the start of project execution, which will define the role and functions of the various actors within the project and the mechanisms for its operation, including the Steering Committee, the Binational Technical Committee, the Project Execution Unit (PEU) and the Regional Execution Units (REU), the binational coordinator, the national coordinators, etc.

Coordination with other GEF projects and other initiatives. The project will draw on information and lessons learned from other GEF projects, including International Waters projects where both countries participate, such as: "*Integrated Management of Water Resources of the Mira-Mataje and Carchi-Guaitara, Colombia-Ecuador Binational Basins*", "*Implementation of the Strategic Action Programme to Ensure Integrated and Sustainable Management of the Transboundary Water Resources of the Amazon River Basin Considering Climate Variability and Change*", "*Catalyzing Implementation of a Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Humboldt Current System (HCS)*", and the "*Integrated Water Resources Management in the Titicaca-Desaguadero-Poopo-Salar de Coipasa (TDPS) System*". The project will also use the results and lessons learned of the project "*Implementing Integrated Measures for Minimizing Mercury Releases from Artisanal Gold Mining*" which focused on the implementation of integrated measures aimed at minimizing mercury releases from artisanal gold mining activities affecting the Puyango-Tumbes Basin. This last project, in its terminal evaluation, identified the need to have indicators and a long-term environmental quality monitoring system for the protection of human health and food production.

The project will also coordinate with other existing initiatives, as described in section II of this PIF. These projects include the bi-national project for the "reduction of the vulnerability of the population and its livelihoods to threats of drought and floods in the border territories of Ecuador and Peru" (2020-2022), the IUCN BRIDGE Andes project "Strengthening water governance mechanisms in transboundary basins" (2019-2021), the project "*Strengthening resilience to climate change through the protection and sustainable use of fragile ecosystems*" ProCamBio II. Similarly, there is the Puyango Tumbes Special Binational Project (PEBPT) for irrigation, which seeks to irrigate 22 thousand hectares of crops on the Ecuadorian side and 15 thousand hectares in Peru.

The lessons learned from other projects will be integrated into the final design and development of this project. For example, the project "*Integrated binational management of transboundary watersheds as measures of mitigation and adaptation to climate change, Water without Borders*" was developed between 2015-2017 in the Macará River sub-basin, belonging to the Catamayo-Chira transboundary watershed. The project leaves important lessons regarding the insertion of climate change that can be used in this project. This project was financed by the European Commission, and was implemented with the participation of the Decentralized Provincial Autonomous Government of Loja and the Regional Government of Piura.

7. ***Consistency with National Priorities. Is the project consistent with the National strategies and plans or reports and assessments under relevant conventions? (yes ☒ /no ☐). If yes, which ones and how:***

   - National Bio Strategy Action Plan (NBSAP)

   - CBD National Report

   - Cartagena Protocol National Report

   - Nagoya Protocol National Report

   - UNFCCC National Communications (NC)

   - UNFCCC Biennial Update Report (BUR)

   - UNFCCC National Determined Contribution

   - UNFCCC Technology Needs Assessment

   - UNCCD Reporting

   - ASGM National Action Plan (ASGM NAP)

   - Minamata Initial Assessment (MIA)

- ***Stockholm National Implementation Plan (NIP)***
- ***Stockholm National Implementation Plan Update***
- ***National Adaptation Programme of Action Update***
- ***Others***

In general, the project is aligned with the Ecuadorian-Peruvian Comprehensive Agreement on Border Integration, Development and Neighborhood. Also, the project is consistent with the National Development Plans of Ecuador (National Development Plan 2017-2021 "Toda una Vida") and Peru (Strategic National Development Plan "Plan Bicentenario"), and the national priorities of each country in water resources, biodiversity, climate change and chemical and waste management, described in the national policies, strategies and plans in these areas. The project is aligned with the **water resources strategies and plans** of Ecuador and Peru. In **Peru**, it is aligned with the National Environment Plan (PNA) (2009), the National Water Resources Policy and Strategy (PENRH), the National Water Resources Plan (PNRH) (2013), the National Strategy for the Improvement of Water Resources Quality 2016-2025 (2016), ANA's Institutional Strategic Plan 2019-2024 and the guidelines for the formulation, implementation and participatory evaluation of the Water Basin Management Plans (PGRHC) for the three binational basins. The PENRH contains five policy and intervention strategies to which the project contributes, including quantity management, quality management, opportunity management, water culture management and adaptation to climate change and extreme events. Specifically, under opportunity management its Intervention Strategy 3. 2 seeks to "promote and implement Integrated Water Resources Management in Transboundary Basins", under the following action guidelines: i) Promote IWRM in transboundary basins and aquifers; ii) Formulate binational water resources management plans for transboundary basins; iii) Implement water resources management plans for transboundary basins; iv) Control and prevent water resources pollution in transboundary basins in accordance with the quality management policy in force in the countries included in the basins. In **Ecuador**, the project is aligned with the National Plan for Integrated and Comprehensive Management of Water Resources and of Water Basins and Micro-watersheds (2016), which includes among its lines of action the planning of an effective water resources management system, the supply and use of good quality water, the protection and conservation of water and soil, and the implementation of structural and non-structural measures for flood control and disaster relief. Similarly, it is aligned with the National Drinking Water and Sanitation Strategy (2016) and the National Water Quality Strategy 2016-2030 (ENCA).

The monitoring of mercury and other heavy metals and of pesticides and agrochemicals generated in agricultural and livestock activities is aligned with the objectives of reducing mercury in artisanal and small-scale gold mining (ASGM, *ASGM National Action Plan, ASGM NAP*) in Ecuador and Peru and of maximum permissible limits in waters according to the National Implementation Plans of the Stockholm Convention in Ecuador and Peru. Monitoring allows the development of strategies for the prevention of exposure of vulnerable populations, particularly children and women of reproductive age.

In terms of **biodiversity**, Ecuador and Peru have national biodiversity/biodiversity strategies to which the project is aligned. In the case of **Ecuador**, the project is aligned with the National Biodiversity Strategy 2015-2030 and the Action Plan 2014-2020, especially with three of its targets. Target 9.4 seeks that "*by 2021, the IWRM approach is implemented in at least three river basin, with emphasis on binational watersheds*", target 16.1 that "*by 2021, the cumulative forest restoration area has been increased to 3,000,000 ha, with emphasis on fragile ecosystems and watersheds contributing to multipurpose, irrigation, and hydro-generation projects*", and with target 16.2 that "*by 2021, concrete climate change adaptation and mitigation measures and actions have been incorporated into 100% of GAD with competence in the matter, in synergy with peoples and nationalities*". The result of these actions is that Ecuador will restore degraded habitats in order to increase the resilience of ecosystems and their capacity to provide goods and services that are essential for the good life of the population and for changing the productive matrix. In the case of **Peru**, the project is aligned with the National Strategy for Biological Diversity to 2021 and the Action Plan 2014-2018, where it contributes to the fulfillment of goals and measures such as the formulation and implementation of mechanisms of remuneration for ecosystem services (MERESE) with emphasis on hydrological ecosystem services (Measure 4. 2), and the "Management of water resources in 10 basins (ANA), including the Tumbes river basin" or target 6, which "*by 2021 has increased by 20% the awareness and appreciation of Peruvians about the contribution of biodiversity to national development and well-being*". The project is aligned with the Master Plans of the four (4) national protected areas in Peru found in the three basins, including Cerros de Amotape National Park, El Angolo Game Preserve, Tumbes National Reserve, and Los Manglares de Tumbes National Sanctuary.

The project is also aligned with **climate change adaptation and mitigation** policies, strategies and plans. For Ecuador, the project is consistent with the priorities on adaptation and adaptation activities in water and natural heritage in the first

Nationally Determined Contribution (NDC) (2019), the National Strategy for Climate Change 2012-2025 (2012) and the National Adaptation Plan (which started its preparation in 2019 until 2022), including the improvement of institutional capacities and the improvement of climate projections, climate risk and analysis of vulnerability and impacts on human and natural systems, under a gender perspective. The project is also aligned with the Technology Needs Assessment (TNA) (2013), which evaluated technologies for technical management of water for irrigation and for water supply management in quantity and quality. These include, for example, the use of community funds to finance the improvement of agricultural and irrigation practices (General Board of Irrigation System Users); the improvement of irrigation efficiency through loss reduction and training; and the monitoring of water resources at the sub-basin and aquifer levels. In **Peru**, the project contributes with the fulfillment of the Nationally Determined Contributions (NDC) (2015) and the document developed by the Multisectoral Consulting Group for the implementation of the NDC (2018) and is aligned with the line of action of "scientific knowledge and technology" of the National Strategy for Climate Change (2015) that includes the evaluation of the impact and effects of climate change in basins and ecosystems through the development of studies of climate change vulnerability on basins, ecosystems, communities, cities and sectors, to propose appropriate measures for the prevention or reduction of those impacts. By including technologies for planting and harvesting water, the project is aligned with the Technology Needs Assessment for Climate Change (TNA) on adaptation (2012), which focused on water resources, specifically on micro and small reservoir rainwater harvesting and the use of micro-reservoir-regulated irrigation systems.

8. ***Knowledge Management. Outline the "Knowledge Management Approach" for the project and how it will contribute to the project's overall impact, including plans to learn from relevant projects, initiatives and evaluations.***

The project considers several actions and activities for the generation, processing and management of the knowledge developed within the project. Through components 1 and 4, and a direct budget allocation, the following activities will be implemented:

- Development of a binational information platform for water resources management in the Zarumilla, Puyango-Tumbes and Catamayo-Chira transboundary basins (Output 4.2). The Platform will enable the collection, exchange, integration, dissemination and transmission of information, based on standards and protocols. A web portal will be developed that includes a geoportal, viewer, metadata catalogues to share data and binational information in the three transboundary basins and applications or modules will be created in the web portal to access information generated from new IWRM projects on water monitoring, early warning systems, water schools, among others.
- Development of a communication strategy at different levels (national, regional and local) (Activity 1.2.3)
- Development of communities of practice in the bi-national platform that allows the exchange of knowledge and awareness throughout the basin.
- Development of knowledge products for dissemination on the IW:LEARN website. Preparation of case studies and participation in regional conferences and workshops on international waters and other global and regional dialogue processes to share project results.
- Participation in national, regional and global forums on international waters, developed or promoted by the GEF, UNDP, or others.

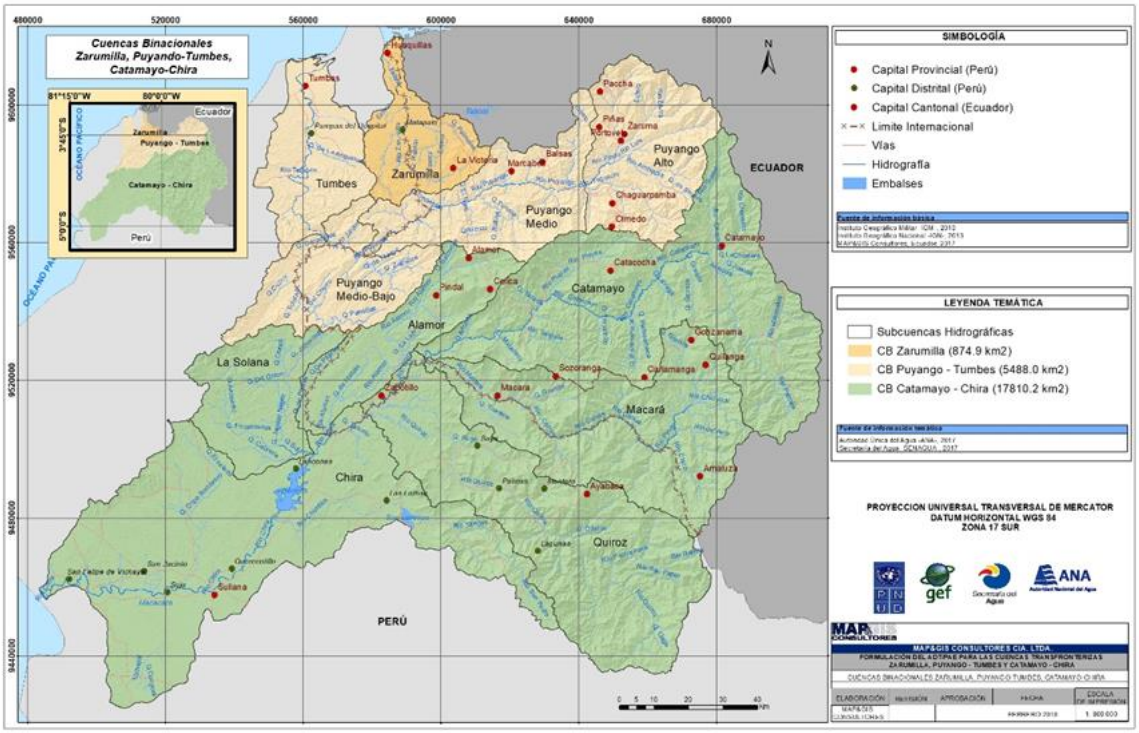
PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter(s) with this template. For SGP, use this SGP OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*
Martha Cuba Cronkleton	GEF Operational Focal Point in Peru	Ministry of Environment	09/25/2020
María Belén Durán	GEF Operational Focal Point in Ecuador	Ministry of Environment and Water	09/23/2020

Annex A

PROGRAM/PROJECT MAP AND GEOGRAPHIC COORDINATES



Annex B

GEF 7 Core Indicator Worksheet

Use this Worksheet to compute those indicator values as required in Part I, item F to the extent applicable to your proposed project. Progress in programming against these targets for the project will be aggregated and reported at anytime during the replenishment period. There is no need to complete this table for climate adaptation projects financed solely through LDCF and SCCF.

Core Indicator 1	**Terrestrial protected areas created or under improved management for conservation and sustainable use**							***(Hectares)***
				Hectares (1.1+1.2)				
				Expected		Achieved		
				PIF stage	Endorsement	MTR	TE	
				4,000				
Indicator 1.1	Terrestrial protected areas newly created							
Name of Protected Area	WDPA ID	IUCN category		Hectares				
				Expected		Achieved		
				PIF stage	Endorsement	MTR	TE	
		Sum						
Indicator 1.2	Terrestrial protected areas under improved management effectiveness							
Name of Protected Area	WDPA ID	IUCN category	Hectares	METT Score				
				Baseline		Achieved		
					Endorsement	MTR	TE	
Jilili		VI PA with sustainable use of natural resources	*500*					
Paimas		VI PA with sustainable use of natural resources	*500*					
Montero		VI PA with sustainable use of natural resources	*500*					
Ayabaca		VI PA with sustainable use of natural resources	*500*					
Minchay, Shirillo and San Cecilia in Macará and Catamayo (Ecuador)		VI PA with sustainable use of natural resources	*2,000*					
		Sum	*4,000*					
Core Indicator 2	**Marine protected areas created or under improved management for conservation and sustainable use**							***(Hectares)***

				Hectares (2.1+2.2)			
				Expected		Achieved	
				PIF stage	Endorsement	MTR	*TE*
Indicator 2.1	Marine protected areas newly created						
Name of Protected Area	WDPA ID	IUCN category		Hectares			
				Expected		Achieved	
				PIF stage	Endorsement	MTR	TE
			(select)				
			(select)				
			Sum				
Indicator 2.2	Marine protected areas under improved management effectiveness						
Name of Protected Area	WDPA ID	IUCN category	Hectares	METT Score			
				Baseline		Achieved	
				PIF stage	Endorsement	MTR	TE
		(select)					
		(select)					
		Sum					
Core Indicator 3	**Area of land restored**						***(Hectares)***
				Hectares (3.1+3.2+3.3+3.4)			
				Expected		Achieved	
				PIF stage	Endorsement	MTR	TE
				1,200			
Indicator 3.1	Area of degraded agricultural land restored						
				Hectares			
				Expected		Achieved	
				PIF stage	Endorsement	MTR	TE
Indicator 3.2	Area of forest and forest land restored						
				Hectares			
				Expected		Achieved	
				PIF stage	Endorsement	MTR	TE
				1,200			
Indicator 3.3	Area of natural grass and shrublands restored						
				Hectares			
				Expected		Achieved	
				PIF stage	Endorsement	MTR	TE
Indicator 3.4	Area of wetlands (including estuaries, mangroves) restored						
				Hectares			
				Expected		Achieved	
				PIF stage	Endorsement	MTR	TE
Core Indicator 4	**Area of landscapes under improved practices (hectares; excluding protected areas)**						***(Hectares)***
				Hectares (4.1+4.2+4.3+4.4)			
				Expected		Expected	
				PIF stage	Endorsement	MTR	TE
				10,700			
Indicator 4.1	Area of landscapes under improved management to benefit biodiversity						
				Hectares			
				Expected		Achieved	
				PIF stage	Endorsement	MTR	TE
Indicator 4.2	Area of landscapes that meet national or international third-party certification that incorporates biodiversity considerations						
Third party certification(s):				Hectares			

			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 4.3	Area of landscapes under sustainable land management in production systems					
			Hectares			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
			10,700			
Indicator 4.4	Area of High Conservation Value Forest (HCVF) loss avoided					
Include documentation that justifies HCVF			Hectares			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Core Indicator 5	**Area of marine habitat under improved practices to benefit biodiversity**					***(Hectares)***
Indicator 5.1	Number of fisheries that meet national or international third-party certification that incorporates biodiversity considerations					
Third party certification(s):			Number			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 5.2	Number of large marine ecosystems (LMEs) with reduced pollution and hypoxial					
			Number			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 5.3	Amount of Marine Litter Avoided					
			Metric Tons			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Core Indicator 6	**Greenhouse gas emission mitigated**					***(Metric tons of CO_2e)***
			Expected metric tons of CO_2e (6.1+6.2)			
			PIF stage	Endorsement	MTR	TE
	Expected CO2e (direct)					
	Expected CO2e (indirect)					
Indicator 6.1	Carbon sequestered or emissions avoided in the AFOLU sector					
			Expected metric tons of CO_2e			
			PIF stage	Endorsement	MTR	TE
	Expected CO2e (direct)					
	Expected CO2e (indirect)					
	Anticipated start year of accounting					
	Duration of accounting					
Indicator 6.2	Emissions avoided Outside AFOLU					
			Expected metric tons of CO_2e			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
	Expected CO2e (direct)					
	Expected CO2e (indirect)					
	Anticipated start year of accounting					
	Duration of accounting					
Indicator 6.3	Energy saved					
			MJ			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE

Indicator 6.4	Increase in installed renewable energy capacity per technology					
		Technology	Capacity (MW)			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
		(select)				
		(select)				
Core Indicator 7	**Number of shared water ecosystems (fresh or marine) under new or improved cooperative management**					***(Number)***
Indicator 7.1	Level of Transboundary Diagnostic Analysis and Strategic Action Program (TDA/SAP) formulation and implementation					
		Shared water ecosystem	Rating (scale 1-4)			
			PIF stage	Endorsement	MTR	TE
		Zarumilla, Puyango-Tumbes, Catamayo-Chira	*3*			
Indicator 7.2	Level of Regional Legal Agreements and Regional Management Institutions to support its implementation					
		Shared water ecosystem	Rating (scale 1-4)			
			PIF stage	Endorsement	MTR	TE
		Zarumilla, Puyango-Tumbes, Catamayo-Chira	*3*			
Indicator 7.3	Level of National/Local reforms and active participation of Inter-Ministerial Committees					
		Shared water ecosystem	Rating (scale 1-4)			
			PIF stage	Endorsement	MTR	TE
		Zarumilla, Puyango-Tumbes, Catamayo-Chira	*2*			
Indicator 7.4	Level of engagement in IWLEARN through participation and delivery of key products					
		Shared water ecosystem	Rating (scale 1-4)			
			Rating		Rating	
			PIF stage	Endorsement	MTR	TE
		Zarumilla, Puyango-Tumbes, Catamayo-Chira	*2*			
Core Indicator 8	**Globally over-exploited fisheries Moved to more sustainable levels**					***(Metric Tons)***
Fishery Details			Metric Tons			
			PIF stage	Endorsement	MTR	TE
Core Indicator 9	**Reduction, disposal/destruction, phase out, elimination and avoidance of chemicals of global concern and their waste in the environment and in processes, materials and products**					***(Metric Tons)***
			Metric Tons (9.1+9.2+9.3)			
			Expected		Achieved	
			PIF stage	PIF stage	MTR	TE
Indicator 9.1	Solid and liquid Persistent Organic Pollutants (POPs) removed or disposed (POPs type)					
POPs type			Metric Tons			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
(select)	(select)	(select)				
(select)	(select)	(select)				
(select)	(select)	(select)				
Indicator 9.2	Quantity of mercury reduced					
			Metric Tons			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 9.3	Hydrochloroflurocarbons (HCFC) Reduced/Phased out					
			Metric Tons			

			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 9.4	Number of countries with legislation and policy implemented to control chemicals and waste					
			Number of Countries			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 9.5	Number of low-chemical/non-chemical systems implemented particularly in food production, manufacturing and cities					
		Technology	Number			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 9.6	Quantity of POPs/Mercury containing materials and products directly avoided					
			Metric Tons			
			Expected		Achieved	
			PIF stage	Endorsement	PIF stage	Endorsement
Core Indicator 10	**Reduction, avoidance of emissions of POPs to air from point and non-point sources**					***(grams of toxic equivalent gTEQ)***
Indicator 10.1	Number of countries with legislation and policy implemented to control emissions of POPs to air					
			Number of Countries			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 10.2	Number of emission control technologies/practices implemented					
			Number			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Core Indicator 11	**Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment**					***(Number)***
			Number			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
		Female	*32,518*			
		Male	*23,183*			
		Total	*55,701*			

Annex C

Project Taxonomy Worksheet

Use this Worksheet to list down the taxonomic information required under Part I, item G by ticking the most relevant keywords/ topics/themes that best describe this project.

Level 1	Level 2	Level 3	Level 4
☒**Influencing models**			
	☐**Transform policy and regulatory environments**		
	☒**Strengthen institutional capacity and decision-making**		
	☒**Convene multi-stakeholder alliances**		
	☐**Demonstrate innovative approaches**		
	☐**Deploy innovative financial instruments**		
☒**Stakeholders**			
	☐**Indigenous Peoples**		
	☐**Private Sector**		
		☐Capital providers	
		☐Financial intermediaries and market facilitators	
		☐Large corporations	
		☐SMEs	
		☒Individuals/Entrepreneurs	
		☐Non-Grant Pilot	
		☐Project Reflow	
	☒**Beneficiaries**		
	☒**Local Communities**		
	☒**Civil Society**		
		☒Community Based Organization	
		☒Non-Governmental Organization	
		☒Academia	
		☐Trade Unions and Workers Unions	
	☒**Type of Engagement**		
		☒Information Dissemination	
		☒Partnership	
		☐Consultation	
		☒Participation	
	☒**Communications**		
		☒Awareness Raising	
		☒Education	
		☐Public Campaigns	
		☒Behavior Change	
☒**Capacity, Knowledge and Research**			
	☐**Enabling Activities**		
	☒**Capacity Development**		
	☐**Knowledge Generation and Exchange**		
	☐**Targeted Research**		
	☒**Learning**		
		☒Theory of Change	
		☒Adaptive Management	
		☒Indicators to Measure Change	
	☐**Innovation**		
	☒**Knowledge and Learning**		
		☒Knowledge Management	
		☐Innovation	
		☒Capacity Development	
		☒Learning	
	☒**Stakeholder Engagement Plan**		

☒**Gender Equality**			
	☒**Gender Mainstreaming**		
		☒Beneficiaries	
		☐Women groups	
		☒Sex-disaggregated indicators	
		☐Gender-sensitive indicators	
	☒**Gender results areas**		
		☐Access and control over natural resources	
		☒Participation and leadership	
		☐Access to benefits and services	
		☐Capacity development	
		☒Awareness raising	
		☐Knowledge generation	
☒**Focal Areas/Theme**			
	☐**Integrated Programs**		
		☐Commodity Supply Chains ([8]Good Growth Partnership)	
			☐Sustainable Commodities Production
			☐Deforestation-free Sourcing
			☐Financial Screening Tools
			☐High Conservation Value Forests
			☐High Carbon Stocks Forests
			☐Soybean Supply Chain
			☐Oil Palm Supply Chain
			☐Beef Supply Chain
			☐Smallholder Farmers
			☐Adaptive Management
		☐Food Security in Sub-Sahara Africa	
			☐Resilience (climate and shocks)
			☐Sustainable Production Systems
			☐Agroecosystems
			☐Land and Soil Health
			☐Diversified Farming
			☐Integrated Land and Water Management
			☐Smallholder Farming
			☐Small and Medium Enterprises
			☐Crop Genetic Diversity
			☐Food Value Chains
			☐Gender Dimensions
			☐Multi-stakeholder Platforms
		☐Food Systems, Land Use and Restoration	
			☐Sustainable Food Systems
			☐Landscape Restoration
			☐Sustainable Commodity Production
			☐Comprehensive Land Use Planning
			☐Integrated Landscapes
			☐Food Value Chains
			☐Deforestation-free Sourcing
			☐Smallholder Farmers
		☐Sustainable Cities	
			☐Integrated urban planning
			☐Urban sustainability framework
			☐Transport and Mobility
			☐Buildings
			☐Municipal waste management
			☐Green space
			☐Urban Biodiversity
			☐Urban Food Systems
			☐Energy efficiency
			☐Municipal Financing
			☐Global Platform for Sustainable Cities
			☐Urban Resilience

8

	☐ **Biodiversity**		
		☐ Protected Areas and Landscapes	
			☐ Terrestrial Protected Areas
			☐ Coastal and Marine Protected Areas
			☐ Productive Landscapes
			☐ Productive Seascapes
			☐ Community Based Natural Resource Management
		☐ Mainstreaming	
			☐ Extractive Industries (oil, gas, mining)
			☐ Forestry (Including HCVF and REDD+)
			☐ Tourism
			☐ Agriculture & agrobiodiversity
			☐ Fisheries
			☐ Infrastructure
			☐ Certification (National Standards)
			☐ Certification (International Standards)
		☐ Species	
			☐ Illegal Wildlife Trade
			☐ Threatened Species
			☐ Wildlife for Sustainable Development
			☐ Crop Wild Relatives
			☐ Plant Genetic Resources
			☐ Animal Genetic Resources
			☐ Livestock Wild Relatives
			☐ Invasive Alien Species (IAS)
		☐ Biomes	
			☐ Mangroves
			☐ Coral Reefs
			☐ Sea Grasses
			☐ Wetlands
			☐ Rivers
			☐ Lakes
			☐ Tropical Rain Forests
			☐ Tropical Dry Forests
			☐ Temperate Forests
			☐ Grasslands
			☐ Paramo
			☐ Desert
		☐ Financial and Accounting	
			☐ Payment for Ecosystem Services
			☐ Natural Capital Assessment and Accounting
			☐ Conservation Trust Funds
			☐ Conservation Finance
		☐ Supplementary Protocol to the CBD	
			☐ Biosafety
			☐ Access to Genetic Resources Benefit Sharing
	☐ **Forests**		
		☐ Forest and Landscape Restoration	
			☐ REDD/REDD+
		☐ Forest	
			☐ Amazon
			☐ Congo
			☐ Drylands
	☐ **Land Degradation**		
		☐ Sustainable Land Management	
			☐ Restoration and Rehabilitation of Degraded Lands
			☐ Ecosystem Approach
			☐ Integrated and Cross-sectoral approach
			☐ Community-Based NRM
			☐ Sustainable Livelihoods
			☐ Income Generating Activities
			☐ Sustainable Agriculture

			☐Sustainable Pasture Management
			☐Sustainable Forest/Woodland Management
			☐Improved Soil and Water Management Techniques
			☐Sustainable Fire Management
			☐Drought Mitigation/Early Warning
		☐Land Degradation Neutrality	
			☐Land Productivity
			☐Land Cover and Land cover change
			☐Carbon stocks above or below ground
		☐Food Security	
	☒**International Waters**		
		☐Ship	
		☐Coastal	
		☒Freshwater	
			☒Aquifer
			☒River Basin
			☐Lake Basin
		☐Learning	
		☐Fisheries	
		☐Persistent toxic substances	
		☐SIDS : Small Island Dev States	
		☐Targeted Research	
		☒Pollution	
			☒Persistent toxic substances
			☒ Plastics
			☒Nutrient pollution from all sectors except wastewater
			☒Nutrient pollution from Wastewater
		☐Transboundary Diagnostic Analysis and Strategic Action Plan preparation	
		☒Strategic Action Plan Implementation	
		☐Areas Beyond National Jurisdiction	
		☐Large Marine Ecosystems	
		☐Private Sector	
		☐Aquaculture	
		☐Marine Protected Area	
		☐Biomes	
			☐Mangrove
			☐Coral Reefs
			☐Seagrasses
			☐Polar Ecosystems
			☐Constructed Wetlands
	☐**Chemicals and Waste**		
		☐Mercury	
		☐Artisanal and Scale Gold Mining	
		☐Coal Fired Power Plants	
		☐Coal Fired Industrial Boilers	
		☐Cement	
		☐Non-Ferrous Metals Production	
		☐Ozone	
		☐Persistent Organic Pollutants	
		☐Unintentional Persistent Organic Pollutants	
		☐Sound Management of chemicals and Waste	
		☐Waste Management	
			☐Hazardous Waste Management
			☐Industrial Waste
			☐e-Waste
		☐Emissions	
		☐Disposal	
		☐New Persistent Organic Pollutants	
		☐Polychlorinated Biphenyls	
		☐Plastics	

		☐Eco-Efficiency	
		☐Pesticides	
		☐DDT - Vector Management	
		☐DDT - Other	
		☐Industrial Emissions	
		☐Open Burning	
		☐Best Available Technology / Best Environmental Practices	
		☐Green Chemistry	
	☒**Climate Change**		
		☒**Climate Change Adaptation**	
			☐Climate Finance
			☐Least Developed Countries
			☐Small Island Developing States
			☒Disaster Risk Management
			☐Sea-level rise
			☒Climate Resilience
			☒Climate information
			☒Ecosystem-based Adaptation
			☐Adaptation Tech Transfer
			☐National Adaptation Programme of Action
			☐National Adaptation Plan
			☐Mainstreaming Adaptation
			☐Private Sector
			☐Innovation
			☐Complementarity
			☐Community-based Adaptation
			☐Livelihoods
		☒**Climate Change Mitigation**	
			☒Agriculture, Forestry, and other Land Use
			☐Energy Efficiency
			☐Sustainable Urban Systems and Transport
			☐Technology Transfer
			☐Renewable Energy
			☐Financing
			☐Enabling Activities
		☐**Technology Transfer**	
			☐Poznan Strategic Programme on Technology Transfer
			☐Climate Technology Centre & Network (CTCN)
			☐Endogenous technology
			☐Technology Needs Assessment
			☐Adaptation Tech Transfer
		☐**United Nations Framework on Climate Change**	
			☐Nationally Determined Contribution
☒**Rio Marker**	☒**Climate Change Mitigation 1**		
	☒**Climate Change Adaptation 1**		