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Report No: PAD4108

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT
ON A
PROPOSED GRANT

FROM THE GLOBAL ENVIRONMENT FACILITY

IN THE AMOUNT OF US\$12.84 MILLION

TO THE

WILDLIFE CONSERVATION SOCIETY

FOR AN

INTEGRATED WATERSHED MANAGEMENT OF THE PUTUMAYO-IÇÁ RIVER BASIN
PROJECT

June 15, 2022

Environment, Natural Resources & The Blue Economy Global Practice
Latin America And Caribbean Region

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CURRENCY EQUIVALENTS

For the Federative Republic of Brazil
(Exchange Rate Effective April 26, 2022)

Currency Unit = Brazilian Real

BRL 4.95 = US\$1

US\$0.20 = BRL 1

For the Republic of Colombia
(Exchange Rate Effective April 26, 2022)

Currency Unit = Colombian Pesos (COP)

COP 3,944 = US\$1

US\$0.0003 = COP 1

For the Republic of Peru
(Exchange Rate Effective April 26, 2022)

Currency Unit = Peruvian Sol (PEN)

PEN 3.80 = US\$1

US\$0.26 = PEN 1

The US dollar is the official currency of the Republic of Ecuador, effective January 2000

FISCAL YEAR

January 1–December 31

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Abbreviations and Acronyms

ACTO	Amazon Cooperation Treaty Organization
ASGM	Artisanal and Small-scale Gold Mining
ASL	Amazon Sustainable Landscapes Program
COVID-19	Coronavirus Disease of 2019 (also known as 2019 novel coronavirus or SARS Cov-2)
CET	Country Engagement Teams
CONAMA	Brazil National Council of the Environment (<i>Conselho Nacional do Meio Ambiente</i>)
CPF	Country Partnership Framework
CSO	Civil Society Organization
EFA	Economic and Financial Analysis
ERP	Environmentally responsible procurement
ESF	Environmental and Social Framework
ESMF	Environmental and Social Management Framework
FM	Financial management
FMA	Financial Management Assessment
F/S	Financial Statements
FY	Fiscal Year
FZS	Frankfurt Zoological Society
GEF	Global Environment Facility
GEF-7	Global Environment Facility seventh replenishment period
GEF IEO	Global Environment Facility Independent Evaluation Office
GHG	Greenhouse Gas
GOLD	Global Opportunities for Long Term Development of ASGM Sector - GEF-Funded program
GRID	Green, Resilient, and Inclusive Development
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
HQ	Headquarters (located in Washington, DC, for the WB and New York City for WCS)
IFR	Interim Financial Reports
IPs	Indigenous Peoples
IPF	Investment Project Financing
IPLC	Indigenous Peoples and Local Communities
IRR	Internal Rate of Return
IT	Indigenous Territories
IW:LEARN	International Waters Learning Exchange and Resource Network
IWRM	Integrated Water Resources Management
LAC	Latin American and the Caribbean Region
KMS	Knowledge Management Strategy
M&E	Monitoring and Evaluation
NGO	Nongovernmental Organization
NPV	Net Present Value
NTFP	Nontimber Forest Products
OFP	Operational Focal Point
PA	Protected Area
PDO	Project Development Objective
PMU	Project Management Unit
POA	Annual Operation Plan (<i>Plan Operativo Anual</i>)
POM	Project Operations Manual
PPP	Project's Procurement Plan
PPSD	Project Procurement Strategy for Development
RSC	Regional Steering Committee
SAP	System Application and Products in Data Processing
SAP–Amazon	Strategic Action Program – Regional Strategy for Integrated Water Resources Management in the Amazon Basin

SCC	Social Cost of Carbon
SEMA	Secretariat of Environment of Amazonas State, Brazil (<i>Secretaria de Estado do Meio Ambiente do Amazonas</i>)
SINCHI	Amazon Institute for Scientific Research (Colombia) (<i>Instituto Amazónico de Investigaciones Científicas</i>)
SOE	Statement of Expenditures
STEP	Systematic Tracking and Exchanges in Procurement
TC	Technical Committee
TDA	Transboundary Diagnostic Analysis
Tor	Terms of Reference
TPH	Total Petroleum Hydrocarbons
WB	The World Bank
WBG	The World Bank Group
WCS	Wildlife Conservation Society
WWF	World Wide Fund for Nature

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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Latin America	Integrated watershed management of the Putumayo-Içá river basin	
Project ID	Financing Instrument	Environmental and Social Risk Classification
P172893	Investment Project Financing	Substantial

GEF Focal Area

Multi-focal area

Financing & Implementation Modalities

<input type="checkbox"/> Multiphase Programmatic Approach (MPA)	<input type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Series of Projects (SOP)	<input type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Performance-Based Conditions (PBCs)	<input type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made Disaster
<input type="checkbox"/> Alternate Procurement Arrangements (APA)	<input type="checkbox"/> Hands-on Enhanced Implementation Support (HEIS)

Expected Approval Date	Expected Closing Date
05-Jul-2022	30-Sep-2027

Bank/IFC Collaboration

No

Proposed Development Objective(s)

To strengthen the enabling conditions for the participant countries to manage the shared freshwater ecosystems of the Putumayo- Içá basin in the Amazon region



Components

Component Name	Cost (US\$, millions)
Governance and capacity for informed and participatory decision making on IWRM	4.30
Management interventions towards shared IWRM	6.08
Project Management, Communications, Monitoring and Evaluation	2.46

Organizations

Borrower:	Wildlife Conservation Society
Implementing Agency:	Ministry of Environment - Peru
	Ministry of Environment and Sustainable Development - Colombia
	Secretaria de Estado de Meio Ambiente, Amazon State, Brazil
	Ministry of Environment, Water and Ecological Transition - Ecuador
	Wildlife Conservation Society

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	12.84
Total Financing	12.84
of which IBRD/IDA	0.00
Financing Gap	0.00

DETAILS

Non-World Bank Group Financing

Trust Funds	12.84
Global Environment Facility (GEF)	12.84

INSTITUTIONAL DATA

Practice Area (Lead)	Contributing Practice Areas
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Environment, Natural Resources & the Blue Economy

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	● Substantial
2. Macroeconomic	● Moderate
3. Sector Strategies and Policies	● Moderate
4. Technical Design of Project or Program	● Moderate
5. Institutional Capacity for Implementation and Sustainability	● Moderate
6. Fiduciary	● Substantial
7. Environment and Social	● Substantial
8. Stakeholders	● Moderate
9. Other	● Substantial
10. Overall	● Substantial

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

[] Yes [✓] No

Does the project require any waivers of Bank policies?

[] Yes [✓] No

**Environmental and Social Standards Relevance Given its Context at the Time of Appraisal**

E & S Standards	Relevance
Assessment and Management of Environmental and Social Risks and Impacts	Relevant
Stakeholder Engagement and Information Disclosure	Relevant
Labor and Working Conditions	Relevant
Resource Efficiency and Pollution Prevention and Management	Relevant
Community Health and Safety	Relevant
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Relevant
Cultural Heritage	Relevant
Financial Intermediaries	Not Currently Relevant

NOTE: For further information regarding the World Bank's due diligence assessment of the Project's potential environmental and social risks and impacts, please refer to the Project's Appraisal Environmental and Social Review Summary (ESRS).

Legal Covenants

Sections and Description

Grant Agreement (GA), Schedule 2, Section I.A.1 (a) and (b). The Recipient shall maintain, until the completion of the Project, a Project Management Unit ("PMU"), and ensure that the PMU functions at all times in a manner and with staffing, budgetary resources, and authority necessary and appropriate for satisfactory Project implementation, and all of which shall be acceptable to the World Bank.

Sections and Description

GA, Schedule 2, Section I.A.2. By no later than thirty (30) days following Effective Date, the Recipient shall have updated its multi-currency accounting system with proper data processing and reporting functionality for the purposes of the Project in a manner acceptable to the Bank.

Sections and Description



GA, Schedule 2, Section I.B.1 and 2. The Recipient shall maintain, throughout Project implementation, a Project Operations Manual (“POM”), in substance and manner acceptable to the World Bank, and shall carry out the Project, and cause the Project to be carried out, in accordance with the arrangements, procedures and guidelines set forth in the POM.

Sections and Description

GA, Schedule 2, Section I.C.1. For purposes of carrying out the Project, the Recipient shall execute and maintain Inter-institutional Cooperation Agreements with the Partner Entities, on terms and conditions acceptable to the World Bank.

Sections and Description

GA, Schedule 2, Section I.D.1. For purposes of carrying out Parts 1.A(ii)(b), 1.A(iii), 2.A(i)(a)(2), 2.A(i)(b)(2), 2.A(i)(c)(2), 2.A(ii)(a), 2.B(i)(b), 2.B(ii)(b), and 2.B(iii)(b) of the Project, the Recipient shall ensure that the selection of each Subproject Beneficiary and Subproject complies with the process and eligibility criteria set forth in the POM.

Sections and Description

GA, Schedule 2, Section I.D.2. Prior to any Subproject Beneficiary to be eligible to receive any proceeds of the Project to carry out its corresponding Subproject, the Recipient shall enter into an agreement with each Subproject Beneficiary (“Subproject Grant Agreement”), under terms and conditions satisfactory to the World Bank.

Sections and Description

GA, Schedule 2, Section I.E.1 and 2. The Recipient shall ensure that the Project is carried out in accordance with the Environmental and Social Standards, and the Environmental and Social Commitment Plan (“ESCP”), in a manner acceptable to the World Bank.

Sections and Description

GA, Schedule 2, Section I.G. The Recipient shall: (a) prepare and furnish to the World Bank (i) for the first year of Project implementation, not later than three (3) months after the Effective Date; and (ii) for the second year of Project implementation and the following calendar years of Project implementation, not later than November 30th of each year during the implementation of the Project, a proposed Annual Operational Plan and Budget; afford the Bank a reasonable opportunity to exchange views on each such proposed Annual Operational Plan and Budget; and not make or allow to be made any change to the approved Annual Operational Plan and Budget without the Bank’s prior written approval.

Conditions

Type	Financing source	Description
Effectiveness	Trust Funds	GA, Section 5.01 (a) and 5.02. The execution and delivery of the Grant Agreement on behalf of the Recipient have been duly authorized or ratified by all necessary governmental and corporate action; and furnish to the World Bank an opinion or opinions satisfactory to the World Bank of counsel acceptable to the World



		Bank, showing on behalf of the Recipient, that the Grant Agreement has been duly authorized or ratified by, and executed and delivered on its behalf and is legally binding upon it in accordance with its terms.
Type Effectiveness	Financing source Trust Funds	Description GA, Section 5.01 (b). The Recipient has prepared and furnished to the World Bank, all of the following, which shall be in form and substance acceptable to the World Bank: (i) terms of reference for the core staff of the Project Management Unit (namely the Project director, grant manager, and the procurement specialist, environmental and social specialist, monitoring and evaluation specialist, and communication specialist) in accordance with Section I.A.1 of Schedule 2; and (ii) the procedures and simplified documents for the procurement of all consulting services and non-consulting services for the establishment and operationalization of the Project Management Unit.
Type Disbursement	Financing source Trust Funds	Description GA, Schedule 2, Section III. B.1 (b). No withdrawal shall be made under Categories 1 and 2 until the Recipient has: (i) established a Project Management Unit in accordance with Section 1.A.1 to the satisfaction of the World Bank; (ii) adopted a Project Operational Manual, in form and substance acceptable to the World Bank; and (iii) executed Inter-institutional Cooperation Agreements with each of the Core Partner Entities.



I. STRATEGIC CONTEXT

A. Country Context

1. **The Amazon River basin hosts the world's largest rainforest and river system.**¹ The Amazon basin spans approximately 6.8 million square kilometers (km^2) across countries in South America (Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, Venezuela) and the French Guiana territory. It hosts a combination of ecosystems, including lowland and mountainous forests, natural savannas, and wetlands, traversed by numerous rivers, including the world's largest, the Amazon. The region includes 210 million hectares (ha) of protected areas (PAs) and around 3,000 indigenous territories (IT) covering over 200 million ha. Forty percent of the world's remaining rainforests are located in the Amazon. Stretching at least 6,800 km from the high Andes to the Atlantic, the Amazon River is one of the two longest rivers in the world, discharging 15–16 percent of the freshwater entering the oceans annually.²
2. **Conserving the Amazon basin is of critical global, regional, and local importance.** The Amazon basin is rich in biodiversity, housing about 40,000 plant species, at least 2,750 freshwater fish species,³ 1,300 species of birds, 427 species of mammals, 400 species of amphibians, and 370 species of reptiles.⁴ Many plant and animal species have evolved within the Amazon wetlands, the richest freshwater aquatic habitats in the world. The Amazon provides numerous ecosystem services, including (a) *provisioning* material goods like wood, medicines, food, and clean freshwater; (b) *regulating* hydrological, biogeochemical cycles and regional and global climate; (c) *sustaining cultural* practices; and (d) *supporting* the provision of habitat, thus contributing to the maintenance and generation of regional biodiversity. The Amazon's extensive riverine network also plays an important role as a transportation system.
3. **The population of the Amazon is estimated at 47.4 million people, including 410 indigenous groups.** Brazil is home to approximately 61 percent of the Amazon's total population, Peru accounts for almost 9 percent, Colombia for 3 percent, and Ecuador for 2 percent.⁵ Since the 1970s, the Amazon is the scene of an important urbanization process; almost 75 percent of its population now resides in urban areas. Although in recent years, poverty and extreme poverty have declined, the Amazon still has higher poverty rates than the national averages in each Amazon country. The Coronavirus Disease 2019 (COVID-19) pandemic exposed the high vulnerability of communities in the Amazon, where the virus rapidly spread. As of October 4, 2021, the virus has affected more than 3.3 million people in the Amazon region of the Project participant countries, of which over 91,000 have died.⁶ The emergency has exposed the

¹Charity, S., N. Dudley, D. Oliveira, and S. Stoltz (Eds.). 2016. *Living Amazon Report 2016: A Regional Approach to Conservation in the Amazon*. WWF Living Amazon Initiative, Brasília and Quito. Gland, Switzerland: WWF (World Wide Fund for Nature).

² Richey, J. et al. 1989. "Amazon River Discharge and Climate Variability: 1903 to 1985." *Science* 246: 101–03.

³ Dagosta, Fernando C. P., and Mário De Pinna. 2019. "The Fishes of the Amazon: Distribution and Biogeographical Patterns, With a Comprehensive List of Species." *Bulletin of the American Museum of Natural History* 431: 11–63.

⁴ Dalberg Advisors. 2018. *Ríos Sanos, Gente Sana—Abordando la Crisis de Mercurio en la Amazonía*, 50 pp. Gland, Switzerland: WWF.

⁵ Red Amazónica de Información Socioambiental Georeferenciada. 2020. *Amazonía Bajo Presión*. www.redamazonica.org.

⁶ <https://redamazonica.org/covid-19-panamazonia/>. Of this total, within the Project area more than 67,000 people have been infected with the virus, of which over 1,800 have died as of October 4, 2021. This data corresponds to information from the areas of Brazil (Alto Salimoes), Colombia (Leticia, Puerto Leguizamo-Solano, Mocoa Sibundoy), Ecuador (Sucumbios), and Peru (San Jose Amazonas).



region's poor health infrastructure and the long time it takes to travel to the few urban centers. The situation has been alarming for Indigenous Peoples (IPs), who not only faced reduced population from loss of life but also lost traditional knowledge⁷ from the vulnerable elderly.

4. **The Amazon region's main economic activities include agriculture, livestock, logging, fishing, mining, hydrocarbon extraction, and harvesting of wild fruits and other plant species.** Fishing is the basin's main source of income and food for riverside communities, with a per capita consumption of between 100 grams and 550 grams per day.⁸ The area has considerable fish resources, with current production of almost 400,000 tons per year from about 200 species. Gold mining, both legal and illegal, is widespread in the lowlands and mountainous areas of the Amazon basin. Amazon countries produce approximately 400 metric tons of gold annually, supplying almost 10 percent of the world's demand.⁹ Artisanal and small-scale gold mining (ASGM)¹⁰ operations produce 15 percent of Amazon countries' gold, employing nearly 1.4 million people.¹¹ Illegal gold mining is of particular concern because of the environmental damage associated with it and the large number of people affected by this unregulated economic activity.

B. Sectoral and Institutional Context

5. **The Putumayo-Içá River is the 10th longest tributary of the Amazon River, providing globally significant biodiversity and ecosystem services.** The Putumayo-Içá river basin covers 118,000 km² and accounts for approximately 1.7 percent of the Amazon basin. The Putumayo-Içá¹² drainage includes Colombia, Ecuador, Peru, and downstream, Brazil,¹³ where it discharges into the Amazon River. The Putumayo-Içá serves as a corridor connecting key ecosystems from its headwaters, which flow from the Andes Mountains into an intricate web of rivers, lakes, and flooded forests in the lower plains, as it flows into the Amazon River. Rivers and streams harbor a great variety of microhabitats that sustain the region's unparalleled biological and cultural diversity. Of the large Andes-Amazon tributaries, the Putumayo-Içá is the only one likely to remain as a free-flowing river, considering there are no plans for the construction of large hydroelectric dams. The middle and lower parts of the basin house one of the largest well-conserved areas of forest in the world, with nearly 90 percent of intact forests and less than 1 percent of tree cover loss in the last 18 years.¹⁴ Along with a myriad of ecosystem services, forest cover provides resilience to climate change by regulating seasonality, reducing risks of extensive fires from increased temperatures and droughts, and flooding and erosion from increased rains. Seventy-five percent of the basin is located

⁷ Traditional knowledge is the collective understanding of traditions and practices used by indigenous groups to sustain and adapt themselves to their environment. This knowledge has proven critical to global efforts to protect and renew nature.

⁸https://wwf.panda.org/knowledge_hub/where_we_work/amazon/vision_amazon/models/natural_resources_management_a_mazon/fish_management/#:~:text=Fish%2C%20a%20vital%20part%20of,the%20country's%20rivers%20and%20lakes.

⁹ Dalberg Advisors. 2018. *Healthy Rivers, Healthy People: Assessing the Mercury Crisis in the Amazon*. Gland, Switzerland: WWF.

¹⁰ Defined by the Minamata Convention on Mercury as "gold mining conducted by individuals or small enterprises with limited capital investment and production."

¹¹ Dalberg Advisors. 2018. *Healthy Rivers, Healthy People. Assessing the Mercury Crisis in the Amazon*. Gland, Switzerland: WWF.

¹² Andean countries refer to the main river as the Putumayo. In Brazil it is called Içá.

¹³ The basin includes four Peruvian districts, three Brazilian municipalities, 26 Colombian municipalities, and six Ecuadorian cantones.

¹⁴ Intact forest landscapes are unbroken expanses of natural ecosystems large enough that all native biodiversity, including viable populations of wide-ranging species, are maintained. Estimation for the region of Encanto, Tarapacá, and San Antonio de Içá, Global Forest Watch, 2020.



in IT, PAs, or proposed areas for conservation.¹⁵ The watershed is rich in fish (400–600 species),¹⁶ amphibian, reptile, bird, and mammal species, standing out as one of the most diverse places in the entire Amazon basin.¹⁷ In addition, the forests of the watershed act as carbon reserves and sink, showing areas with larger contents than other forests in the Peruvian¹⁸ and Colombian¹⁹ Amazon. In addition, significant peatlands can be found in the lower portions of the basin.

6. The Putumayo-Içá basin includes some of the most remote, economically underdeveloped communities with the lowest population density, including 18 IPs groups, as well as nonindigenous *campesino* and *ribereño* communities. Demographic data is partially available due to its remoteness and dispersion of information across national boundaries. The socioeconomic conditions and dynamics of the watershed vary along the basin. Overall population density of the watershed is on average less than 14 people/km², with density declining from 75.4 people/km²²⁰ at its headwaters in the west to less than 5 people/km²²¹ in the middle and lower reaches. Public infrastructure is scarce and mainly limited to a few large cities with more than 55,000 inhabitants. The basin is mostly a roadless wilderness, except for a road network in the upper reaches in Ecuador and Colombia that supports larger towns, oil developments, and agricultural activities. Most communities are located along the banks of rivers that are navigable throughout the year.²² Public lighting is only available in a few communities, and electricity is generally limited to health clinics and houses with their generators. In most communities, trash pick-up and common area cleanup are done by communal work teams.

7. Fisheries are a major source of income for the riverine communities, and agriculture, cattle ranching, mining, and logging are limited to specific areas. These activities significantly contribute to local economies and have driven changes in land cover and water quality. Subsistence livelihoods revolve around fishing, hunting, timber, nontimber forest products (NTFP), and small-scale agriculture, while illegal artisanal mining and illicit crop cultivation are growing activities. The highly eroding, low-nutrient soils of large areas of the watershed make large-scale agriculture unlikely. However, the sustainable production of NTFP²³ is a potential alternative with socioeconomic benefits and relatively fewer impacts on ecosystems, but one that has not been sufficiently developed and scaled up.

¹⁵ Note that information from within watershed boundaries is uneven, given that data collection varies between the four countries and the provinces within each country. Provincial boundaries do not correspond to watershed boundaries.

¹⁶ SINCHI (Amazon Institute for Scientific Research). 2018. *Segundo Encuentro Binacional Corredor Cultural y Biológico Putumayo Perú-Colombia*. Leticia, Colombia, October 2018. A single park in Peru—Yaguas—harbors 550 species of fish, which is more fish than anywhere else in Peru, and about two-thirds of Peru's continental fish diversity is contained, the Yaguas River.

¹⁷ See, for example, Pitman, N., R. C. Smith, C. Vriesendorp, D. Moskovits, R. Piana, G. Knell, and T. Wachter (Eds.). 2004. *Perú: Ampiyacu, Apayacu, Yaguas, Medio Putumayo. Rapid Biological Inventories Report 12*. Chicago: Field Museum.

¹⁸ Asner, G., et al. 2014. *The High-Resolution Carbon Geography of Peru. A Collaborative Report of the Carnegie Airborne Observatory and the Ministry of Environment of Peru*. Stanford, CA: Carnegie Institution for Science and Lima: Ministry of Environment of Peru.

¹⁹ Asner, G., et al. 2012. "High-Resolution Mapping of Forest Carbon Stocks in the Colombian Amazon." *Biogeosciences* 9: 2683–96.

²⁰ CorpoAmazonia (Ed.). 2010. *Plan de Ordenación y Manejo de la Cuenca Alta del Río Putumayo*. Mocoa, Colombia: CorpoAmazonia, WWF, and Asociacion Ampora.

²¹ Pitman, N., E. Ruelas Inzunza, C. Vriesendorp, et al. 2013. *Perú: Ere-Campuya-Algodón. Rapid Biological and Social Inventories Report 25*. Chicago: Field Museum.

²² <https://www.bbc.com/mundo/noticias-america-latina-52578619>.

²³ NTFP includes products such as camu camu (*Myrciaria dubia*), copaiba (*Copaifera officinalis*), aguaje (*Mauritia flexuosa*), andiroba (*Carapa guianensis*), and açaí (*Euterpe oleracea*), among others.



8. The strategic location of the Putumayo-Içá River, which connects the Amazon floodplains with the Northern Andes, facilitates fluvial transport. The main ports in Colombia, Puerto Asis and Puerto Leguízamo have been important for the commercialization of natural resources and agricultural goods, with historical volumes of more than 200 tons of fish per year for the latter.²⁴ Brazil's Puerto de San Antonio do Içá reported 345 tons of fish in 2018.²⁵ Fisheries in the Colombian-Peruvian-Brazilian border are characterized by their international nature. For internal consumption, the basin provides around 90 kg of fish/person/year.²⁶ In addition, freshwater turtles and tortoises have been an important resource for riverine communities. The eggs and meat of the giant South American river turtle (*Podocnemis expansa*) and the yellow-spotted river turtle (*P. unifilis*) are key elements of the diets, trade activities, and traditions of Indigenous Peoples and local communities (IPLC).

9. Although the rivers and streams of the Putumayo-Içá are in relatively good environmental condition when compared to others in the Amazon basin, there is an increasing risk of deforestation, water pollution, and biodiversity loss. These environmental threats are higher in neighboring basins, but they have been increasingly encroaching into new areas with weak governance and natural resource use planning, including areas in the Putumayo-Içá. If not addressed effectively and on time, these threats could affect the integrity of the watershed, its capacity to provide global benefits, the well-being of its inhabitants, and its role in transferring nutrients from the Andes to the Amazon plains. Increased rates of deforestation can increase erosion and run-off of soils, generating changes in sediment dynamics and affecting the quality of ecosystems, availability of freshwater biota, and biodiversity. Water pollution is caused mainly by mercury from gold mining and other contaminants coming from oil extraction and poor waste management. Besides impacts on the natural ecosystems, the impact on populations regularly exposed to contaminants like mercury may include effects on the nervous, digestive, and immune systems, as it has already been observed in a few sites of the basin. Biodiversity loss is caused by the unsustainable use of wildlife and plant species and the introduction of non-native species.

10. The proposed Project will address drivers of deforestation, water pollution, and biodiversity loss in the basin, aiming to maintain its high conservation status. One driver relates to the lack of awareness or consideration of the biological, cultural, and spatial complexity of freshwater ecosystem dynamics in jurisdictional-level planning and decision-making. Decisions related to interventions involving infrastructure, agriculture, fishing, and hydrocarbon activities do not fully consider the integrated dynamics of the basin's watershed, resulting in accumulated impacts downstream. Another driver is the unsustainable and unregulated natural resources use practices. For example, due to overfishing, previously common fish species consumed locally are now scarce. In addition, unregulated fishing among the countries results in regional-level mismanagement that particularly affects migratory fish species.²⁷ ASGM using mercury and improper oil extraction practices contaminates soil and water.²⁸ The

²⁴ Bonilla-Castillo, C., et al. 2012. "Dinámica de la Pesca Comercial de Consumo en el Medio Río Putumayo: Tres Décadas de Desembarques en Puerto Leguízamo." *Revista Colombia Amazónica* 5 (2012): 129–49.

²⁵ <https://www.mamiraua.org.br/publicacoes/desembarque/>.

²⁶ Agudelo, E., J. Gonzalez, and L. Moya. 2006. *Perspectivas Para el Ordenamiento de la Pesca y Acuicultura en el Área de Integración Fronteriza Colombiana-Peruana del Río Putumayo*. Bogotá: Instituto Nacional de Desarrollo.

²⁷ Guzman, A., et al. 2017. "Transboundary Fisheries Management in the Amazon: Assessing Current Policies for the Management of the Ornamental Silver Arowana (*Osteoglossum bicirrhosum*)". *Marine Policy* 76: 192–99.

²⁸ According to the 2013 United Nations Environment Programme (UNEP) Global Mercury Assessment, ASGM is the largest single source of human-driven mercury pollution in the world, accounting for 37 percent of all emissions into the atmosphere



unsustainable use of agrochemicals, the indiscriminate use of pharmaceuticals in livestock, and the lack of proper waste management systems also contribute to water contamination. Finally, changes in variability and seasonality due to climate change exacerbate other drivers, increasing environmental threats and their severity. More frequent extreme weather events could affect the complex hydrological dynamic and the watershed's ecological resilience and socioeconomic welfare. Increased water temperatures and a decrease in dissolved oxygen, for instance, could affect animal populations.

11. To address the regional environmental threats and their drivers, the Project will support activities aiming to overcome the following barriers: (a) limited, fragmented, and inaccessible information to support decision-making for integrated water resources management (IWRM);²⁹ (b) loss and under-representation of traditional knowledge in decision-making and weakened governance systems; (c) weak governance for joint regional IWRM; (d) insufficient information and implementation of models for the mitigation of pollution impacts on the socio-ecosystems; and (e) insufficient opportunities, incentives, and capacities to develop sustainable and equitable natural resource use management schemes and value chains. Considering that many of the threats and drivers that affect the basin are interlinked and have a cumulative effect along the watershed streams, effectively addressing them will require a multi-country IWRM approach across jurisdictions. Other factors and barriers are beyond the proposed control of the Project, but it will address the prioritized challenges via a range of regional and national-level interventions that promote collaboration to enhance synergies. The Project will strengthen the enabling conditions required for the participant countries to conserve and manage the shared basin by: enhancing knowledge about the basin, making it accessible to key stakeholders for decision-making, strengthening governance structures, piloting activities to address key issues and impacts around water contamination, and promoting sustainable natural resources management. Improving the capacity of participant countries to protect the basin and its high biodiversity guaranteeing the provision of ecosystem services, which are the foundation for the development and quality of life of its inhabitants. A recent study also highlighted the importance of conserving pristine areas in the Amazon, to maintain the region's low levels of spillover risks for future pandemics.³⁰ A results chain is included in section II D, and Annex 2 provides a full detailed Project description.

Institutional and regulatory context

12. Brazil, Colombia, Ecuador, and Peru, participant countries that share the Putumayo-Içá basin, have an extensive regulatory framework about environmental-related issues guiding the complex multistakeholder, multisectoral, and multicultural scenario. The regulatory context includes a wide range of both national regulations and multilateral agreements and plans that promote the preservation of the environment for current and future generations. The constitutions of all countries identify water

and into local water sources. According to the Global Environment Facility Independent Evaluation Office (GEF IEO), December 2020, *Evaluation of GEF Interventions in the Artisanal and Small-Scale Gold Mining Sector*, Brazil, Colombia, Ecuador, and Peru are among the top eight countries in the world with the largest levels of mercury use in ASGM.

²⁹ IWRM is a process that promotes the coordinated development and management of water, land, and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. It includes hydrologic and hydrobiological resources. According to the WB, an integrated water resources perspective ensures that social, economic, environmental, and technical dimensions are taken into account in the management and development of water resources. Source: <http://web.worldbank.org/>.

³⁰ Vale, M., P. Marquet, et al. 2021. *Could a Future Pandemic Come from the Amazon? The Science and Policy of Pandemic Prevention in the Amazon*. Conservation International. Even a small amount of deforestation can have large impacts on spillover, especially if the deforested areas were pristine.



resources as a state-owned strategic resource to be protected, used, conserved, and sustainably managed.³¹ Examples of high-level national water laws and policies include Brazil's National Water Resources Policy (Law 9.433/1997), Colombia's National Policy for the Comprehensive Management of Water Resources (2010–2022), the Organic Law on Water Resources, Uses and Exploitation (2014) in Ecuador, and the Water Resources Law (2009) in Peru.

13. Related to water pollution, the four countries are part of the Stockholm Convention on Persistent Organic Pollutants and the Minamata Convention on Mercury. The countries have developed national implementation plans to comply with the Stockholm Convention, ratified the Minamata Convention, and issued legislation regarding the use of mercury. The Resolution 357/2005 by the Brazil National Council of the Environment (CONAMA) states the conditions and standards of water quality for different chemicals and water bodies. Mercury-related legislation includes Decree 97.507/1989, which requires permits for all mining extractive activities that use mercury and includes CONAMA's Resolution 396/2008 on the maximum mercury levels in water, among other resources. Ecuador launched the Zero Mercury Plan in 2013 to eliminate the use of mercury in some products and processes, and the 2014 Organic Law of Hydrological Resources, Uses, and Exploitation of Water formulates compliance with water pollutants levels. For Colombia, the Resolution 631/2015 established the parameters and permitted levels of discharge, and Law 1658/2013 committed to eliminating the use of mercury in mining by 2018 and other industries by 2023. The 2013 National Environmental Policy in Peru includes the general guidelines for water quality, and the Decree 1103/2012 mandates the regulation and control of mercury in the country.

14. At the transnational level, the regulatory context includes a series of multinational agreements involving cross-boundary collaboration for environmental protection and sustainable use of natural resources. The proposed Project will align with and/or support the implementation of relevant aspects of multilateral and bilateral agreements and results from cabinet meetings. These agreements include: (a) the Regional Strategy for IWRM in the Amazon Basin–Strategic Action Program (SAP–Amazon), endorsed in 2018 by the Amazon Cooperation Treaty Organization (ACTO); (b) the 2019 Pucallpa Action Plan (August 27, 2019), in which the presidents of Colombia and Peru committed to implementing coordinated conservation and sustainable development actions in the Putumayo basin;²⁷ (c) the December 2020 Andean Environmental Letter (Carta Ambiental Andina), agreed and adopted by the Council of the Andean Community (including Colombia, Ecuador, and Peru, among others), with objectives promoting a green economy, sustainable management of natural resources, environmental awareness, and climate change adaptation and mitigation actions; and (d) the Leticia Pact, signed in 2019 by most Amazon governments, supporting a joint response to disasters, strengthening regional actions, and advancing the generation of scientific knowledge. Despite the existence of an ample regulatory framework, there are shortcomings in procedures, policies, institutional capacity, enforcement, and intersectoral governance structures for regional integrated watershed planning and conservation of resources that affect the Putumayo-Içá basin.

15. The Project's institutional context comprises multiple institutions (in addition to local, provincial, or municipal governments) with different levels of responsibility for the conservation and sustainable development of the basin. Water resources management institutions in the Amazon vary by country. The management of transboundary water resources in Brazil is a shared responsibility between the national

³¹ ACTO/OTCA (Amazon Cooperation Treaty Organization). 2018. *Strategic Action Program: Regional Strategy for Integrated Water Resources Management in the Amazon Basin*. Brasília: ACTO/OTCA.



and federal levels, with the Secretariat of Environment of Amazonas State (SEMA) and the National Water and Sanitation Agency being responsible for the management of the Putumayo-Içá basin. In Colombia, the responsible institution is the Ministry of Environment and Sustainable Development (Minambiente). In Peru, water resource management is shared by the Ministry of Environment (MINAM) and the National Water Authority, which is part of the Ministry of Agriculture and Irrigation. Finally, in Ecuador, the responsibility for transboundary water management is within the Ministry of Environment, Water and Ecological Transition (MAATE). Specialized institutes, as well as local environmental authorities, provide technical support, control, and management of specific areas within the basin. In addition, the four countries have national technical institutions responsible for meteorology and hydrology, mining (hydrogeology/groundwater activities), and irrigation, with responsibilities involving water resources management. The institutional context is also enriched by national- and regional-level organizations that represent IPLC. Finally, there are ongoing initiatives led by the governments and civil society aiming to preserve and sustainably use resources, as well as build integrated participatory and adaptive management of the overall watershed. The Project will build on successes from these initiatives and promote coordination, establishing synergies and increasing scale and impact.

C. Relevance to Higher Level Objectives

16. The proposed Project is consistent with the World Bank Group's (WBG) Country Partnership Frameworks (CPFs) in the four participating countries: Brazil (Fiscal Year -FY- 2018–FY2023),³² particularly the *Outcome Areas of environmental significance under protection measures in target areas in Amazon and coastal/marine regions* under Focus Area 3: Inclusive and Sustainable Development; Colombia (FY2016–FY2021),³³ particularly Pillar I *Fostering Balanced Territorial Development* and its Objective 2: *Enhanced Capacity for Natural Resources Management in Target Regions*; Ecuador (FY2019–FY2023),³⁴ with the 2025 Climate Change Targets and the Adaptation and Resilience Action Plan, and the Nationally Determined Contribution; and Peru: (FY2017–FY2021),³⁵ particularly Objective 8: *Strengthen the management of natural resources in Pillar III Natural Resources and Climate Change Risk Management*.

17. The Project aligns with the WBG COVID-19 crisis response approach paper *Saving Lives, Scaling-up Impact and Getting Back on Track* (June 2020).³⁶ Although not considered a COVID-19 response operation, it will assist countries in addressing the health threat and the social and economic impacts of the COVID-19 crisis. The Project contributes to the pillars related to *protecting the poor and vulnerable; ensuring sustainable business growth and job creation; and rebuilding better strengthening policies, institutions, and investments*. Consistent with the Green, Resilient, and Inclusive Development (GRID) approach (October 2021)³⁷ promoting economic growth that goes hand in hand with environmental goals and inclusion, the Project, via sustainable management of freshwater resources, will assist the countries in building a resilient, equitable, and inclusive recovery. Through a highly participatory process, the Project

³² Report No. 113259-BR, discussed by the Board of Executive Directors on July 13, 2017.

³³ Report No. 101552-CO, discussed by the Board of Executive Directors on April 7, 2016.

³⁴ Report No. 135374-EC, discussed by the Board of Executive Directors on June 11, 2019.

³⁵ Report No.112299-PE, discussed by the Board of Executive Directors on May 2, 2017.

³⁶ <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/136631594937150795/world-bank-group-covid-19-crisis-response-approach-paper-saving-lives-scaling-up-impact-and-getting-back-on-track>.

³⁷ <https://openknowledge.worldbank.org/bitstream/handle/10986/36322/Green-Resilient-and-Inclusive-Development.pdf?sequence=5&isAllowed=y>



will support green businesses in an area inhabited by economically vulnerable populations. Conserving pristine forests is part of a prevention strategy as it contributes to minimizing the risks of zoonotic diseases. Similarly to the GRID approach, the Project considers institutional strengthening and technological innovation as cross cutting enablers for the successful achievement of the project objectives.

18. Participant countries are also parties to the Convention on Biological Diversity, the UN Framework Convention on Climate Change, and the Amazon Cooperation Treaty, as well as a number of sustainable development initiatives. In addition, the Project aligns with each national development plan and the policies and programs consistent with them. **Brazil's National Strategy for Socioeconomic Development 2020–2030** in its environmental axis supports the sustainable use of environmental resources and a transition to low-carbon economies. In **Colombia**, the current National Development Plan³⁸ and particularly the Pact for Sustainability—*Produce while conserving and conserve while producing*—recognizes the need to advance an environmental agenda that consolidates biodiversity as a strategic national asset. The Project also aligns with Amazon Vision (*Visión Amazonía* in Spanish), the umbrella government program established in 2013 to promote low-carbon development in the region. **Ecuador's** new government took office on May 24, 2021, and a new 2021–2025 government plan (*Plan de Creación de Oportunidades*) recognizes hydrological resources as a fundamental factor in economic and social progress. The plan includes the objectives to conserve, restore, and protect natural resources and promote sustainable natural resource use and IWRM. **Peru's** National Environmental Policy 2030 (approved in July 2021) prioritizes the conservation of its biodiversity and the recovery of ecosystem services, in order to contribute to the improvement of people's quality of life. Peru's National Development Plan is being conceived by the new government, which took office on July 29, 2021.

19. Finally, the Project aligns with the Global Environment Facility seventh replenishment period (GEF-7) Programming Directions regarding the International Waters and Chemicals and Waste Focal Areas. In relation to the International Waters Focal Area, the Project will contribute to the objective of enhancing water security in freshwater ecosystems, and it aligns with the GEF's direction that sustainable environmental management of transboundary resources requires a common understanding of what pressures the shared ecosystems are facing, coupled with national and regional investment plans. The Project will add value to the GEF-financed Amazon basin Transboundary Diagnostic Analysis (TDA) and development of the 2018 SAP–Amazon by focusing on the shared Putumayo-Içá watershed, providing detailed analysis and supporting investments that respond to its specific needs. The Project will support some of the priority regional transboundary problems identified in the SAP–Amazon that are relevant to this basin and will prepare, with ample multistakeholder participation, specific plans at the relevant jurisdictions, on prioritized topics. Project results will in turn inform similar efforts in other Amazon basins. In the Chemicals and Waste Focal Area, the Project will respond to the GEF-7 emphasis on facilitating the reduction of chemicals through stronger alignment with the shift to sustainable production and consumption and a multisector-based approach. The Project will support governments' joint efforts to promote best practices and control emissions from contaminants released from legal activities, control and enforce regulations against illegal practices, and mitigate their impacts. It will also strengthen national legislation and regulatory capacity for meeting obligations listed in the chemicals and waste conventions. The Project brings added value to the Chemicals and Waste GEF portfolio, supporting complementary

³⁸ <https://www.dnp.gov.co/DNPN/Paginas/Plan-Nacional-de-Desarrollo.aspx>.



interventions to those financed via the GEF funded Global Opportunities for Long Term Development of ASGM Sector (GOLD) Program currently ongoing in Colombia and Peru (as well as a similar one in Ecuador). Project interventions will support the countries in jointly addressing the environmental threat coming from mercury contamination in the basin before it reaches higher levels that would require larger investments to repair environmental damage and cause further social/health negative impacts. The Project will support a shared vision and action plan for the basin, strengthening the capacity of the countries to advance toward sustainable management through proper land and water use planning. This approach considers that, given the basin's environment, physical cultural importance, and tangible cultural heritage, mining activity remains largely restricted and, when using mercury, remains illegal. The IWRM approach will have an important contribution toward the conservation of key land and water biodiversity, increasing climate change resilience via a better understanding of climate scenarios and potential impacts, and promoting climate-smart practices. The Project will also respond and contribute to the GEF's knowledge management guiding framework,³⁹ facilitating the collection, exchange, and update of relevant knowledge within the participating countries and others involved in relevant experiences.

II. PROJECT DESCRIPTION

A. Project Development Objective

PDO Statement

20. To strengthen the enabling conditions for the participant countries to manage the shared freshwater ecosystems of the Putumayo-Içá basin in the Amazon region

PDO Level Indicators

- Regional knowledge management strategy (KMS) providing relevant information for decision-making promoting conservation and sustainable natural resource use
- Action plan agreed for shared management of the basin—designed and operational
- Share of targeted subproject beneficiaries with improved livelihood conditions

B. Project Components

21. **The proposed Project will strengthen the enabling conditions for Brazil, Colombia, Ecuador, and Peru to collectively manage the freshwater ecosystems of the Putumayo-Içá basin.** These enabling conditions include an improved knowledge base for decision-making toward conservation and sustainable use of natural resources, as well as the strengthened multisectoral and multilevel governance for collaborative management of the basin's natural resources. The Project will respond to the challenges that have been identified to address the drivers of the basin's environmental issues and threats that could result in irreversible negative impacts on the basin's socioeconomic and environmental dynamics, and that could compromise its well-conserved state. Effectively addressing transboundary threats and drivers will require a multi-country IWRM approach, as the proposed Project intends. Even though some of the environmental challenges are beyond the Project's scope, the Project is a strategic opportunity to address key threats in a timely manner, when political and institutional commitment exists to strengthen enabling conditions for collaborative management beyond national-scale approaches, and in a context where building trust and collective action has been initiated and has the potential to be scaled up.

³⁹ GEF. 2015. *GEF Knowledge Management Approach Paper*. Washington, DC: GEF. GEF/C.48/07/Rev.01.



22. Progress toward enabling conditions will be measured by an agreed strategic action plan for the basin that will result from a shared vision towards IWRM, and by the implementation of pilot sustainable natural resources use activities that demonstrate strengthened capacity and decision-making for integrated management and that deliver concrete economic and social benefits. Knowledge management, capacity building, and strengthened governance will have a basin-wide approach, whereas pilot interventions, mostly via subprojects, will be developed in selected areas. The Project will build on and strengthen the ongoing water and land conservation initiatives and efforts of governments and civil society involved in the watershed. Actions will be driven by a bottom-up approach with active participation of local communities and will integrate multicultural, multistakeholder, and gender considerations in decision-making. Coordination at different levels will be promoted as a key enabling condition to address the environmental threats, preserve cultural traditions, guarantee sustainable resource use, and preserve and enhance global environmental benefits and ecosystem services.

23. **Component 1. Governance and capacity for informed and participatory decision-making on IWRM (US\$4.30 million).** The Project will strengthen conditions for shared management of the basin's water resources via enhanced governance⁴⁰ structures and a KMS designed and implemented for improved accessible information that responds to the basin's culturally and socioeconomically diverse nature. Multistakeholder dialogue, information analysis, collaboration, and partnerships will result in a strategic plan for the IWRM of the basin. The component will finance subproject grants, goods, consulting and non-consulting services, training and operating costs, within two subcomponents:

24. 1.1. Traditional and scientific knowledge for informed decision-making, including: (a) participatory design of a KMS based on agreed upon, inclusive, and harmonized guiding principles for information management; (b) collection, systematization, research, and analysis of relevant scientific knowledge, via technical assistance and subprojects; (c) provision of subprojects for the direct benefit of IPs to recover, share and validate ancestral knowledge; (d) establishment of a regional data and knowledge repository system, including provision of Project-related information, and provision of support to existing, selected national-level systems (including relevant platforms) to enhance integration of, and access to data and information produced by the Project, and deliver capacity building for relevant stakeholders to access and use the knowledge, information and data;⁴¹ and (e) knowledge exchange events. The Project will adopt technological and innovative participatory tools⁴² to collect, organize, and analyze data, information, and knowledge.⁴³ 1.2. Governance for integrated water resource management, financing: (a) establishment and strengthening of new and existing thematic multisectoral and regional working groups and roundtables focused on relevant themes (*inter alia*, fisheries management, water pollution, PA

⁴⁰ Environmental governance refers to the institutions, policies, rules, and practices that mediate how the international community, nation-states, corporations, and citizens interact with the environment at different levels—global, national, and local. Effective environmental governance means the participation and cooperation of all actors in collaborative efforts toward sustainable development and environmental improvement. It involves citizens and CSOs in identifying, creating, and monitoring environmental and sustainable development policies and processes. Source: <https://sgp.undp.org/about-us-157/partnerships/ngo-environmental-governance-project.html>.

⁴¹ This will ensure accessibility of data and knowledge in the long term by the relevant institutions.

⁴² These include customized digital systems using cost-free, low connectivity demand, open-source tools, and hand-held devices to collect granular geo-tagged data that feeds into interactive dashboards and web maps.

⁴³ During Project preparation, a spatial database portal for the basin was prepared by the WB team to be linked to the Project's webpage; the portal provides a one-stop shop for geospatial data and datasets that provide information for the basin.



management), to take informed decisions for IWRM; (b) design, facilitated by working groups, of a strategic action plan for the basin; (c) technical assistance to mainstream IWRM considerations in territorial planning and sectoral practices, policies, and programs; and (d) support to advance implementation of relevant multi-country agreements, including the Minamata and Stockholm Conventions.

25. Component 2: Management interventions towards shared IWRM (US\$6.08 million). The project will finance subproject grants, goods, minor works, consulting and non-consulting services, training and operating costs for key management interventions in prioritized areas, grouped in two subcomponents: 2.1. Water and environmental pollution associated with mercury and other contaminants. Activities will be implemented via technical assistance and subproject grants. Prevention and control activities include: (a) training and capacity building to promote best practices among key sectors responsible for water pollution, and communities legally registered to carry out ASGM; (b) strengthening joint efforts for prevention and control of contamination; (c) institutional capacity building on environmental issues to environmental authorities and prosecutorial agencies officially mandated to prevent the use of contaminants; (d) implement of pilot early warning system for water pollution; and (e) communications and awareness raising campaigns for Amazon communities and broader audiences. Reduction and mitigation activities include: (a) support via Subprojects for small-scale mitigation, recovery, or remediation,⁴⁴ and restoration activities for water contamination, and (b) technical assistance to identify innovative technological solutions. 2.2. Sustainable management and value chains for selected natural resources, including (a) design, strengthening and implementation of pilot sustainable management plans and value chains for selected hydrobiological resources (NTFP and vulnerable/threatened fish and turtle species); (b) small-scale alternative livelihood activities promoting food security; and, (c) capacity-building activities for key stakeholders in natural resources management to improve extension services and participatory monitoring.

26. Component 3. Project Management, Communications, Monitoring, and Evaluation (US\$2.46 million). This component will finance goods, consulting and non-consulting services, and operating costs in three subcomponents: 3.1. Project management, coordination, and governance committees; 3.2. Communications strategy; and 3.3. Project monitoring and evaluation (M&E) and environmental/social standards compliance.

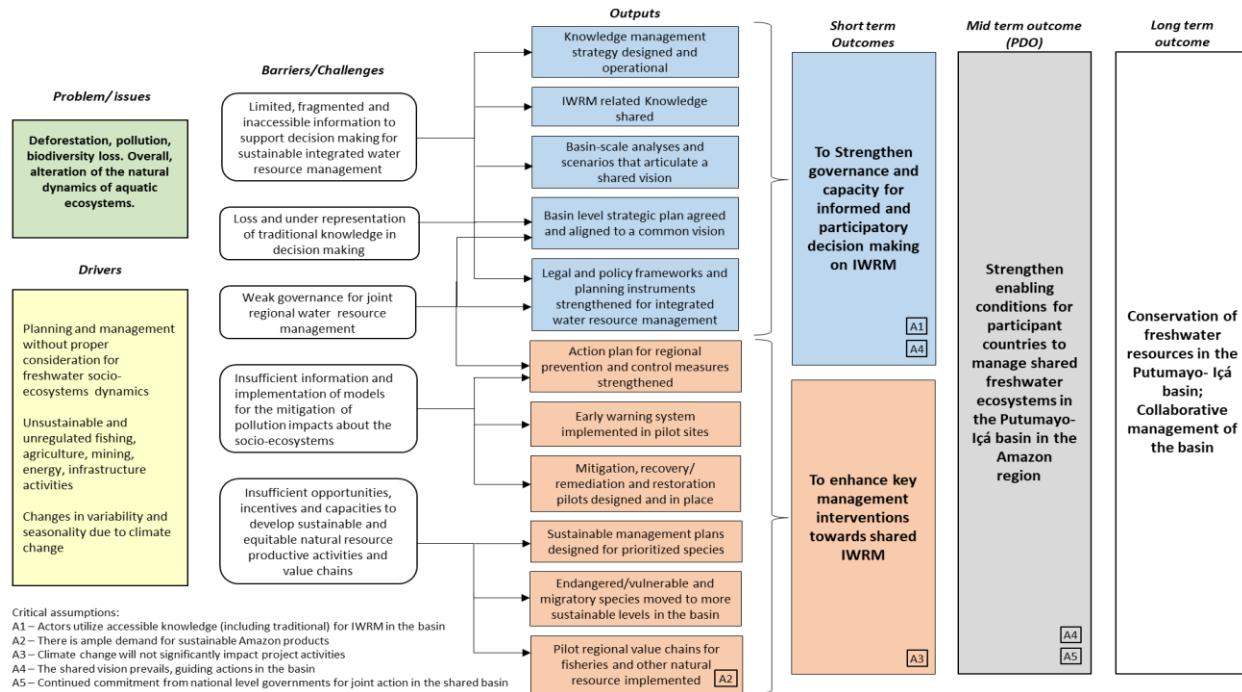
C. Project Beneficiaries

27. The Project is estimated to reach 6,300 direct beneficiaries, comprising indigenous communities, *campesino* and fishermen communities, local institutions and governance agencies, academic and research centers, and nongovernmental organizations (NGOs). Women, youth, IPs, and other vulnerable or marginalized groups will be proactively targeted by the Project. Indirect beneficiaries include the population in the entire basin, who will gain from the conditions enabling improved management of the shared basin and its associated resources, including water. A larger number of people will also benefit as audiences for the KMS and communication strategy.

⁴⁴ The term refers to the removal of pollution or pollutants from the environment (soil, groundwater, sediment, or surface waters) for the general protection of human health and the environment.



D. Results Chain



E. Rationale for Bank Involvement and Role of Partners

28. **The World Bank (WB) has a long history of supporting watershed and integrated water resource management in all regions.** This Project supports the WB efforts in assisting clients during the COVID-19 recovery process through a new grow-back-greener paradigm that promotes fisheries and forestry activities toward sustainable socio-economic and environmental development outcomes. The WB has a long-term involvement in the natural resources sector, including previous GEF-financed projects in the Amazon (particularly in Brazil since 1992 and Colombia since 2011), such as the Amazon Sustainable Landscapes Program (ASL). Under the ASL, the WB has demonstrated its ability to convene partners and has established an Amazon community for knowledge sharing and collaboration from which the proposed Project will benefit. The WB has also supported projects on agriculture, forestry, land administration, and green growth in each of the participant countries, with ample participation of key civil society and NGOs, also to be involved in the proposed Project.

F. Lessons Learned and Reflected in the Project Design

29. **The Project draws on lessons learned from worldwide WB-financed projects about sustainable management of resources in transboundary basins,⁴⁵ including the Amazon countries.** It also draws on

⁴⁵ These include lessons collected in the WB's 2015 Working Note Watershed Management Portfolio Review (fiscal 1990–fiscal 2015); GEF-financed projects in Lake Victoria, the Volta River basin, and the Sava and Drina Rivers; the document *Evaluation of GEF Interventions in the Artisanal and Small-Scale Gold Mining Sector*; experience from the Alliance for the Reduction of Impacts from Gold Mining and their strategies to reduce or eliminate illegal mining and/or its impacts; the WCS's work with the



experiences from GEF-financed projects and those implemented by government agencies and other partners' agencies, including those from the Amazon Waters Initiative led by Wildlife Conservation Society (WCS).⁴⁶ Some of the key lessons are the following: a) A shared vision is critical for effective collaborative action in the basin involving governments, implementing agencies from multiple sectors, and other stakeholders. It requires adaptive management, political know-how, clear procedures, and respect for others' voices and countries' sovereign rights. (b) Incorporating traditional and local knowledge and recognizing the contributions and rights of IPLC in planning and other decision-making processes is essential for project success. (c) Establishing foundations for trustful and cooperative relationships is necessary for a regional project. Engaging with the multiple stakeholders active in the Amazon maximizes impact by finding synergies and avoiding overlaps. (d) Social change and reforms in the fisheries sector and the subsequent recovery of overfished stocks require an extended time horizon. Capacity building among key institutions will ensure the reforms will continue and be monitored beyond the Project duration. (e) Adaptive management must be established as the process for deliberately learning from management actions with the intent of improving subsequent management practices. The Project will design strategies based on the assessment of the specific issues and information collected, put them into practice with the pilot activities, monitor results, gather lessons and adjust strategies accordingly.⁴⁷

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

30. **The Project will be executed by WCS in coordination with the Ministries of Environment of Colombia, Ecuador, and Peru and the Secretariat of the Environment of the State of Amazonas in Brazil⁴⁸.** The Project will involve the active participation of other relevant public national and subnational agencies, as well as civil society organizations (CSOs). The Project Operations Manual (POM) to be prepared will include details on the specific institutional arrangements and roles and responsibilities of the different parties. The Project's governance structure comprises: (a) the Regional Steering Committee (RSC) in charge of Project general oversight and direction, and composed of the Ministries of Environment from Colombia, Ecuador, and Peru (represented by the minister or their delegate and the GEF Operational Focal Point–OFP), SEMA for Brazil (the Project's focal point and technical delegate),⁴⁹ and WCS; (b) the Technical Committee (TC), which will provide strategic and technical orientation for Project design, and which will include representatives from scientific/technical units of the governmental entities whose jurisdiction overlaps the Putumayo-Içá basin, invited experts, and national level stakeholders; and (c) the Project Management Unit (PMU) in charge of the Project's operational, technical, financial and administrative management. The PMU will include technical and administrative staff, including a Project director, a communications specialist, social and environmental specialists. The administrative/operational staff will consist of a grants manager, a procurement specialist, an M&E

Critical Ecosystem Partnership Facility (CEPF) to reduce the impact of mining in the Tropical Andes; the IW:LEARN platform; and other experiences from partners.

⁴⁶ The initiative addresses threats to aquatic ecosystems of the Amazon. <http://amazonwaters.org/the-initiative/>.

⁴⁷ This lesson comes from the experience of the GEF-financed TDA/SAP–Amazon approach.

⁴⁸ As approved in the Letter of Endorsement signed by the Brazilian GEF Operational focal point from the Ministry of Economy on March 20, 2020, confirming that the project will be prepared and implemented by Amazonas State SEMA and WCS.

⁴⁹ The OFP will coincide with the GEF OFP for each country if so determined by Colombia, Ecuador, and Peru; specifically, by the Ministry of Environment or a representative of its office. From SEMA, which is the institution designated by the government of Brazil to lead the project, two representatives (technical and operational) will be nominated to be part of the RSC.



specialist, and thematic coordinators or specialists. In addition, there will be country engagement teams (CETs) providing technical, logistical, and administrative support and in-country coordination, with regular communication with government representatives and M&E. Details are provided in Annex 1.

B. Results Monitoring and Evaluation Arrangements

31. **Overall responsibility for M&E will lie within WCS.** Data collected by the Project's M&E system will enhance Project implementation and achievement of the Project's goal. WCS will assign a dedicated M&E specialist who will coordinate with partner institutions for data collection and processing, bring WCS previous expertise and tracking systems, report on indicators, and prepare Project reports. Kobotoolbox and other information management systems will be used to facilitate data collection, analysis, and remote monitoring. Details are given in Annex 1.

C. Sustainability

32. **This Project becomes part of a long-term engagement and commitment from the GEF and WB toward conservation and sustainable development in the Amazon basin.** Project sustainability will be assured at: (a) *Policy level*—aligning and contributing to implementation with multiple national, binational, and multinational plans, programs, and agreements that go beyond the duration of the Project; (b) *Institutional level*—strengthening the agency's capacity for IWRM and promoting multilevel, multistakeholder, and multisectoral dialogue and joint decision-making as a key enabling condition for the basin's IWRM, with an emphasis on strengthening ongoing public/private/community alliances and ensuring their continuance after Project completion; (c) *Knowledge and information*—promoting interoperability within and between existing platforms from government and research institutions, so Project information will remain accessible beyond the Project's duration; (d) *Community engagement*—involving communities in Project implementation and monitoring activities, and strengthening community-level governance structures to promote the construction of an informed conservation constituency and empower people to take care of the basin; (e) *Economic*—developing business models for fish and NTFP value chains to reach financial sustainability, and also financing a study to estimate the medium- and long-term costs of continuing activities promoting IWRM, including potential sources of funding and a fundraising strategy to inform government decision-makers; and (f) *Ecological*—by improving integrated water resources management and strengthening connectivity between jurisdictions.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic, and Financial Analysis (if applicable)

33. **The Project will contribute to global benefits by strengthening the capacity of governments to address transboundary threats in a highly conserved area in the Amazon.** Understanding common pressures and developing national and regional investment plans will contribute to enhancing water security in freshwater ecosystems. Global environmental benefits to be protected include biodiversity conservation, food and water availability, regulation of hydrological and biogeochemical cycles, sediment/nutrients in wetlands, and other ecosystem services, including those important for tackling climate change and those key to the well-being of the area's inhabitants. In addition, the Project will incorporate in its watershed-use planning and decision-making cultural and traditional practices that have proven effective in conserving Amazon ecosystems.



34. Overfishing-stress reduction will be achieved via design and implementation of fisheries management plans (including fishing quotas, bans, best practices) financed via subprojects in sites along the river basin favoring connectivity. Fisheries management plans will protect key vulnerable species including arawana or *Osteoglossum bicirrhosum*, pirarucu or *Arapaima gigas*, and migratory species including fish species with local and transnational migrations (potentially gilded catfish or *Brachyplatystoma rousseauxii*, Zebra catfish or *Brachyplatystoma juruense*, and/or black prochilodus or *Prochilodus nigricans*). Results will be measured including via the GEF core indicator of *Globally over-exploited fisheries moved to more sustainable levels* (with baseline and targets to be confirmed in year 1). Alternative livelihood small-scale sustainable activities will promote food security to alleviate the impacts of the COVID-19 pandemic. The Project will support activities leading to reduced mercury contamination, which threatens ecosystems and human health. Finally, improved management of flooded forests and peatlands in the watershed will reduce carbon emissions and improve carbon storage.

Rationale for public sector provisioning/financing, if applicable

35. The proposed Project will improve the capacity of participant countries to protect a highly biodiverse Amazon region, ensure water security, and preserve and sustainably manage freshwater and associated land ecosystems, guaranteeing the provision of ecosystem services, all of which is the foundation for the well-being of its inhabitants. These expected outcomes are mainly global public goods, with substantial benefits for the four participant countries, and they do not lend themselves easily to privatization. Supporting sound policies and regulations for pollution prevention and sustainable exploitation of hydrobiological and other resources, and ensuring effective transboundary resource management, are primary governance activities that can only be provided by collaborative efforts from the national and local authorities. The Project will also strengthen the capacities of public institutions and governance bodies and improve stakeholder coordination. Public financing is justified for these goals.

Value added of the Bank's support

36. The WB has a long history of supporting watersheds and integrated water resource management in all regions, including Amazon countries and transboundary basins. The WB is also recognized as a global leader in watershed management, with several projects receiving significant recognition.

GEF incremental value

37. Without GEF financing: (a) there would be no strengthened governance structures working in coordination along the whole basin, or a feasibility assessment of a regional basin governance structure; (b) information and knowledge about the region would continue to be siloed, hindering basin and transboundary scale decision-making; (c) duplication would persist, in actions and projects developed by private and public agencies, without an intentional cohesive dialogue along common themes; (d) emphasis would remain on understanding and conserving land and forest ecosystems, with inadequate attention given to the basin's water resources at regional scale; and (e) water resources planning and management would remain mostly sector by sector at national levels, without taking into account upstream and downstream dynamics. GEF funding will add incremental value to existing actions in each jurisdiction and bring it up to the basin-level scale. Learning that otherwise occurs at the national level will be accelerated and enriched via the Project's knowledge exchange activities among the four countries and with other projects (facilitated by the International Waters Learning Exchange and Resource Network (IW:LEARN Platform), making it accessible to all stakeholders and promoting decision-making. The Project



will also add value by: (a) promoting multisectoral dialogue between local, subnational, and national actors as well as IPLC; and (b) promoting joint activities and harmonization of policies aiming to reduce levels of mercury contamination.

Economic and financial analysis (EFA)

38. **For the incremental analysis of the economic (welfare) benefits generated by the Project, three benefit streams were estimated based on: (a) watershed benefit stream by ecosystem, (b) carbon storage and sequestration, and (c) marginal income gained from the avoided mercury concentration in the basin.** The incremental economic analysis shows that the net present value (NPV) is projected to reach US\$2.48 million (lower bound), and US\$14.17 million (upper bound) in the baseline scenario (20 years, with a carbon market price of US\$18/tCO₂-e, and 6 and 9 percent discount rate). The investments evaluated for the EFA will generate a benefit-cost ratio between 1.20 and 2.02; and an internal rate of return (IRR) between 15.71 percent and 37.10 percent. The results of the quantitative simulations are robust in terms of sensitivity analyses, assuming a 15-year Project, an NPV variation between US\$464 thousand and US\$11.95 million, a benefit-cost ratio between 1.04 and 1.89, and an IRR between 9.81 percent and 22.62 percent (carbon price between US\$18/tCO₂-e and US\$60/tCO₂-e, and 6 and 9 percent discount rate). The benefit assumptions were based on the values of ecosystem services and carbon sequestration by recognized studies. The EFA shows that if Project implementation is effective and efficient, Project-supported investments will bring substantial financial and economic benefits to indigenous, *campesino*, and *ribereño* communities and other potential beneficiaries in the Project area and the Amazon in general. Increasing the discount rate from 6 to 9 percent, reducing the carbon price from US\$60/tCO₂-e to US\$18/tCO₂-e, and using more conservative estimates regarding the value of forest ecosystem services provided do not affect the conclusions. Details are provided in Annex 3.

B. Fiduciary

Financial Management

39. **The Project's financial management (FM) will be centrally coordinated by the PMU under WCS's regional office oversight.** However, given the regional nature of the Project and the need to execute Project activities in each country, the CET embedded in WCS country offices involved in Project execution (Ecuador, Colombia, Peru, and Brazil) will be responsible for day-to-day operational aspects. The WB performed a Financial Management Assessment (FMA) of WCS and its offices in Colombia, Ecuador, Peru, and Brazil in accordance with OP/BP 10.00⁵⁰ and the FM Manual for WB-Financed Investment Operations (effective March 1, 2010 and revised February 10, 2017). The assessment included: (a) evaluation of the existing FM systems in place to be used for Project monitoring, accounting, and reporting; (b) determination of staffing requirements; (c) definition of the flow of funds arrangements and disbursement methodology; (d) an understanding of the internal control mechanisms in place; (e) an agreement on the financial reporting, including the format and content of Interim Financial Reports (IFRs); and (f) a definition of internal and external audit arrangements. The details are included in Annex 1.

Procurement

40. **The Procurement of goods, works, non-consulting services, and consulting services under the Project will be conducted applying the Procurement Regulations for Investment Project Financing (IPF) Borrowers dated November 2020.** The procurement under the Project will be centrally managed by the

⁵⁰ OP/BP 10.00 Operational Policy/Bank Procedure for Investment Project Financing



PMU under WCS's regional office responsibility. However, given the regional nature of the Project and the need to execute project activities in each Country (Colombia, Ecuador, Peru and Brazil), the CET embedded in WCS country offices involved in project execution will be responsible for supporting procurement processes, signing, managing, and supervising contracts, as required, under the WCS regional office responsibility. A capacity procurement assessment of the Project Executing Agency was carried out in March 2021 which concluded that WCS has no previous experience in implementing WB-financed projects in Latin America and Caribbean Region (LAC); nevertheless, the entity has the capacity to implement the procurement-related activities applying the recommendations established in Annex 1 including to hire a procurement specialist, as part of the PMU, with sufficient experience in carrying out procurement processes under WB's guidelines and/or regulations, and who will provide security, efficiency, and effectiveness in executing the Project's Procurement Plan (PPP). Also, WCS regional office will ensure that each WCS Country Office has adequate procurement support capacity, based on the specific needs identified in the PPP and the complexity of the activities. WCS, under the WB's support, prepared a Simplified Project Procurement Strategy for Development (PPSD) that establishes the best procurement arrangements to ensure value for money while efficiently achieving the PDO (more details are provided in Annex 1). The PPP for the first 18 months of implementation was defined based on the results of the PPSD.

C. Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	Yes
Projects in Disputed Areas OP 7.60	No

41. Projects on International Waterways OP 7.50: The Policy is triggered because activities involve the use of waters of the Putumayo-Ica river, a tributary of the Amazon River and an international waterway. This is a regional project involving all riparian countries. Therefore, no further riparian notification is required and all Policy requirements are met.

D. Environmental and Social

42. **The environmental risk is rated as substantial under the WB Environmental and Social Framework (ESF).** The Project has environmental and social objectives, and the impacts are deemed to be positive, as biodiversity conservation efforts will be coupled with measures to mitigate and prevent water pollution from mercury. Despite the environmentally positive design objectives, substantial risks remain – before mitigation measures which are described in the ESRS – because of (a) the distant and vulnerable sites (sensitive areas) where the Project will be developed; (b) the complexity and variety of organizations and institutions present in the area, including various national, provincial, and local governments, environmental authorities, national PA administrations, indigenous authorities, national and international companies, and NGOs, all of which produce different kinds of information; (c) the potential pilot remediation methods for mercury contamination, which may require a good degree of expertise to avoid collateral environmental damages in the contaminated sites and along the transportation and final disposal areas; (d) WCS's lack of experience with remediation techniques and the WB's ESF in a WB-funded project, despite its institutional capacity and work with experienced research



entities; (e) the contextual risks related to the characteristic Amazon periodic flood regime and climate change effects; and (f) the potential risks of non-sustainable natural resources use. These risks and impacts are temporary and/or reversible, at a local level, and can be mitigated through a series of activities included in an Environmental and Social Management Framework (ESMF)⁵¹. As for the risks related to mercury remediation, these are expected to be lower in magnitude as compared to the mercury pollution levels' present and future threats. The specific remediation technique to be applied has not been selected yet, and the subprojects will only be selected during Project implementation. Selected techniques will be those that (a) minimize ordinary waste and hazardous waste production of the remediation alternative; (b) do not consider remediation of mercury by cyanidation; (c) demonstrate they are safe for inhabitants and domestic animals in the treated areas, as well as for personnel applying them; (d) avoid activities relating to, or involved in preparation for, exploitation of any plant or animal species in the remediation techniques that involve a significant conversion or degradation of natural or critical habitats; (e) avoid the introduction or promotion of non-native invasive species; and (f) avoid significant conversion or degradation of critical or other natural habitats. Once these subprojects are selected, the environmental risk will be subject to a new evaluation. To address and mitigate potential risks, the implementing agency is drafting an ESMF to provide (a) characterization of potential contextual, environmental, and social risks and impacts for all Project activities; (b) applicable legislation; (c) generic management and mitigation measures for likely impacts associated with Project activities, particularly regarding natural resource productive activities and the pollution bioremediation activities; (d) implementation arrangements, structural organization, capacity-building measures, and budget; and (e) the environmental control and follow-up measures for the Project.

43. **Social risks are substantial.** The Project activities are designed to generate positive results for the population's well-being and natural resources conservation. The Project will also generate social benefits in critical areas for the survival of local communities, such as food security, health, and recovery of traditional knowledge, and at the same time, it will have an impact on better practices for conserving biodiversity and ecosystem resilience over generations. The Project does not fund major infrastructure or activities with adverse impacts on physical, cultural, and/or archaeological sites or that lead to resettlement, involuntary displacement, or restrictions affecting communities' livelihoods. Despite these benefits, substantial social risks have been identified as follows: (a) In the Project areas, conflict and social unrest occurs—these are not new to the region and despite difficult circumstances, projects on the ground have been implemented and outcomes have been achieved; (b) The variety of organizations and institutions with a presence in the area (national, regional, and local governments; international and local NGOs; IPs; social organizations; among others) presents a complexity to promote dialogue and joint action; (c) The vulnerability of social groups (especially IP and women) may increase after the COVID-19 pandemic. In terms of mitigation measures, the Project will use a highly participatory approach that emphasizes community consensus and participation in managing the basin's resources. The Project will pay particular attention to the impacts and benefits for IPLC and vulnerable social groups, particularly women; specific measures to reduce identified gender gaps, the needs of the most vulnerable, and

⁵¹ A draft version of the ESMF will be submitted to the Bank for review no later than 30 days after the Grant Agreement Effectiveness Date. Such draft will be consulted during implementation and a final version sent to the Bank for review and approval before carrying out any activity under Parts 1.A(ii), 1.A(iii), 1.A(iv), 1.B(i), 1.B(ii), 2.A(i)(b), 2.A(i)(e), 2.A(ii), 2.B(i), 2.B(ii), and 2.B(iii) of the Project as included in the Grant Agreement. Once approved, it will be disclosed and adopted throughout the period of Project implementation.



indicators to monitor them will be proposed. WCS has a long history in this region and is recognized by local communities, which is why it is expected to have the capacity to prepare and manage the necessary instruments to mitigate social risk. The instruments include the draft IPs Planning Framework and Process Framework prepared and to be included in the ESMF, the Stakeholder Engagement Plan (SEP) cleared and disclosed, and a Gender Plan prepared as per GEF requirements. The Project implementation arrangements also include governance structures with the participation of different institutions, both public and private, that will support informed and inclusive decision-making and adaptive management. The Project's ESCP and SEP were disclosed on the World Bank's external website on May 21, 2022.

Corporate Requirements

44. **Gender tagging, citizen engagement, climate co-benefits, and climate disaster risk screening are not required for trust-funded projects.** However, as per GEF requirements, a gender action plan has been prepared to comply with the GEF's Policy on Gender Equality (SD/GN/02),⁵² aligned with the WBG Gender Strategy (FY2016–23).⁵³ This action plan was disclosed (in-country disclosure) on February 28th after GEF endorsement of the documents. For citizen engagement, a specific indicator was included to measure the percentage of grievances registered in relation to the delivery of Project benefits that are being addressed. In terms of climate change, as per GEF requirements, a climate risk screening was developed. This screening assessment considers changes in variability and seasonality due to climate change increase, environmental threats, and their severity. The Project area does not suffer from droughts or dry periods, and rainfall occurs at different levels throughout the year with total annual precipitation of approximately 3,300 millimeters along the basin. An analysis of climate variables (including annual average temperatures, annual average precipitation levels, likelihood of encountering severe drought) for the Putumayo-Içá basin results indicates a moderate risk rating. The Project will enhance climate change resilience via better understanding of climate scenarios, incorporating climate change into planning instruments, and promoting climate smart sustainable practices.

V. GRIEVANCE REDRESS SERVICES

45. Communities and individuals who believe that they are adversely affected by a WB-supported project may submit complaints to existing project-level grievance redress mechanisms (GRM) or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project-affected communities and individuals may submit their complaint to the WB's independent Inspection Panel, which determines whether harm occurred, or could occur, as a result of WB noncompliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the WB's attention and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the WB's corporate GRS, please visit <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

⁵² GEF (Global Environment Facility). 2017. *Guidelines on Gender Equality (SD/GN/02)*. GEF. http://www.thegef.org/sites/default/files/documents/Gender_Equality_Guidelines.pdf.

⁵³ WBG. 2015. *World Bank Group Gender Strategy (FY16–23): Gender Equality, Poverty Reduction and Inclusive Growth*. Washington, DC: World Bank. <https://openknowledge.worldbank.org/handle/10986/23425>.



VI. KEY RISKS

46. **The overall risk rating for this Project is assessed as Substantial**, considering the complexity of multi-country, multistakeholder implementation and decision-making, potential intervention areas with the presence of conflict between various armed groups, and COVID-19-related socioeconomic impacts. A summary of key risks rated substantial is included below.

47. **Political and governance risks are Substantial**. Despite demonstrated commitment from all four countries toward sustainable development and conservation in the Amazon, conflicting and competing demands among the countries and entities could delay decision-making and undermine the collaborative process essential for achieving the PDO. Changes in country governments with elections during Project implementation could alter the commitment towards the Project. To mitigate the risk, the RSC will aim to promote collaborative action under the umbrella of existing multinational commitments, which compel countries to work toward regional joint action for sustainable development in the basin. Involving local governments and communities in the Project, as well as stakeholders from diverse development sectors, will increase their awareness of the benefits of promoting sustainable regional management of the basin's natural resources and mitigate the risk. Also, having WCS as the regional executing agency reduces vulnerability on government changes. The risk associated with the support to be provided to authorities, informing their environmental law enforcement activities, has been assessed and considered low. The training and technical assistance activities will comprise information related to the use of contaminants and their impacts on communities and ecosystems.

48. **The Project's fiduciary risk is Substantial, considering the following:** (a) The Project is complex, involving four countries at various administrative and political levels; (b) Despite fiduciary and administrative capacity, with central support from the WCS New York global office and the regional office, WCS has no previous experience in implementing WB-financed projects in LAC; (c) Procurement processes will be centrally executed by the PMU under WCS's regional office responsibility, and they can be carried out by the CET embedded in any of the four countries involved in the Project, so the WCS country offices will be responsible for supporting procurement processes, signing and contract administration, as required, adding complexity to procurement; (d) Project execution will happen in vulnerable, remote areas of four countries, adding complexity to fiduciary processes; (e) Project investment will involve the participation of multiple actors that require important interactions with different government institutions. Fiduciary risk mitigation measures were identified; mainly, the provision of capacity building activities to WCS in WB-specific fiduciary requirements, responding to the assessment of specific needs in terms of support capacity for each CET, as well as for subprojects implementation; and constant assistance in the preparation of the operational manual with clear definition of the processes, roles, and responsibilities for both procurement and financial management processes, and supervision in its implementation (more details in tables 1 and 2 in Annex 1).



49. **Environmental and social risks are substantial.** Risks relate to the remoteness of the area of intervention, the complexity of the institutional arrangements, potential collateral damages from water contamination remediation subprojects without the required expertise, climate change impacting natural resources management practices, and the localized conflict and social unrest. These risks and impacts are temporary and/or reversible, at a local level, and can be mitigated through a series of activities included in the ESMF, the SEP and Gender Plan. In addition, the Project will use a highly participatory approach that emphasizes consensus and community participation in managing the basin's resources. (More details in section IV.D.)

50. **Other: internal security risks are substantial.** This risk relates to the unstable political conditions and social unrest, particularly in Colombia. The borders of Colombia with the three other countries have long been affected by violence and crime. In recent years the situation has deteriorated in the Amazon basin due to an increased activity of organized crime and illegal armed groups causing unrest and threats to social and environmental leaders. To mitigate this risk, security considerations will be part of the selection criteria for on-the-ground intervention areas. Security protocols will be established by the organizations, conducting constant analysis of the situation and risks.

51. **Other: COVID-19 risk is considered substantial.** The Project has been adjusted to better respond to the new set of circumstances and mitigate the risk of increasing pressure on natural resources. At the operational level, the Project design has incorporated measures (to be updated as needed) to implement activities considering health security protocols, and following WB guidelines and governments' internal directives. This Project is expected to start implementation during the second half of 2022, by which time the Project team and the implementing partners will have gained the required experience to implement the necessary protocols and procedures even if the pandemic continues. Vaccination rates have risen and are expected to continue in the areas of intervention.

**VII. RESULTS FRAMEWORK AND MONITORING****Results Framework**

COUNTRY: Latin America

Integrated watershed management of the Putumayo-Içá river basin

Project Development Objectives(s)

To strengthen the enabling conditions for the participant countries to manage the shared freshwater ecosystems of the Putumayo- Içá basin in the Amazon region

Project Development Objective Indicators

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
Enabling conditions to manage the shared freshwater ecosystems in the basin							
Regional knowledge management strategy providing relevant information for decision making towards conservation and sustainable natural resource use (Number)		0.00	1.00	2.00	3.00	4.00	4.00
Action plan agreed for shared management of the basin designed and operational (Number)		0.00	1.00	2.00	3.00	4.00	5.00
Share of targeted subproject beneficiaries with improved livelihood conditions		0.00	0.00	0.00	50.00	70.00	70.00



Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
(Percentage)							

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
Governance and capacity for informed decision making on IWRM							
Research processes for the recovery of traditional knowledge that supports IWRM (Number)		0.00	0.00	2.00	4.00	4.00	4.00
Trained beneficiaries participating in project community monitoring (Number)		0.00	60.00	80.00	100.00	150.00	150.00
Level of engagement in IWLEARN through participation and delivery of key products (Number)		1.00	2.00	3.00	4.00	4.00	4.00
Regional working groups established and/or strengthened in operation (Number)		0.00	2.00	4.00	6.00	6.00	6.00
Women participating in the working groups (Percentage)		0.00	40.00	40.00	45.00	45.00	45.00
Indigenous people and other ethnic minorities		0.00	20.00	20.00	25.00	25.00	25.00



Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
participating in the working groups (Percentage)							
Feasibility analysis of regional basin governance structure validated by countries (Yes/No)	No	No	No	Yes	Yes	Yes	Yes
Management interventions towards shared IWRM							
Contamination early warning system designed and operational in pilot sites (Number)	0.00	1.00	2.00	3.00	4.00	4.00	
Quantity of Mercury reduced (tons) (Number)	0.00	1.00					3.00
Pilot sites adopting and implementing subprojects for control and monitoring of water pollution (Number)	0.00	0.00	2.00	4.00	4.00	4.00	
Fisheries management plans implemented (CRI, Number)	0.00	2.00	3.00	5.00	5.00	5.00	
Priority fish species exploited at sustainable levels within the basin (Number)	0.00	0.00	2.00	3.00	4.00	4.00	
Value chains for natural resource products developed/strengthened (Number)	0.00	1.00	2.00	4.00	4.00	4.00	
Project Management, Communications, Monitoring and Evaluation							
Direct beneficiaries (Number)	0.00	1,000.00	2,500.00	5,000.00	6,300.00	6,300.00	
Women direct beneficiaries (Percentage)	0.00	40.00	40.00	45.00	45.00	45.00	
Grievances registered related to delivery of project benefits	0.00	90.00	100.00	100.00	100.00	100.00	



Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
that are addressed (Percentage)							
Monitoring & Evaluation Plan: PDO Indicators							
Indicator Name	Definition/Description		Frequency	Datasource	Methodology for Data Collection		Responsibility for Data Collection
Regional knowledge management strategy providing relevant information for decision making towards conservation and sustainable natural resource use	Measures the design and operation of the IWRM KMS (collect, systematize, generate and share knowledge), its relevance and use for decision making.		Annual	Project reports (including survey results)	Values: 0: No KMS; 1: Design of the regional KMS harmonizing existing protocols; 2: KMS with initial research and knowledge exchange activities; 3: KMS operational with 70% users rating satisfactory relevance; 4: Knowledge generated by the project incorporated into IWRM plans, programs and projects.		WCS



Action plan agreed for shared management of the basin designed and operational	Stages towards participatory design and operationalization of an action plan for IWRM, resulting from intersectoral dialogue, strengthened governance and based on knowledge produced/systematized.	Annual	Project reports, Action plan document and documents	Index: 0: No action plan; 1: Diagnostic studies systematized/prepared; 2: Draft plan designed with active multicountry participation; 3: Lessons from subprojects incorporated; 4: Plan launched; 5. Regional agreements/instruments informed by the plan	WCS
Share of targeted subproject beneficiaries with improved livelihood conditions	Share of beneficiaries that identify their wellbeing has improved as a result of the subprojects	Annual - starting year 2	Survey to be designed	Basic Necessities Survey. Steps: (i) participatory design with well-being proxy variables; (ii) data collection; (iii) analysis.	WCS

Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Research processes for the recovery of traditional knowledge that supports	Processes designed and implemented by IP to	Annual	Research reports and	Count processes and review of reports	WCS



IWRM	recover traditional knowledge on IWRM		other documents		
Trained beneficiaries participating in project community monitoring	Trained People participating in community monitoring and sharing experience with others.	Annual	Project reports	Count of number of beneficiaries	WCS
Level of engagement in IW:LEARN through participation and delivery of key products	GEF Core subindicator Level of engagement in (IW:LEARN.	Annual	Project reports	1: No participation; 2: Active website following IW:LEARN guidance; 3: + participation in training/twinning events and at least 1experience note and 1 results note prepared; 4: + participation of project and country representatives at IW conferences and the provision of spatial and other data via project website.	WCS
Regional working groups established and/or strengthened in operation	Working groups established and/or strengthened. Operational if: members' roles and responsibilities documented; meetings documented; members from at least 2 countries;	Annual	Minutes of meetings	Review project reports	WCS



	results presented at the TC.				
Women participating in the working groups					
Indigenous people and other ethnic minorities participating in the working groups					
Feasibility analysis of regional basin governance structure validated by countries	Analysis -validated by countries- of technical, financial and political feasibility of regional governance structure for basin IWRM	Annual	Analytical documents, reports, minutes from validation workshop	Review of reports	WCS
Contamination early warning system designed and operational in pilot sites	Stages towards the existence and operationalization in pilot sites of a water contamination early warning system	Annual	Project and early warning Reports	Index: 1: Technical Design. 2: Consultation with relevant stakeholders. 3. System operational in at least 2 sites. 4: System operational in at least 4 pilot sites	WCS
Quantity of Mercury reduced (tons)	Amount of mercury reduced in the basin	Baseline, midterm, completion	Project and government mercury reports.	Monitoring will consider air, sediments, groundwater and biota	WCS
Pilot sites adopting and implementing subprojects for control and monitoring of	Pilot sites implementing reduction/mitigation	Annual	Project reports from	Review of project reports	WCS



water pollution	activities for water contamination		activities in the pilot sites.		
Fisheries management plans implemented	This indicator measures the number of fisheries management plans that have been implemented through operations supported by the World Bank. This indicator relates to the actual application and enforcement of measures to control fishing in a determined geographic area. Fishing units accessing the fisheries are identifiable (registered, marked, possibly licensed), and management measures (such as gear and spatial or period restrictions) are applied and enforced (as demonstrated by a minimum rate of control of the target fleet each year, and prosecution of identified delinquents).	Annual	Project reports with support from community monitors.	Review of project reports related to commercial and subsistence fishing management plans	WCS
Priority fish species exploited at sustainable levels within the basin	Fish species exploited at sustainable levels, supported by management	Annual	Project reports	At year 1, the project will assess the species' status and extent of	WCS



	agreements designed, strengthened and enforced.			overfishing. Management will be monitored via impact level (stock status) and stressor (overfishing) indicators., revealing whether catches include immature or mature fish.	
Value chains for natural resource products developed/ strengthened	Fish and NTFP value chains developed/ strengthened	Annual	Project reports	Review of project reports	WCS
Direct beneficiaries	Individual people who receive targeted support (monetary and non-monetary) from the GEF and/or who use the specific resources that the project maintains or enhances.	Annual	Project reports	Add from lists of participants	WCS
Women direct beneficiaries					
Grievances registered related to delivery of project benefits that are addressed	Citizen Engagement indicator. Percentage of the grievances received and addressed following set procedures	Annual	Project GRM	Review of reports from the project's GRM	WCS

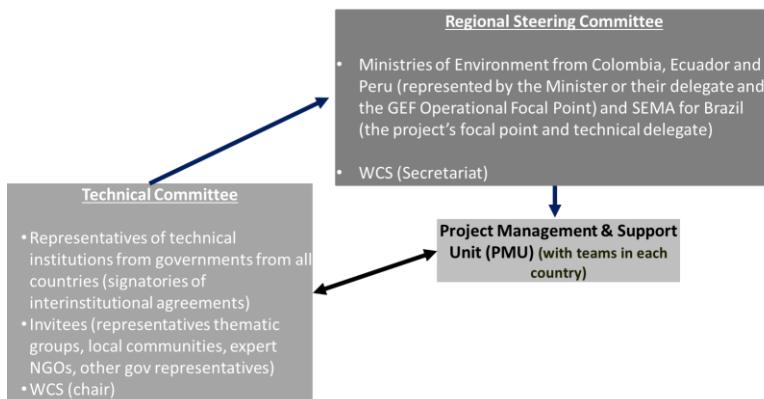


The World Bank

Integrated watershed management of the Putumayo-Içá river basin Project (P172893)

**ANNEX 1: Implementation Arrangements and Support Plan****Latin America
Integrated watershed management of the Putumayo-Içá river basin Project****Project Institutional and Implementation Arrangements**

1. **The Project will have WCS as the *Executing Agency* in coordination with the Ministries of Environment of Colombia, Ecuador, and Peru and the Secretariat of the Environment of Brazil's State of Amazonas.** The Project will involve the active participation of relevant public national and subnational agencies and CSOs. The participant countries designated WCS, based on its presence in each of the countries, its long-term experience working with diverse institutions and local communities, and its technical capacity in sustainable use and management of natural resources. As the grant recipient, WCS will have primary responsibility for overseeing the Project execution and ensuring compliance with the WB's guidelines and procedures involving project coordination, fiduciary responsibilities, procurement, FM, and M&E. WCS will establish a PMU (see figure 1) and establish an RSC as the highest decision-making authority, as well as a TC. Details will be included in the POM.

Figure 1. Schematic illustration of Project coordination instances

2. **The Regional Steering Committee (RSC) will be in charge of general oversight, policy advice, and strategic orientation.** It will be composed of the Ministries of Environment from Colombia, Ecuador, and Peru (represented by the minister or their delegate and the OFP), SEMA for Brazil (the Project's focal point and technical delegate), and WCS, which will serve as secretariat. The RSC will specify criteria and guidelines for the Project's implementation and seek coordination with sectoral public policies and other international cooperation initiatives. It will meet at least twice (2) per year, in person and/or online, and will: (a) provide strategic guidance; (b) approve the annual operation plans (POA, as it stands in Spanish) and any modifications to them before they are presented for no objection to the WB;⁵⁴ (c) approve the biannual management and results reports that are presented by the PMU to the WB; (d) support and participate in WB implementation support missions; (e) resolve, during specific meetings called for this

⁵⁴ The POM will include the provisions by which specific changes in the POA will need to be discussed/decided by the RSC.



purpose, major issues—defined in the POM—as they arise, including those coming from the Project’s GRM. In addition, the PMU and its representatives from the country offices will establish ad hoc meetings⁵⁵ with the OFP to ensure regular communication and reporting.

3. **The Technical Committee (TC), in charge of providing strategic and technical orientation to the Project**, will be chaired by the PMU and consist of representatives from scientific/technical units within the governmental entities whose jurisdiction overlaps the Putumayo-Içá basin. The members of the TC will be the core partners entities⁵⁶ with whom interinstitutional cooperation agreements will be signed, but also other partner implementing entities⁵⁷. Independently of the number of technical entities per country in the TC, to be nominated by the Ministries of Environment and SEMA, the number of votes will be equal between the countries. As needed and according to the agenda, representatives from the following will be invited to the TC: (a) thematic groups created or strengthened by the Project; (b) community-based groups or NGOs; and (c) other national/subnational government institutions. Overall, to the extent needed and appropriate, relevant experts, organizations, or entities can be convened at the TC. In addition, the TC will enrich its discussions and decisions with inputs from multistakeholder meetings at the national level.⁵⁸ The TC shall meet as a whole quarterly and extraordinarily if needed and called by its members. All TC meetings will be facilitated and supported by the technical team of the PMU, in particular the thematic coordinators and CET. Specifically, the TC will be in charge of: (a) ensuring peer review and overall technical quality and feasibility of proposed activities, through identification and referral of best practices, tools, methods, and guidelines; (b) providing technical support and recommendations to the PMU for the development of the POA; (c) ensuring coordination and complementarity with other projects and initiatives; (d) collecting and sharing relevant information coming from national level multistakeholder discussions; (e) providing inputs to the PMU for the preparation of Project reports; and (f) supporting the planning and delivery of the WB implementation support missions and ensuring the timely provision of quality information to mission members.

4. **The PMU, operated by the WCS with team members in each country office, will be responsible for the financial and operational day-to-day Project management and coordination** (see figure 2). Specifically, the PMU will: (a) coordinate with all partner entities in the priority areas of intervention; (b) develop the POA and its modifications and submit them to the WB for no objection; (c) facilitate and chair the RSC and the TC meetings; (d) ensure the proper application of the WB’s ESMF (including managing the GRM⁵⁹); (e) ensure implementation of the POM, recommend or collect recommendations from parties, and present these to the WB for no objection; (f) establish, facilitate, and monitor compliance of the four

⁵⁵ Potentially every 45 days.

⁵⁶ Core Partner Entities include: from Brazil: Secretariat of State of Meio Ambiente del Estado do Amazonas; from Colombia: Ministry of Environment and Sustainable Development, Sinchi Institute, Corpoamazonia, National Parks Authority; from Ecuador: Ministry of Environment and Water; and, from Peru: Ministry of Environment, Ministry of Agriculture and Irrigation, Regional Loreto Government.

⁵⁷ Partner Entities means, collectively, the Core Partner Entities and any other entities as may be determined by the Recipient, and agreed to by the World Bank, to be important partners for the implementation of the Project.

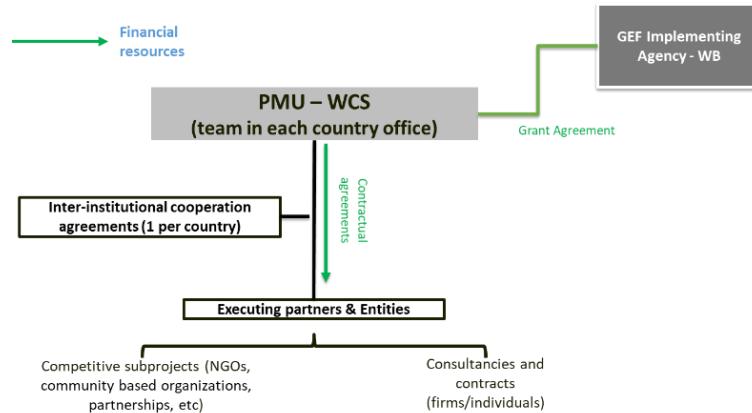
⁵⁸ These national meetings will be set up as needed by the technical institutions involved in each country, financed with their own resources (as cofinancing) and to bring inputs to the TC.

⁵⁹ Including receiving and responding to any complaints, ensuring the effective investigations of such complaints, and ensuring measures are taken to correct any failures or mismanagement, and facilitating conflict resolution.



Interinstitutional Cooperation Agreements signed with partners in each country; (g) establish and manage contractual agreements with third parties (individuals and organizations); (h) prepare the biannual management and results reports for the WB; (i) prepare Project briefs and call ad hoc meetings to ensure regular communication between the PMU and CETs with the OFPs; (j) support, in coordination with government representatives, the planning and delivery of WB implementation support missions, midterm and completion missions; and (k) ensure the timely provision of quality information to the WB and agencies. The PMU will be integrated by technical and administrative staff. The technical staff will comprise a Project Director, who will be the primary representative and be responsible for high-level decisions and any significant troubleshooting; a communications specialist; thematic coordinators or specialists; specialist in social and environmental standards; a grants manager, a procurement specialist, and an M&E specialist. In addition, there will be CETs in each country providing technical, logistical, and administrative support, as well as in-country coordination and communication with government representatives and M&E. Terms of Reference (ToRs) for the PMU will be submitted for WB approval following consultation with representatives of the participating countries.

Figure 2. Schematic illustration of contractual arrangements for project implementation



5. **Project Operations Manual.** The POM, to be prepared in collaboration with government representatives and approved by the WB, will include details on: (a) institutional and implementation responsibilities by all key stakeholders at national and regional level, including the roles of the Partner Entities; (b) M&E with methodologies and responsibilities for data collection and reporting; (c) ESMF compliance procedures; (d) disbursements, FM and procurement aspects, roles and responsibilities; and, (e) reporting provisions related to the interinstitutional cooperation agreements between the WCS and Core Partners Entities; and (e) procedures and arrangements related to the subprojects.



IMPLEMENTATION SUPPORT PLAN

6. **To ensure coordination between the high number of agencies, the WB team will carry out close implementation support planning and results monitoring.** WB's implementation support will include but not be limited to semiannual missions, regular (monthly) communication with government representatives and the PMU, and the creation of online groups to share images and demonstrate progress in each of the countries. Financial management support from the four country offices will be provided. The WB technical and fiduciary teams will have continuous dialogue with WCS's PMU at least while the PMU becomes familiar with WB procedures, and cross sector support from other WB groups, such as Water, Agriculture, and Social Development Global Practices, will be formalized as needed. Even if travel has resumed as possible, the team will plan for virtual implementation support meetings to allow reviewing specific aspects from the different WCS country offices. This will allow for more regular support without extra expenses and travel (also reducing project's carbon footprint). Skill sets required for effective implementation include, among others, project management, natural resources management, fisheries, integrated transboundary basin management, community development, water pollution, M&E, procurement, FM, information and communications technologies, communications, legal, and social. The Implementation Support Plan will be revised periodically based on progress and risk assessments.

Focus of support to implementation during different project phases

Time	Focus
First 12 months	Start-up. Training of PMU staff. Monitoring of initial procurement activities in all four countries. Socialization of activities with local communities and progress in ESF instruments. Institutional arrangements becoming operational.
12–24 months	Continue implementation support/monitoring of implementation
24–36 months	Continue implementation support/monitoring of implementation. Mid-term review.
36 months–closing	Keep project implementation on track. Drawing lessons learned from the project and mainstreaming good practices.
Within 12 months of closing.	ICR preparation.

Skills Needed	Number of S/W	Number of Trips	Comments
TTL Environmental Specialist	30	11	Based in HQ
Environmental Specialist (ESF)	12	10	Based in CO
Social Specialist (ESF)	12	10	Based in CO
Procurement Specialist	20	5	Based in CO
Financial Management Specialist (support from specialist in the other 3 CO)	15	5	Based in CO
Consultant – M&E	15	5	International or Local
Other Consultants	8	5	International and Local

**FIDUCIARY
Procurement**

7. Procurement will be implemented according to the WB's Procurement Regulations for IPF Borrowers dated November 2020, for the supply of goods, works, non-consulting, and consulting services under the project and the provisions stipulated in the Grant Agreement. Procurement for goods, works, consultant services and non-consulting services will be implemented based on the Mandatory Procurement Prior Review Thresholds detailed in Annex I of the WB's Procurement Procedures. The WB's Standard Procurement Documents will govern the procurement of WB-financed Open International Competitive Procurement. For procurement involving National Open Competitive Procurement and other methods, the documents will be agreed with the WB.

8. The procurement under the Project will be centrally managed by the PMU under WCS regional office responsibility. However, given the regional nature of the Project and the need to execute project activities in each Country (Colombia, Ecuador, Peru and Brazil), the CET embedded in WCS country offices involved in project execution will be responsible for supporting procurement processes, signing, managing, and supervising contracts, as required, under the WCS regional office responsibility. An assessment of WCS was carried out in March 2021 which concluded that WCS has no previous experience in implementing WB-financed projects in LAC region; nevertheless, the Entity has the capacity to implement the project procurement-related activities applying the following recommendations: (a) Staff: The PMU will be dedicated to the coordination, execution, and monitoring of the Project. This PMU must hire a procurement specialist with enough experience in carrying out procurement processes under WB Guidelines and/or Regulations and a support team as required. The WCS regional office should review and ensure each WCS Country Office has adequate procurement support capacity, based on the needs in the PPP and the complexity of the activities. Likewise, the technical team shall include experts responsible for providing the necessary inputs for the different procurement processes. (b) Roles and responsibilities: The POM's procurement chapter will establish the roles and responsibilities of the PMU and all the actors/agencies involved in procurement activities, including clear and enforceable tasks related to the selection, execution, and proper contracts' administration. (c) Training: to be delivered based on needs assessment for the executing team (PMU and CET's) and/or project partner agencies that require it; (d) Complaint procedure required to guarantee the proper management of complaints (reception, response, and monitoring) during the procurement processes and contract administration. (e) Files and documentation management will be necessary to guarantee the proper and timely file management for procurement processes and contract administration and to facilitate monitoring and audits. (f) PPP: Maintain the Project's PSD and the PPP up-to-date and carry out the corresponding management through the Systematic Tracking and Exchanges in Procurement (STEP).

9. Risk mitigation plan. Table 1 summarizes the mitigation actions proposed for identified risks.

Table 1. Procurement Improvement Action Plan to be delivered by WCS

Risks—Areas for Improvement	Mitigation Actions	Status
Procurement planning. The lack of or poor planning can	Include the PPP in the WB's STEP system.	30 days after the effective date of the grant agreement



Risks—Areas for Improvement	Mitigation Actions	Status
cause delays in Project execution.	Keep the PPSD and PPP updated in STEP to reflect actual Project execution.	During Project implementation.
Staff. Lack of staff with expertise in procurement processes under the WB's guidelines and/or regulations.	Prepare ToR for the selection/hiring of procurement professionals required, and do the selection and hiring process. Review the specific needs in terms of procurement support capacity for each CET, based on the PPP and the complexity of the activities and make sure to adequately meet these needs. Procedures and simplified procurement documents for the procurement of all consulting services and non-consulting services for the establishment and operationalization of the PMU, prepared by WCS and approved by WB.	By effectiveness Capacity building during project implementation
Roles and responsibilities. Unknown roles and responsibilities related to the procurement between multiple actors, entities, CET, among others involved.	The POM's procurement chapter will be prepared with a clear definition of the processes, roles, and responsibilities of the different units (including CETs) and staff related to the implementation of the procurement activities.	Disbursement condition (for components 1 and 2 including subprojects)
Training. Personnel's lack of knowledge in the execution of this type of project, specifically the role of procurement.	Once personnel to be involved in procurement are identified or hired, a workshop will be held on general aspects of the WB Procurement Regulations, by Project request.	During Project implementation.
Complaints. Occurrence during the procurement processes and lack of opportunity to provide responses.	Include the complaints' mechanism of reception, response, and monitoring in the POM's procurement chapter. Maintain updated complaints database, including the reception and response of procurement processes in STEP.	Disbursement condition (for components 1 and 2 including subprojects). During Project implementation.
Files and documentation management. Incomplete contractual records/files.	Include in the POM guidelines for filing and documentation management of procurement processes, records and contract administration.	Disbursement condition (for components 1 and 2 including subprojects)
Subprojects. Lack of proper procurement monitoring and support from WCS to beneficiary entities during subprojects implementation.	WCS will monitor and support the procurement processes that will be carried out by the beneficiary entities. The POM will specify the applicable procurement arrangements and procedures. As needed, a training program will be developed on the application of the procurement procedures, to be provided regularly to the beneficiary entities.	During project implementation

10. **Procurement arrangements.** WCS, with the WB's support, has prepared a PPSD that establishes the best procurement arrangements to ensure the delivery of value for money while efficiently achieving the agreed PDO. The PPSD concluded that Project's resources will be concentrated around 60% on procurable expenses of consulting services, goods, minor works, and non-consulting services directly performed by WCS, and 40% for subprojects awarded through open and competitive calls and whose procurement activities will be carried out by each subproject's beneficiary entity.

11. The PPSD focuses on one of the important contracts for project implementation, namely, the design and implementation services of an early warning system through which the preparation and response systems for contingencies in the Putumayo-Içá river basin are strengthened. The analysis shows some alternatives in terms of number and characteristics of possible consulting firms, based on which, the best approach is to carry out an open national competitive process. The complexity is moderate, but



with clear ToR, the consultant firms will be able to present a good quality proposal that responds to the Project needs. Once the ToR is available, the market study will be updated, and the selection method and the country to develop the process will be confirmed.

12. The procurement arrangements for other activities that are expected to be carried out are detailed in the PSD and the PPP, as follows: (i) Consulting services. The market approach for specific consultant services of environmental studies and management of technologies and services (including studies of the river basin, information analysis and systematization, communication strategy, project management services, etc.) will be an open competition in the national market. Quality and Cost-Based Selection, Quality-Based Selection, Least Cost-Based Selection, Selection Based on the Consultants' Qualifications or direct selection, would be the selection methods, considering the nature and scope of the services. (ii) Individual consultants. Individual consultants will be selected in accordance with the provision of paragraphs 7.34 to 7.39 of the Procurement Regulations. (iii) Goods, works and non-consulting services. The Project will finance the procurement of equipment for prevention and control of river pollution, early warning systems, boats, logistics services, transport operators and minors works, etc. According to the PSD, the open national competitive bidding and quotations approach will be applied. The national approach is supported by the availability of bidders in the local markets.

13. The PSD also analyzed the implications of the regional nature of the project for the countries involved, concluding: (i) A budget or procurement activities per country will not be previously defined; therefore, based on each market analysis carried out to meet the project's procurement needs and requests, the specific Country to carry out the procurement process and contract execution will be defined, and included / updated in the PPP, before the start of the processes; the nature of the Project's procurement processes are national approach; and (ii) All procurement documents shall be in Spanish. In the case of processes carried out in Brazil, WCS will assume full responsibility for the correct translation of the documents into Portuguese, and in case of discrepancies, the Spanish text will prevail (in accordance with the provision of paragraphs 5.14 to 5.18 of the Procurement Regulations).

14. **Procurement Plan.** In accordance with paragraph 5.9 of the Procurement Regulations, the WB's STEP system will be used to prepare, clear, and update the PPP and conduct all the Project's procurement transactions, as necessary. The initial PPP was prepared by WCS in accordance with the results provided by the PSD and agreed with the WB on January 24, 2022.

15. **Subprojects.** Achieving the subprojects objectives will require financing both procurable (goods, minor works, non-consultant services, and consulting services) and non-procurable items (such as travel and administrative expenses). Beneficiary entities would decide what investments to make according to their business plans and competitively selected proposals. The grant application will request a business plan including a simplified PPP with a list of the goods, works and services to be procured and their estimated cost. Procurement of goods, minor works, non-consulting services and consulting services will be carried out considering the eligible expenses and the specific procurement arrangements, in accordance with the applicable WB Procurement Regulations, that will be set forth in the POM for each type of subproject, under terms and conditions approved by the WB. The POM must include at least: 1. Procurement capacity assessment methodology of beneficiary entities; 2. Procurement methods to be applied; 3. Simplified procurement documents (PPP, request for quotations, model contracts / purchase orders, fraud and corruption annex, etc.); 4. Roles and responsibilities of all parties involved in



procurement activities (WCS, beneficiary entities, etc.); 5. Procurement supervision arrangements; 6. Audit arrangements; 7. Documentation that the beneficiary entities must keep and submit as part of the regular reporting process; and 8. The relevant model form of legal agreement for Subprojects implementation.

16. **Frequency of Procurement Supervision.** In addition to prior review supervision to be carried out by the WB office, annual supervision missions will be carried out to visit the field and conduct post review of procurement actions.

Financial Management

8. Based on the FMA conducted by the WB on participating countries (see Fiduciary section in the document) and the fiduciary risk (section VI. Key Risks), an FM action plan was designed (see table 2)

Table 2. FM Action Plan

Tasks	Status
Include in the POM the procedures and implementation instruments between the PMU and CET for the FM of the Project for each of the areas: budget, accounting, cash flow, financial reporting, internal control, and external audit, including controls and procedures for the evaluation and disbursement of subprojects; as well as the annexes of the financial and disbursement reports, including the certification for the Project's operating costs shared with other WCS' projects.	Disbursement condition for components 1 and 2 including subprojects
Update of the System Application and Products in Data Processing (SAP) Environmentally Responsible Procurement (ERP) Multi Currency fund accounting system based on the Project components, including the details of operating costs to allow the monitoring and audit of the Project expenses, and generate the financial reports required by the WB with the same level of granularity.	Completed within 30 days after effectiveness.
Report the staff necessary to manage the Project and the respective ToR for no objection by the WB.	By effectiveness
Prepare draft auditor's ToR that includes field work in each CET based on the example shared by the WB, including countries' audit reports and financial performance in each one of the countries.	Disbursement condition for components 1 and 2 including subprojects
The WB's FM specialist for each CET will provide FM training to WCS staff in WB's procedures.	After effectiveness (or before if general training is provided). An initial training occurring in March 2022.

9. **The PMU, in coordination with the CETs in each country office, will be responsible for carrying out the Project's administrative and FM tasks, such as budgeting, accounting, financial reporting, and payments to vendors, contractors, consultants, and others.** The regional financial and administrative structure under the head of the Director of Operations is supported by a Regional Comptroller and is led by a Regional Business Manager. All country offices, and therefore the CETs therein, are part of the regional finance and administration structure. There is a Finance Manager in each country office. Specific training on the WB's procedures and policies will be required. Besides the personnel financed by the Project funds to work for the Project, WCS, with its funds (as co-financer), will allocate team members from its financial and administrative structure to partially support the Project.



10. **Budgeting and Accounting:** The PMU will operate under the supervision of the WCS regional office for the Andes, Amazonia, and Orinoquia, and in coordination with the country offices, ensuring timely and efficient budget management during implementation. For this Project, the budget, accounting, and treasury functions will be integrated into WCS's global financial information system, to which each CET has access. Each CET has a cost center assigned within the accounting system for the recording and traceability of transactions made locally and at the subproject level. At the headquarters (HQ) level and in the regional office and country offices, there are control procedures to ensure that information is reviewed/validated and consolidated in a single accounting system, which allows for the entry of information for each project, by a unique numerical identifier. WCS's system allows for ex-post adjustments, guaranteeing the accurate tracking of the entire history of financial transactions in the country where the transactions take place. The use of SAP's ERP Multi Currency fund accounting system enables the WCS to track and monitor grant funding by donation, donor, project, type of expenditure, and type of activity, and generate project reports, including balance sheets and budget execution. The complementary financial and administrative manuals for accounting and SAP ERP regulate the detailed system operation procedures. Project financial information will be aggregated through a unique numeric identifier disaggregating each expenditure category and the operating costs that will be monitored by the PMU. The budget, and any modifications thereto, shall be recorded and monitored through the financial information system that will incorporate the Project data.

11. **Internal Controls:** All transaction processing (recording of annual budgets, budget commitments, accounting, payments, and internal control reviews) will be performed by HQ or the CETs, as appropriate, in coordination with the PMU. Other internal control mechanisms will include payment review and reconciliation, adequate access to systems, segregation of duties, and adherence to internal administrative manuals and procedures. The Project's internal control processes will be detailed in the POM and, if necessary, will align WCS policies to enable timely Project implementation, subject to WB approval. Periodically, on a risk basis, HQ and CETs shall include the Project processes as part of their internal control reviews. WCS has a Code of Conduct and Finance and Administrative Policies and Procedures, which will be applied to the Project and an adequate system to protect assets against fraud, waste, and abuse. Purchased equipment is listed in an inventory register, and each asset is assigned a number and an individual master record, following WCS policies (e.g., goods with a value of > US\$5,000). A physical inventory control of these assets will be performed annually and reconciled with the respective accounts.

12. **Anti-Corruption Guidelines:** WCS shall also observe the Bank's Guidelines on Preventing and Combating Corruption in Projects financed by IBRD and IDA credits and Grants, dated Oct 15, 2006, and Revised in January 2011, that set the general principles, requirements, and sanctions applicable to persons and entities which receive, are responsible for the deposit or transfer of, or take or influence decisions regarding the use of the loan/grant proceeds. WCS's staff must observe the highest standard of ethics and take all appropriate measures to prevent and refrain from engaging in sanctionable practices. WCS must report allegations of fraud and corruption in connection with the use of the loan proceeds, maintain appropriate fiduciary and administrative arrangements, cooperate with Bank investigations, taking timely and appropriate action to address the problem, and follow other applicable government related rules and guidelines.



13. **Subprojects:** The Project will include the modality of subprojects to be implemented by different organizations, selected through competitive processes and under specific criteria to be incorporated in the POM and in line with what is approved in the POA. The transfer of funds allocated to the subprojects will be made through a subproject grant agreement between the WCS and the selected organization. This agreement will specify the awarded amount, a detailed budget with amounts by eligible category, cash flow and work plan, the activities to be carried out, and the responsibilities of the signatory parties. A specific charging code will be assigned to each subproject under the WCS SAP to allow proper accounting, reporting, and auditing of all related expenditures. Before signing, the WCS will be responsible for verifying the organization's ability to execute funds in compliance with technical, legal, and fiduciary standards. The amounts to be allocated will be between \$100,000 to \$300,000, depending on the work plan and assessed capacity. The total amount for the subprojects is approximately US\$5 million. The operational and financial details of the subprojects will be submitted to the POM. The PMU will ensure the subprojects followed Bank's guidelines, and their accounting information is properly accounted on SAP ERP system, and will only claim reimbursements for those eligible paid expenditures from the Bank's proceeds through the Statements of Expenditures (SOEs) that include subproject category.

14. **Project Operating Costs:** The Project will finance reasonable incremental operating costs incurred up to the amount determined in the respective category related to, *inter alia* technical and administrative management, bank charges, office costs, and WCS HQ costs. For such HQ costs, WCS is required to provide a certification letter, indicating the date, amount charged, certifying that it meets the Financial Requirements, Cost Principles, and Audit Requirements for the Project, and, signed by the WCS' Finance Director. Operating costs financed by the Project must be explicitly identified in the budget and accounting systems in accordance with WCS policies, showing the relationship with the Project's operating expenses, being subject to the Project's external audit, and included in the financial and reimbursements reports.

15. **Funds Flow and Disbursement Arrangements:** The HQ and the CETs will make payments directly upon authorization of payment to service providers and contractors once the expenses have been incurred and properly documented. Funds should be committed by source, making it possible to track payments to third parties, revenues, and expenditures of the Project, ensuring a recording mechanism within the system.

16. **The disbursement method available for the Project is reimbursement.** The WCS will prefinance the expenditures for the Project's implementation in each period and request reimbursement from the WB within the agreed periodicity. The WCS has implemented a fund-tracking system in each CET. The WCS HQ office, with the information from the PMU, will have direct responsibility for submitting consolidated reimbursement requests to the WB, grouping expenditures by country, and controlling under this criterion the classification by components in the Project's budgetary, accounting, and financial reports, at the country and consolidated level. The SOE that the WCS will use to submit the reimbursement request to the WB must be generated directly from the financial information system and, after agreement with the WB, must be described and included in the financial section of the POM. There will be no decentralization or transfer of funds to any agency outside the CETs. The Project will also have a grace period of four months after the closing date, during which the WB will accept reimbursement requests related to Project transactions incurred prior to the closing date. All reimbursement details will be reflected in the Disbursement and Financial Information Letter.



17. **Financial Reporting:** The PMU will ensure the timely preparation of semi-annual country and consolidated IFRs, in US dollars, generated from SAP ERP and uploaded to the WB system within 60 days after the end of each half year reported. WCS will create a specific identifier in SAP ERP to record all Project transactions at the individual CET and consolidated level, and align with the Project budget structure to record transactions by category and component. Any counterpart contributions (in-kind or cash) supporting Project activities should be reflected in the IFRs. Accordingly, the format and content of the IFRs should cover the following elements: (a) IFR 1A—Sources and Uses of Funds by disbursement category, with evidence of the WB's share in the financing of expenditures, cumulative (Project-to-date, year-to-date, and for the period) versus actual expenditures, including a variance analysis; (b) IFR 1B—Uses of Funds by Project Activity or Component, cumulative (Project-to-date, year-to-date, and for the period) versus actual expenditures, including variance analysis. In addition to the WB requirements, the POM will include requirements for the WCS to share reports to the government entities from each country, which are represented in the Project's RSC.

18. **External Auditing:** WCS is subject to an annual audit carried out in accordance with the auditing standards generally used in the United States. The New York external auditors KPMG issued a clean audit opinion on the annual financial statements (F/S) of WCS for the periods ending June 30, 2020, 2019, 2018, and 2017. The individual and consolidated Project's annual F/S will be audited by independent auditors, whose ToR and selection are satisfactory to the WB, in accordance with acceptable auditing standards. The auditors shall issue an opinion on the Project's consolidated and individual annual F/Ss in accordance with WB guidelines and conduct a detailed review of Project implementation in each country on a face-to-face or remote basis, as appropriate. The auditors will also prepare management letters for each CET, identifying internal control weaknesses, which will contribute to strengthening the control environment at the country level. The auditors' report will be uploaded into the WB system no later than six months after the close of the Project fiscal year, and the annual audit may be financed from Project resources—in which case the annual cost should be part of the Project budget. The audit will be consolidated and include individual opinions and individual management letters, and all should arrive in a single package. The WCS HQ and CETs will retain all Project records (contracts, orders, invoices, receipts, certification letter of selected operating costs, and other documents) supporting Project expenditures until the later of the following events: (a) one year after the WB has received the audited F/S covering the period during which the last reimbursement was made; and (b) two years after the closing date. HQ and the CETs will ensure that the WB representatives and the external auditors are able to examine such records. The records should clearly identify expenditures made with reference to WB funds to confirm their source of financing.

19. **Access to information:** The access to information policy for the WB-financed operations states that the borrower/grantee will disclose the audited Project F/S on the Project's website. Following the WB's formal receipt of these statements from the grantee, the WB will make them available to the public.

20. **Supervision Plan:** FM supervision will take place twice a year. This will include (a) review of individual and consolidated semiannual IFRs; (b) review of the auditors' report, management letters, and improvement plans, and follow-up of any issues raised by auditors in the management letters, as appropriate; (c) participation in Project supervision, including the visit of the WB's FM Specialist working



in the respective countries; and (d) updating of the Project FM ratings for each CET in the Implementation Status and Results Report.

Monitoring and Evaluation

21. **WCS will be the main responsible agency for M&E and conduct activities as described in component 3.** Within the PMU, a Monitoring Evaluation and Learning Specialist will be hired and will report implementation progress in line with the WB and GEF requirements.⁶⁰ A midterm review and final evaluation by independent consultants charged to the Project will complement the WB's evaluation. The PMU will use innovative approaches and tools to monitor the Project's implementation status and report to the different levels of outcome indicators. Via the interinstitutional cooperation agreements, the PMU will ensure collaboration from government agencies in the collection of data for specific indicators. The WCS will adopt participatory approaches to data collection, building on existing experiences and innovative tools such as Geo-Enabling Monitoring and Supervision tools, the Natural Resource Governance Tool,⁶¹ and the Spatial Monitoring and Reporting Tool,⁶² among others. Finally, building on the partnership between the WB and the European Space Agency, the Project will get products and training in the use of satellite earth observation and analytics for water resources, environmental monitoring, and natural resources management for the shared basin.

⁶⁰ As per guidance, the activities related to oversight, supervision, and corporate reporting on the Project's progress, undertaken by the WB, are not covered by the Project costs.

⁶¹ Detoeuf, D., M. Wieland, P. Cowles, and D. Wilkie. 2020. *The Natural Resource Governance Tool—Version 2*. New York: WCS and Washington, DC: USAID. The tool is designed to identify relevant governance groups in the area, map their jurisdictions, and assess their strengths.

⁶² <https://smartconservationtools.org/>.

**ANNEX 2: Detailed Project Description – Map area of intervention****Latin America****Integrated watershed management of the Putumayo-Içá river basin****Project Theory of Change and Component Description**

1. **The interconnection of freshwater ecosystems makes them prone to synergistic and cumulative impacts.** The well-preserved rivers and streams of the Putumayo-Içá harbor a great variety of microhabitats capable of sustaining the region's biological and cultural diversity and ecosystem services. However, there are interlinked threats that could affect the integrity of the watershed and its capacity to provide global, national, and local benefits and well-being for its inhabitants. Much of the threats that affect the watershed (including its water quality and quantity, ecological functions, and biodiversity) are transboundary in nature, and have cumulative effects along the watershed. Therefore, effectively addressing the interlinked threats and drivers requires a transnational, regional approach, as the proposed Project intends.

Environmental threats

2. **Although the rates of deforestation are currently low compared to other Amazon sub-basins, there is an increased risk of deforestation.** This risk could lead to increased erosion and run-off of soils, generating changes in sediment and nutrient dynamics, subsequently affecting water quality, the physical structure (geomorphology) of the river, and thus the integrity and functioning of associated freshwater and terrestrial ecosystems and their biodiversity. The risks are higher in the upper basin, given growing immigration and economic activities that drive or favor unsustainable practices.⁶³

3. **Water pollution is caused by a range of sources, including gold mining, oil extraction, agriculture, and domestic waste.** Water in the Putumayo-Içá is not highly polluted as compared to other Amazon sub-basins. However, municipal sewage, oil spills, and more recent illegal activities are increasing contaminants (for example, coliforms, mercury, heavy metals, and persistent organic pollutants) in water bodies and freshwater resources.⁶⁴ Mercury occurs naturally in the earth's crust, but human activities such as mining and fossil fuel combustion cause water contamination.⁶⁵ In the Putumayo-Içá basin as many areas of the Amazon, mercury pollution comes mostly from ASGM.⁶⁶ Mercury is converted to methylmercury by bacteria and plankton and is bio-accumulated in fish. Mercury levels found in *pirapucu* (*Boulengerella cuvieri*) were four times higher than the safe limit established by the World Health

⁶³ Murad, Cesar, and Jillian Pearse. 2018. "Landsat Study of Deforestation in the Amazon Region of Colombia: Departments of Caquetá and Putumayo." *Remote Sensing Applications: Society and Environment*. 11. 10.1016/j.rsase.2018.07.003.

⁶⁴ Sampedro, C., and J. Lessmann. 2019. *Amenazas Provenientes de Actividades Humanas Hacia los Ecosistemas de Agua Dulce en las Cuencas Andino-Amazónicas del Ecuador*. https://www.corpoamazonia.gov.co/region/Putumayo/Putumayo_fisico.html.

⁶⁵ Mercury is among the 10 most dangerous chemicals for public health and is a priority concern for the 128 signatory countries of the Minamata Convention. Approximately 80 percent of the total mercury emissions in South America is from the Amazon.

Crespo-López, M., et al. 2021. "Mercury: What Can We Learn From the Amazon?" *Environment International* 146: 106223.

⁶⁶ No official data on quantities of mercury used in ASGM are available since the mercury trade has become criminalized.



Organization, and these higher levels were associated with nearby small-scale gold mining.⁶⁷ The impact on human populations regularly exposed to higher levels of mercury may include effects on the nervous, digestive, and immune systems and on lungs, skin, and eyes, and can cause physical deformities and learning difficulties.⁶⁸ Water pollution from other heavy metals⁶⁹ has been found at high concentrations in the Putumayo-Içá River⁷⁰ from oil spills, persistent inorganic and organic polluting substances, including total petroleum hydrocarbons (TPH), contaminate soils, cause diseases in indigenous communities, increase greenhouse gas (GHG) emissions, and cause fragmentation of the region's ecosystems. The risk continues as large reserves of oil have been found in the upper area of the watershed on the Ecuador-Colombia border and oil and gas are currently being extracted.⁷¹ Additionally, sanitary sewage, solid waste from cities and towns, and pesticides and other chemicals used in agriculture are also sources of water pollution. Contamination by hydrocarbons, urban effluents, mercury, or cadmium affect the size of fish populations and their survival over time.

4. Biodiversity loss derived from human alterations of freshwater systems and unsustainable use of wildlife, among other factors, drives changes to the structure and composition of freshwater populations. Dysfunctional freshwater ecosystems are not able to provide necessities such as food, fibers, and medicines, or other indirect services like flood control, water filtration, pollution reduction, carbon sequestration, and recreation. Overexploitation⁷² of the silver arowana (*Osteoglossum bicirrhosum*) for example, has caused a decrease in local populations, affecting local economies. Similarly, in the Teteyé municipality on the Colombo-Ecuadorian border, migratory catfish are almost extinct due to hydrocarbons exploitation and oil spills.⁷³

Root causes/drivers

5. The following are drivers for the above environmental threats that the proposed Project will aim to influence.

6. Planning and management without proper consideration for freshwater socio-ecosystems⁷⁴ dynamics. The intricate dynamics of freshwater socio-ecosystems have not been sufficiently acknowledged in planning and management decisions. The watershed's streams and rivers comprise a dynamic balance within its floodplains and the patchwork of riverbanks, meanders, swamps, and peatlands. Decisions and interventions designed and planned without proper considerations of the diverse freshwater ecosystems, their dynamics, and their function, cultural significance, and the

⁶⁷ Hacon, S. D., M. Oliveira-da-Costa, C. D. Gama, R. Ferreira, P. C. Basta, A. Schramm, and D. Yokota. 2020. "Mercury Exposure Through Fish Consumption in Traditional Communities in the Brazilian Northern Amazon." *International Journal of Environmental Research and Public Health* 17, no. 15.

⁶⁸ <https://news.mongabay.com/2020/09/mercury-from-gold-mining-contaminates-amazon-communities-staple-fish/>.

⁶⁹ These include TPH, arsenic (Ar), barium (Ba), beryllium (Be), polychlorinated biphenyls (PCBs), and cyanide, among others.

⁷⁰ Veloso Capparelli, M., et al. 2019. "An Integrative Approach to Identify the Impacts of Multiple Metal Contamination Sources on the Eastern Andean Foothills of the Ecuadorian Amazonia." *Science of the Total Environment* 709 (March 20, 2020): 136088.

⁷¹ Encalada, A., et al. 2019. *Los Ríos de las Cuencas Andino-Amazónicas: Herramientas, y Guía de Invertebrados para el Diseño Efectivo de Programas de Monitoreo* (pp. 224). Quito: Trama Diseño.

⁷² People capture the fish and kill adult males to extract the juveniles from their mouths, where they take refuge.

⁷³ <https://sostenibilidad.semana.com/medio-ambiente/articulo/el-petroleo-de-la-empresa-vetra-acabo-con-el-agua-en-puerto-asis/36348>.

⁷⁴ Referring to socio-ecosystems emphasizes the integrated relationship between socioeconomic, cultural, and ecological variables in shaping the dynamics that influence natural ecosystems.



dependence of human activities on them, lead to unintended alteration of the natural dynamics of its ecosystems and subsequent degradation of its habitats. Decisions related to interventions such as road development and agricultural and hydrocarbon activities upstream, which are causing accumulated impacts downstream, are not fully considering the basin's watershed integrated dynamics.

7. Unsustainable and unregulated (including illegal) economic activities and productive practices.

Reduced volumes of capture in the fisheries are caused by the emergence of large-scale fishing techniques like nets and longlines and an expansion of some riverine human centers, which translates into higher demands, capture of nonreproductive individuals, reduced fish stock, and exploration of new fishing grounds. Large catfishes like dorado (*Brachyplatystoma rousseauxii*) and lechero (*Brachyplatystoma filamentosum*)—traditionally abundant in the middle Putumayo-Içá—have been replaced gradually, as their stocks were reduced, by other species.⁷⁵ The highly locally consumed pirarucu (*Arapaima gigas*) is considered endangered due to overfishing. The Project will quantify the stock status of key species and the extent to which overfishing has occurred. This will also allow tracking progress to reflect how these species can remain at sustainable levels of exploitation or be increased to more sustainable levels, if already overexploited. Unsustainable use practices have also affected freshwater turtles and tortoises that are an important resource for riverine communities in the Amazon.⁷⁶ In the lower and medium Putumayo-Içá, local communities harvest the eggs of the yellow-spotted river turtle (*P. unifilis*),⁷⁷ which is now preferred since *P. expansa* is disappearing in some regions. Also, lack of information to determine quotas for eggs often impedes establishing agreements toward sustainable use.

8. Unsustainable and illegal ASGM occurs in the watershed, generating negative impacts on its fragile ecosystems. Illegal mining practices involve the use of mercury to extract gold from dredged sludge, contaminating soil and water.⁷⁸ In addition, dredging and sluicing sediments and soils cause the discharge of huge amounts of sediment, increases in erosion, and changes in floodplains and riverbeds. Without proper regulations and the use of sustainable practices, extraction activities can drive contamination of water and changes in its availability. Although safety procedures are in place, risks of oil spills exist and not all companies of the oil and gas industry in the region have adequate water management plans that consider water dynamics beyond the site of operation, because the national regulations do not require them.

9. In the agricultural sector, water use is largely unregulated. Although regulating water use in all agricultural activities is beyond the Project's scope and capacity, a particular area of concern that can be addressed relates to the unsustainable use of pesticides and the indiscriminate use of pharmaceuticals to manage livestock. These activities add to the municipal and domestic waste and wastewater discharges

⁷⁵ Bonilla-Castillo, C., et al. 2012. "Dinámica de la Pesca Comercial de Consumo en el Medio Río Putumayo: Tres Décadas de Desembarques en Puerto Leguízamo." *Revista Colombia Amazónica* 5 (2012): 129–49.

⁷⁶ In the lower Putumayo-Içá, a dozen eggs from *P. unifilis* costs around US\$1 and the animal itself costs between US\$10 and US\$12. Páez, V. P., M. A. Morales-Betancourt, C. A. Lasso, O. V. Castaño-Mora, and B. C. Bock (Eds.). 2012. *Biología y Conservación de las Tortugas Continentales de Colombia*. Bogotá: Instituto de Investigación de Recursos Biológicos Alexander von Humboldt.

⁷⁷ Bermúdez-Romero, A., et al. 2010. "Tortugas Charapa y Taricaya (*Podocnemis expansa* y *Podocnemis unifilis*), un Recurso de Conservación Prioritario." In *Retos Locales y Regionales para la Conservación de la Fauna Acuática del Sur de la Amazonía Colombiana*, edited by A. L. Bermudez-Romero et al., pp. 111–27. Bogotá: CORPOAMAZONIA/SINCHI.

⁷⁸ According to the 2013 UNEP Global Mercury Assessment, ASGM is the largest single source of human-driven mercury pollution in the world, accounting for 37 percent of all emissions into the atmosphere and into local water sources.



along the river. Finally, extensive, illegal, and unplanned roads drive deforestation and connectivity loss, threatening biodiversity and ecosystem services.

10. Changes in variability and seasonality due to climate change exacerbate other drivers, increasing environmental threats and their severity. The Project area does not suffer from droughts or dry periods, and rainfall occurs at different levels along the year, with total annual precipitation of approximately 3,300 mm along the basin (Climate Change Knowledge Portal).⁷⁹ Some areas in the basin have suffered from intense rain causing severe floods that affected infrastructure and productive activities for local communities.⁸⁰ Intense rain has also produced landslides, mainly in the head of the basin connected to the Andes. An analysis of climate variables for the Putumayo-Içá basin comparing the reference period of 1986–2005 with a 2040–2059 period, for a Representative Concentration Pathway 8.5 scenario, shows: an increase in the annual average temperature of 2.09° C, an increase of 80 days on average in which the heat index will go over 35° C, an annual average increase in precipitation of 62.19 mm, an increase on dry day sequence of one day on average, and an average of 8 percent increase in the likelihood of encountering severe drought. Considering the magnitude, these results represent moderate climate risks. However, increased water temperatures and a decrease in dissolved oxygen may lead to a reduction in the quality of freshwater ecosystems, which in turn affect key biological processes. Higher-intensity rainfall, associated floods, potential landslides, and erosion will lead to increased risks of water turbidity and mobilization of pathogens, while periods of drought will lead to higher concentrations of pollutants in the reduced water flows. Higher sediment loads could have negative consequences for biodiversity. Enhanced hot seasons have been identified as increasing the risk of underground fires in the peatlands.⁸¹ Even though the future climate scenario does not show severe changes, a potential increase in the occurrence of other factors such as deforestation and population growth may increase the potential climate changes. Although the interventions to address this root cause go beyond the Project's scope, the Project will enhance climate change resilience via better understanding climate scenarios, incorporating climate change into planning instruments, and promoting climate-smart sustainable practices.

Barriers to address environmental threats and their drivers, within the project scope

(a) **Limited, fragmented, and inaccessible information to support decision-making for sustainable IWRM.** For the Putumayo-Içá watershed, a body of important information already exists and there are several government institutions, CSOs, and research institutions generating relevant data and information. However, this is mostly at the national level, siloed in specific sectors and thus not available to support holistic decision-making by all relevant stakeholders. There are several data, information, and knowledge management systems that encompass the watershed, including the various national information systems and those operating at the Amazon watershed scale (for example, Earth Observation, IW:LEARN, Amazon Waters Initiative, Citizen Science for the Amazon, RAIGS, Map of Life, MapBiomass, and other nongovernmental and governmental platforms), but efforts are required to ensure that information flows to and between these portals and is accessible. Scientific knowledge is not necessarily

⁷⁹ <https://climateknowledgeportal.worldbank.org/>

⁸⁰ Due to intensive rain, on July 22, 2021, the government of the Colombian Putumayo department declared a public emergency as more than 10,000 families were affected by losses of crops and animals, landslides over roads, loss of sewage service, and related issues.

⁸¹ Field Museum. 2019. *Colombia, Peru: Bajo Putumayo-Yaguas-Cotuhé: Rapid Biological and Social Inventories Report 31*. Chicago: Field Museum.



transferred in ways that reach the broader public to build its awareness of the value of conserving the natural systems, or that help decision-makers take fully informed decisions. Individual, community and institutional stakeholders lack enough fora to exchange knowledge across boundaries.

(b) **Loss and underrepresentation of traditional knowledge in decision-making and weakened governance systems.** IPLC have a deep understanding of their environment, embedded in an array of natural resource management practices helping conserve biodiversity and ecosystem resilience for generations. Traditional knowledge of the riverine communities and traditional fishers is starting to be recognized as a valuable resource that allows for a more holistic understanding of the natural resources and their complex ecosystems.⁸² However, this knowledge remains poorly incorporated into the decision-making processes at different levels—particularly those that go beyond the specific jurisdictions over which communities have control. Traditional knowledge, forest management practices, and governance systems are also being eroded. COVID-19 has impacted elders and traditional leaders at disproportionate rates, and a wealth of knowledge has disappeared. Considering a significant portion of the Putumayo-Içá watershed is under the direct management of IPLC, ensuring proper dialogue, recognition, and consideration of traditional knowledge for decision management processes at all levels is critical.

(c) **Weak governance for joint regional resource management.** A multiplicity of legal frameworks and regulations determines the basin's activities. However, there are still shortcomings in procedures, policies, and intersectoral governance structures for IWRM, including poor multisector regional coordination, few harmonized frameworks for shared natural resource management, and weak enforcement mechanisms at the regional scale. Lack of multisectoral coordination for planning and management of water resources is a barrier to forecasting and managing impacts, affecting connectivity and health of water resources. There is some progress toward collaboration and coordination of management measures, particularly between neighboring PAs or fisher groups. But these are particular cases, and such measures need to be strengthened, systematized, and scaled up. Existing management structures are mostly focused on national and subnational scales and do not engage local communities, understand upstream-downstream dynamics, or incorporate gender and the territory's cultural and spiritual significance. The top-down approaches for decision-making tend to fail when there is a disconnect with the local needs and a lack of information and understanding of the context and particularities.⁸³ The lack of shared technical information hampers effective and coordinated enforcement efforts to prevent and control environmental threats. Finally, the lack of common procedures to collaborate across borders prevents full implementation of bilateral agreements and action plans.

(c) **Insufficient information and implementation models for the mitigation of pollution impacts on freshwater socio-ecosystems.** Joint solutions for tackling the transboundary impacts of water pollution are lacking. Early warning systems that can provide alerts about pollution events and inform response mechanisms do not exist, and much less in an integrated way among participant countries. Research has

⁸² Duque, S., and E. F. Prieto-Piraquive. 2006. "ii Presentación." In *El Conocimiento Ancestral Indígena Sobre los Peces de la Amazonia: los Lagos de Yahuarcaca*, by J. Dámaso Yoni, pp. 5–6. Documentos Opcionales No. 7. Leticia, Colombia: Universidad Nacional de Colombia, Sede Amazonia. www.imani.unal.edu.co/ocpcionales.htm.

⁸³ Field Museum. 2019. *Colombia, Peru: Bajo Putumayo-Yaguas-Cotuhé: Rapid Biological and Social Inventories Report 31*. Chicago: Field Museum. <https://press.uchicago.edu/ucp/books/book/distributed/C/bo69548344.html>.



been done to identify cost-efficient and environmentally friendly techniques for mercury remediation,⁸⁴ but no pilots have been done in the basin.

(d) **Insufficient opportunities, incentives, and capacities to develop sustainable and equitable economic activities and value chains.** Small- and medium-scale producers face limited understanding of demand and access to markets and how to improve efficiency. Similarly, cooperatives and community and producer associations lack capacity for business development, planning, operation, and minimum infrastructure needed to participate in sustainable production chains. There is inadequate transportation and handling of fish, as well as a lack of cooling infrastructure to preserve fish during transportation or storage. In addition, the need for improving the capacity of fishermen along the supply chain has been identified as key to reduce the loss of fish.⁸⁵ Capacity and experiences differ between countries, and there are few experiences of collaboration supporting legal regional value chains. Extension services are often weak, and there are still insufficient logistical, technical, and institutional capacities and data to ensure that best practices and standards are implemented.

Project objective and components

11. **The proposed Project will address the above barriers with specific interventions to strengthen governance and capacity toward informed decisions for IWRM.** The strengthened governance and capacity will be piloted via concrete actions that will generate direct on-the-ground benefits and lessons learned for future scaling up. The PDO, to be achieved after five years, will be to strengthen the enabling conditions for the participant countries to manage shared freshwater ecosystems in the Putumayo-Içá basin in the Amazon region. In the long term, such enabling conditions will allow countries to collaboratively manage the shared basin, mitigate or reduce the existing environmental threats, scale up successful pilots, and advance toward the basin's conservation. The Project will build on and strengthen the ongoing conservation initiatives of governments and civil society involved in the region. Actions will be driven by a bottom-up approach with an active participation of local communities and will reflect the multicultural, multistakeholder, and gender considerations in decision-making. The Project is structured along three interlinked components.

12. **Component 1: Governance and capacity for informed and participatory decision-making on IWRM.** The Project will strengthen conditions for shared management of the watershed's water resources via enhanced governance⁸⁶ structures (including an action plan specific for the Putumayo-Içá basin) and a KMS designed and implemented for improved timely and relevant accessible information that responds to the basin's cultural and socioeconomically diverse nature. The Project component will finance

⁸⁴ Paisio, C. E., P. S. González, M. A. Talano, and E. Agostini. 2012. Remediación Biológica de Mercurio: Recientes Avances. *Revista Latinoamericana de Biotecnología Ambiental y Algal* 3 (2): 119–46.

⁸⁵ Avdalov, N., et al. 2020. *Estimaciones de Pérdida de Pescado en la Amazonía (Brasil, Colombia y Perú)*. Rome: FAO (Food and Agriculture Organization).

⁸⁶ Environmental governance, broadly speaking, refers to the institutions, policies, rules, and practices that mediate how the international community, nation-states, corporations, and citizens interact with the environment at different levels—global, national, and local. Effective environmental governance means the participation and cooperation of all actors—governments, NGOs, the private sector, civil society and community groups, and ordinary citizens—in collaborative efforts toward sustainable development and environmental improvement. It involves citizens and CSOs in identifying, creating, and monitoring environmental and sustainable development policies and processes. Source: <https://sgp.undp.org/about-us-157/partnerships/ngo-environmental-governance-project.html>.



subproject grants, goods, consulting and non-consulting services, training, and operating costs and has been designed along two subcomponents as follows.

13. Subcomponent 1.1: Traditional and scientific knowledge for informed decision-making. The Project will enhance and improve access to relevant knowledge to support improved decision-making and inform collaborative actions for IWRM. This will be achieved through a KMS that will collect, systematize, generate, and share knowledge produced at different scales and will be made accessible to diverse audiences and stakeholders (including IPLC). Subcomponent 1.1 will include the following activities:

(a) Design of the KMS, based on a conceptual model that identifies key variables for IWRM,⁸⁷ and agreed-upon inclusive and harmonized guiding principles for information management, ownership, and access to the information produced by the Project. The design will also incorporate considerations that reflect respect of the IPs' authority and ownership of their knowledge and traditions. Overall, the design and implementation of the KMS will be highly participatory, will strengthen existing national-level systems, and will recognize the multicultural, multigenerational, multistakeholder, and multinational contexts.

(b) Collection, systematization, research, and analysis of relevant scientific knowledge to promote shared IWRM. The Project will support participatory and multidisciplinary regional studies—via technical assistance and subproject grants—based on a gap analysis that will consider the demands of information identified by the Project-financed thematic groups. In addition, the TDA methodology developed by the GEF IW:LEARN⁸⁸ will be consulted to identify additional missing information required for the analysis and as the basis for the design of a basin-level action plan financed via Subcomponent 1.2. Analyses that have already been prioritized include those that value watershed ecosystem services and report on the biological status of the river systems, as well as on the dynamics of water and related impacts from pollution (including pollution levels, pollution drivers, commercial flows, and environmental and socioeconomic impacts). In relation to mercury, data collection methodologies will be aligned with the guidelines as defined by the Minamata Convention.

(c) Research by and for indigenous communities. The Project will finance subproject grants for the direct benefit of IPs to conduct processes for which traditional ancestral knowledge will be recovered, shared, and validated for their own decision-making, in ways that follow their own needs, norms, methodologies, and objectives. The use and dissemination of this research will be determined with indigenous communities.

(d) Establishment of a regional data and knowledge repository system for Project-related information, and provision of support toward interoperability with other existing platforms. The data, information, and

⁸⁷ The model will specify the knowledge dimensions (general topics) that will need to be included in the system (for example, hydrology, connectivity, water quality, hydrobiological resources), the specific information within each dimension (for example, variables), and the data required for each variable. Through a participatory process with local communities and relevant local governance structures (for example, fishermen organizations, indigenous communities, public institutions), additional information needs will be identified. Variables affected by the COVID-19 pandemic will also be considered in the model.

⁸⁸ The TDA/SAP approach is a collaborative, step-wise, nonprescriptive process applied by GEF International Waters projects over the last 26 years. Its principles are adaptive management, the ecosystem approach, sustainable development, poverty reduction, gender mainstreaming, climate variability and climate change, collaboration, stakeholder participation, step-wise consensus building, transparency, accountability, intersectoral policy building, donor partnerships, and government commitment. <https://iwlearn.net/manuals/tda-sap-methodology/tdasap-methodology>.



knowledge compiled, generated, and exchanged by the Project will cross-feed with the relevant existing platforms and knowledge-sharing mechanisms (for example, national and subnational government information systems, GEF's IW:LEARN,⁸⁹ and countries' research centers, among others).⁹⁰ The Project will support existing selected national-level systems (including relevant platforms) to enhance integration of, and access to, data and information produced by the Project. Capacity-building activities will be delivered for relevant stakeholders to access and use knowledge, information, and data. The KMS will also contribute to and be strengthened by the Amazon basin integrated regional platform of information on water resources that has been identified in the SAP-Amazon.

(e) Knowledge exchange events. The Project will support knowledge exchange activities—across national borders within the watershed and within specific communities—to share experiences and lessons learned, strengthening capacity of Project beneficiaries. Exchange activities will also include teams and beneficiaries involved in other relevant projects and programs such as the ASL Program and its knowledge exchange platform, the GEF-financed International Waters projects⁹¹ on the IW:LEARN platform,⁹² the Colombian REDD Early Movers Program, and the existing GEF GOLD projects in Peru and Colombia, as well as the GEF ASGM-related project financed in Ecuador.⁹³ Participants in the IW:LEARN network activities will include members of the PMU plus other key government stakeholders. Contents and methodology for the knowledge exchange activities will be demand driven, responding to the needs of stakeholders and agencies involved in the Project. Results from the exchange activities will be systematized and disseminated to participants and broader audiences.

14. **Subcomponent 1.2: Governance for integrated water resource management.** This subcomponent will aim to strengthen multilevel, multistakeholder, and multisectoral governance around a common vision for the basin. Several interlinked activities include:

(a) Establishment and strengthening of new and existing thematic multisectoral and regional working groups and roundtables. The Project will assist indigenous, *campesino*, and *ribereño* communities, local institutions, environmental authorities, organizations, the public sector, research institutions and the private sector to organize and periodically meet to discuss, in working groups, common challenges and take informed decisions for the regional IWRM. These processes will also involve representatives from other sectors⁹⁴ that influence the basin's environmental status. The Project will not only create groups,

⁸⁹ Project staff and representatives from each country will participate in the International Waters Conferences that take place during Project implementation, as well as other regional or global IW:LEARN workshops.

⁹⁰ Existing platforms include: Earth Observation, ACTO's Regional Amazon Observatory, IW:LEARN, Amazon Waters Initiative, Citizen Science for the Amazon, RAIGS, Map of Life, and Map Biomass.

⁹¹ One example is the GEF project Implementing Integrated Measures for Minimizing Mercury Releases from Artisanal Gold Mining, financed with International Waters and Chemicals Focal Areas, with the objective of protecting human health and the environment in the Puyango River basin in Ecuador and the Tumbes River basin in Peru.

⁹² As per GEF guidance, allocating 1 percent of GEF IW financing to support IW:LEARN activities.

⁹³ Preliminary conversations with GOLD Program teams led to identification of areas of potential collaboration, including nonmercury technologies (which could be important for miners in Ecuador and Brazil), awareness-raising campaigns along the gold value chain, and knowledge management. In addition, in the GEF IEO evaluation of ASGM projects, a note was made of the opportunity for GOLD projects to use knowledge exchange to reach vulnerable downstream communities affected by contamination from mining, despite not mining themselves. The proposed Project provides such opportunities, close to the countries' GOLD projects.

⁹⁴ These sectors would include government health agencies, given not only the health impacts from mercury contamination and the COVID-19 pandemic, but also the agencies' potential collaboration in environmental health monitoring.



but support existing thematic multisectoral and regional groups⁹⁵ or roundtables for conducting land use planning, and coordinate actions on relevant themes such as fisheries management, water pollution, and PA management, among others. Promoting dialogue and agreements with multiple stakeholders will be conducive for an enabling environment to unlock further sector investment, as well as to open the opportunities to empower the voices of IPLC, women, and youth in decision-making processes at different scales. The Project will support and build on the ongoing regional process initiated since 2017 between Peru and Colombia to promote multisectoral dialogue toward establishing a shared vision around a cultural and biological corridor for the basin.⁹⁶ Strengthening the process and involving Brazil and Ecuador will expand the existing community of trust that is leading to the desired shared vision.

(b) Design, facilitated by the working groups, of a regional strategic action plan for the basin. The design of a regional Putumayo-Içá common vision and action plan based on the diagnostics and information collected under the Project. The action plan will involve a participatory process with local communities and public and private institutions from multiple development sectors and the private sector, ensuring ownership and commitment. Institutionalization of the action plan will also be supported by involving foreign affairs representatives. The process will be tailored according to the specific context and progress achieved so far for the basin but will incorporate elements from the methodology that guided the SAP–Amazon. As part of the action plan, the Project will support detailed assessments of the national legal, institutional, and policy frameworks and planning instruments for IWRM, allowing inclusion of proposals to harmonize policy frameworks and protocols enabling shared management. The Project will finance the application of the Natural Resource Governance Tool⁹⁷ to assess the proper governance structure to allow joint management of the basin. The Project will prepare financial sustainability analyses to estimate costs for the action plan's implementation and identify sources of financing.

(c) Technical assistance to mainstream IWRM considerations in territorial planning and sectoral practices, policies, and programs. The subcomponent will promote and support sectoral agreements for the sustainable use of water resources in the watershed. This will include providing recommendations and environmental guidelines for the adoption of best management practices in specific sector industries that are a source of contaminants. The Project will promote the development of guidelines and information to strengthen the territorial environmental planning to incorporate IWRM elements, as well as increase capacity to apply the normative frameworks to stop illegal and unsustainable practices in key areas.⁹⁸ This technical assistance will include support for regional aspects involved within indigenous life plans to be designed or implemented by indigenous authorities.

⁹⁵ These include, among others, the binational committees that work towards water resources management; the agreements between neighboring PAs in the basin, particularly the triangle of PAs between Colombia, Ecuador, and Peru; and the process initiated in 2018 between Colombia and Peru toward a Putumayo cultural corridor. The latter process resulted in a binational action plan involving indigenous communities, government agencies, NGOs, and research institutions to create a biological and cultural corridor for the Putumayo watershed, which will be scaled up by adding Ecuador and Brazil.

⁹⁶ The process has continued since 2017, with support from international donors and international NGOs, including the WWF and the Frankfurt Zoological Society (FZS), and with the leadership of the Field Museum of Chicago.

⁹⁷ Detoeuf, D., M. Wieland, P. Cowles, and D. Wilkie. 2020. *The Natural Resource Governance Tool—Version 2*. New York: WCS and Washington, DC: USAID.

⁹⁸ The effort to mainstream environmental considerations in other sectors will be supported via the Project, but in collaboration with other complementary co-financing interventions, given the complexity of the task; the need for an integrated approach that tracks and aims to influence the participant governments' macro-economic and sector decisions on transportation, mines, and energy; and agricultural activities.



(d) Activities to advance implementation of relevant agreements, including the Minamata and Stockholm Conventions and multinational agreements for harmonized conservation area management.

The Project will support the implementation of relevant multinational agreements, including the Minamata and Stockholm Conventions, the 2019 Pucallpa Action Plan, and the 2019 Leticia Pact, among others, including the binational/trinational agreements⁹⁹ that address collaboration in neighboring conservation areas.

15. **Component 2: Management interventions towards shared IWRM.** The component will enhance key management interventions toward shared IWRM via pilot activities that build on existing efforts from subnational and local public organizations and CSOs. Subproject Grants, goods, minor works, consulting and non-consulting services, training, and operating costs will be financed for two subcomponents.

16. **Subcomponent 2.1: Water and environmental pollution associated with mercury and other contaminants.** The subcomponent will design and support the implementation of pilot activities, through consultancies and subprojects, for the prevention, control, and reduction of water pollution from mercury and other contaminants released by legal and illegal activities occurring along the basin. Representatives from sectors generating water pollution from legal activities (mining, agriculture, energy, and infrastructure) will be engaged in the Project, through knowledge sharing and capacity building on best practices and innovative technologies, as well as in the working groups supported via Subcomponent 1.2. The activities will be designed with participation of key stakeholders, based on the better understanding of the nature, dynamics, and impacts of water contamination, and building on existing collaborative efforts. The activities will involve three dimensions: (a) pollution sources (from ASGM, oil activities, urban developments, and agricultural activities); (b) environmental contingencies such as oil or chemical spills; and (c) pollution sinks where pollutants are deposited. The Project will support the following activities:

Prevention and control of contamination

(a) Provision of technical assistance and subproject grants for capacity building to local organizations, industries and other stakeholders in key sectors (*inter alia* oil and gas,¹⁰⁰ agriculture,¹⁰¹ waste and wastewater management,¹⁰² and ASGM) on best practices to reduce contamination of the basin resulting from their activities, including support for the review and improvement of technical instruments that require companies to prevent, reduce and mitigate the effects of pollution; and to selected communities legally registered to carry out ASGM in the basin.

(b) Provision of technical assistance and subproject grants to strengthen joint efforts of subnational and national environmental authorities and CSO to prevent and control contamination, including

⁹⁹ This includes the agreements established between the La Paya National Natural Park, Colombia; the Gueppí Sekime National Park, Peru; and the Cuyabeno Wildlife Reserve, Ecuador, for the conservation of the region.

¹⁰⁰ These practices strengthen and promote adoption of new technologies and approaches developed by the oil and gas sector for a more efficient and cleaner use of water resources, and integrate them into comprehensive water management plans with a perspective geared to the landscape or watershed (that is, not just to the specific conditions of the oil operation site).

¹⁰¹ These methods involve working with companies manufacturing and selling chemicals, pesticides, and veterinary products in the upper basin to promote behavioral changes for more rational use of these products, based on a more comprehensive understanding of their impacts on freshwater resources.

¹⁰² This includes campaigns reaching smaller peri-urban centers and local communities to promote appropriate management of waste, and to emphasize risks associated with disposal of chemicals, batteries, medicines, and plastics.



harmonizing information and data, supporting adequate data security and custody chain, and improving tools for detecting illegal mercury.

(c) Carrying out of institutional capacity building activities, via technical assistance and subproject grants, on environmental issues, specifically on the use of contaminants and their impacts on communities and ecosystems, to environmental authorities and prosecutorial agencies officially mandated to prevent the use of contaminants, including training to improve the estimation of economic and social impacts from mining.

(d) Implementation of pilot early warning systems for environmental contingencies and changes in water quality to strengthen preparedness and response systems. Systems will be designed to quickly identify contingencies or events such as oil or chemical spills, and to trigger communication with local communities, regional emergency management bodies, and environmental authorities. These in turn are expected to initiate contingency plans and prioritize attention to local communities located downstream. The systems will also allow local communities to identify changes in water quality using low-cost, low-maintenance, and reliable basic detection equipment and participatory monitoring protocols.¹⁰³

(e) Carrying out of communications and awareness raising campaigns¹⁰⁴ for Amazon communities, and broader audiences to respond to and prevent contamination, including mercury contamination and mercury-free gold consumption.

Reduction/mitigation activities

(f) Subproject grants to carry out small-scale mitigation, recovery, remediation, and restoration activities for water contamination, supporting, in particular, vulnerable communities impacted by contamination, providing hands-on practical field training of related technologies. The subprojects, selected over a competitive process allowing proponents to submit proposals. Specific criteria for subproject selection will be incorporated into the POM, and this will include technical¹⁰⁵ and financial feasibility, low or moderate environmental risks and appropriate mitigation measures, involvement of IPLC with gender and cultural sensitivity, inclusion of capacity-building components for IPLC and relevant authorities, adequacy of the monitoring plan with a specific baseline and targets, and scalability to other locations in the watershed. The selected subprojects will build on existing efforts, experience, and knowledge of multiple institutions or consortia, several of which have created the Amazon Alliance for the Reduction of Impacts from Gold Mining.¹⁰⁶

(g) Technical assistance will be provided to identify innovative and technological solutions for mercury mitigation, recovery, remediation and ecosystem restoration and supervise subproject grants. A menu of low-cost, environmentally sound alternatives based on recent research on novel materials and technologies for mercury remediation will be compiled in the POM to facilitate selection of the subprojects.

¹⁰³ There are several experiences associated with early warning systems in Ecuador and Bolivia (<http://institutodegeografia.org/nebe/>). The WCS Citizen Science Program, which includes water quality alerts for local communities, will be implemented in the Napo River basin in Ecuador.

¹⁰⁴ Lessons learned show the importance of awareness of the negative effects of mercury in ensuring that positive outcomes remain beyond the length of the Project (GEF IEO, December 2020). In collaboration with GOLD projects and the USAID, the Project will also work with the private sector and the whole gold value chain to raise awareness.

¹⁰⁵ For example, remediation of mercury by cyanidation will not be promoted, nor will technologies with exotic invasive species.

¹⁰⁶ The Alliance currently integrates public groups and CSOs (WWF, WCS, Fundación para la Conservación y el Desarrollo Sostenible, FZS, Gaia Amazonas, Fundação Oswaldo Cruz, Centro de Innovación Científica Amazónica, and the Colombian National Natural Parks Unit) and aims to involve other organizations to conduct joint efforts.

**17. Subcomponent 2.2: Sustainable management and value chains for selected natural resources.**

This subcomponent will promote pilot sustainable management practices in prioritized sites for selected hydrobiological resources via subprojects and technical assistance, through the following activities:

(a) Design, strengthening and implementation of pilot sustainable management plans and value chains for selected hydrobiological resources (NTFPs, vulnerable/threatened and migratory fish and freshwater turtle species), via technical assistance and subproject grants. This will include inter alia the establishment of management agreements, development of business plans, feasibility analysis, commercialization and marketing strategies, provision of minor infrastructure or equipment for value-added processing transformation.

18. Details will be determined in the POM, but the selection of subprojects and the species involved will be based on the following criteria: (a) regional-level scope involving at least two of the participant countries; (b) contribution on stress reduction and management of pressures on hydrobiological resources; (c) commercialization opportunities (supply and demand); (d) direct benefits to local populations with emphasis on women and youth (empowerment, income, and employment); and (e) alignment with local processes, including indigenous life plans, that incorporate traditions and ancestral knowledge. Experienced institutions will provide technical assistance in the organizational, administrative, and planning processes for the different chains. The Project will also aim to facilitate regional business rounds between producer associations and private entrepreneurs to create market conditions with a differential price that reflects their origin and sustainable practices of the selected products.

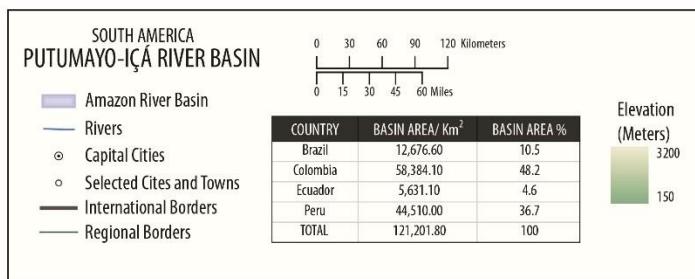
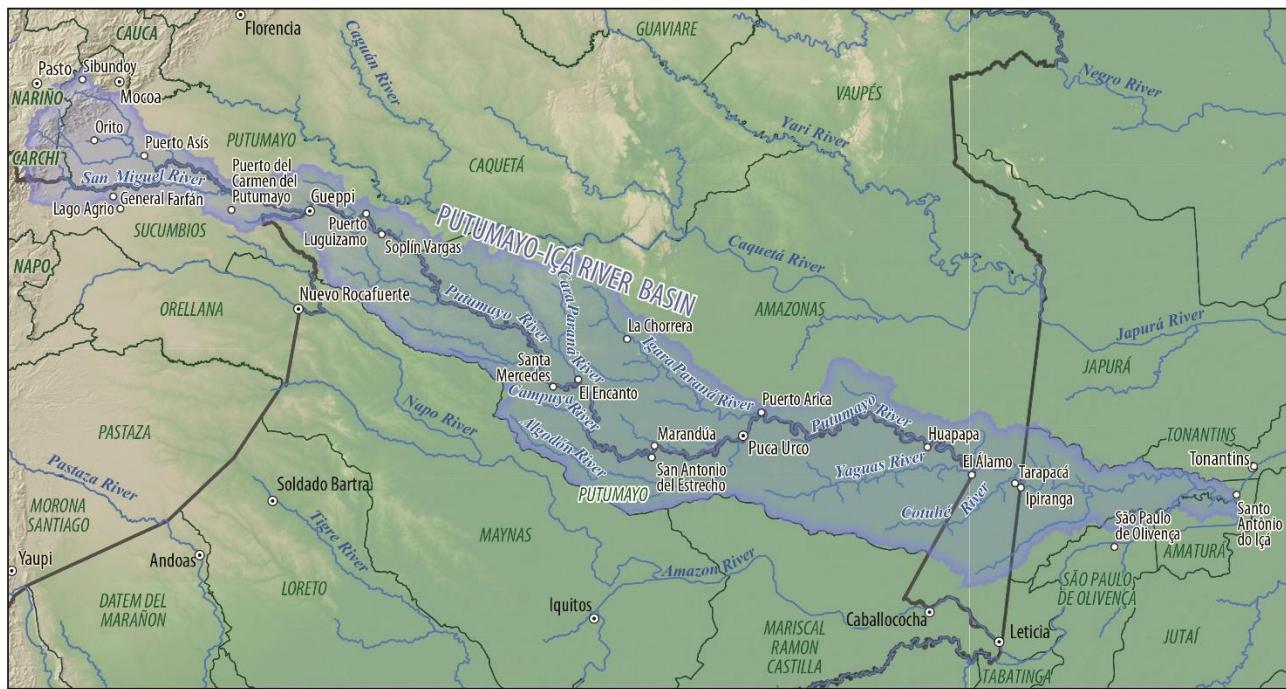
19. The process toward the establishment of a management plan involves the participatory social and environmental characterization and zoning of the area of intervention, including—for the case of fisheries—the identification of the fishing areas, status of the fish population, best practices for fishing, storage and transport stages, and identification of strategies that support the establishment of fishing agreements, incorporating traditional knowledge. Stress reduction for overfishing and other threats will be achieved via fisheries management plans (setting up, inter alia, fishing quotas, bans, and best practices) for sites along the river basin, favoring connectivity. Results from these activities will be measured via several indicators including the GEF core indicator of *Globally over-exploited fisheries moved to more sustainable levels*, with baseline and targets to be confirmed in year 1 after analysis to be conducted. Formalization and renewal of fishing associations will be supported when needed, as well as the support to design monitoring mechanisms to ensure compliance with the management plans. The species pirarucu (*Arapaima spp.*), silver arowana (*Osteoglossum bicirrhosum*), and some migratory fish belonging to the genera *Pseudoplatystoma*, *Brachyplatystoma*, *Prochilodus*, and *Brycon*, among others, have been preliminarily identified. The Project will also support participatory conservation and sustainable use strategies for turtles (focusing on *Podocnemis unifilis*, *Podocnemis expansa*, and *Chelonoidis denticulata*). Finally, preliminary prioritized NTFPs include camu camu (*Myrciaria dubia*), copaiba (*Copaifera officinalis*), aguaje (*Mauritia flexuosa*), andiroba (*Carapa guianensis*), açaí (*Euterpe oleracea*), honey, and resin producer flora, among others, complementing efforts involving water resources.

(b) Small-scale alternative livelihoods. Technical assistance and subproject grants to local communities to implement small scale alternative livelihood activities to improve food security (local agricultural plots or chagras, small fish farms with native species, and other livelihood alternative activities) to help compensate for the negative effects of COVID-19 pandemic on communities' livelihoods.



(c) Capacity-building activities for key stakeholders including, *inter alia*, partner public agencies and communities, in natural resources management via subproject grants and technical assistance, to improve extension services and participatory monitoring. This will include dialogue, exchange of information, and practices through which the Project acknowledges the traditional knowledge in the region as essential for the basin's cultural and biological diversity.

20. **Component 3: Project management, communications, monitoring, and evaluation.**
21. Goods, consulting services, non-consulting services, and operating costs for the following.
22. **Subcomponent 3.1: Project management, coordination, and governance committees.** This component will provide support for the PMU, including to carry out Project coordination, technical management, financial management, and procurement and operationalization of the RSC, TC and CET.
23. **Subcomponent 3.2: Communications strategy.** A communications strategy will be designed and implemented to ensure that the knowledge generated and compiled reaches target audiences, through appropriate languages and formats, taking into account ethnic and gender considerations, and with the purpose of serving as inputs for planning, management, and decision-making. The communications strategy will consist of three lines of action: (a) Internal communication, within the PMU, CET, and the Project partners in each of the countries, will keep participants updated on the progress of the different components. (b) Community communication, directed at the Project beneficiaries, will disseminate Project results and create communication channels managed by and for the local communities, to socialize the Project's progress. The process will be participatory, inclusive, and sensitive to gender and cultural issues and will seek to build capacity for beneficiaries in communication techniques and tools to better access Project-related information. (c) External communication, directed to a broad public related directly or indirectly to the Project, such as IPLC and other users of the watershed, the private sector, government institutions, and donors, among others, will disseminate information to raise awareness on key relevant issues. The website designed during Project preparation will continue and be improved as a key tool to gather and share key information from the Project and its partners.
24. **Subcomponent 3.3: Project monitoring and evaluation, and environmental and social standards compliance.** The PMU, in collaboration with executing partners, will put in place a system to track Project results for all Project components as a cross-cutting activity, and to incorporate lessons promoting adaptive management. This subcomponent will also support activities toward compliance of environmental and social standards, including the establishment of a culturally appropriate GRM. The subcomponent will also include Project audits, evaluations, and supervision missions.

Map – Area of intervention¹⁰⁷

This map was produced by the Cartography Unit of the World Bank Group. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

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¹⁰⁷ Map produced by the WBG Cartography Unit. The latest clearance for the map was provided on April 26, 2022.

**ANNEX 3: Economic and Financial Analysis****Latin America****Integrated watershed management of the Putumayo-Içá river basin****Overview**

1. The EFA presents an incremental analysis of the economic (welfare) benefits generated by the Project, including key benefit streams related to environmental goods and services and carbon sequestration from the sustainable natural resource management. It also presents the benefits of controlling and preventing water pollution from mercury and other contaminants along the Putumayo-Içá basin, and of strengthening livelihood activities of local communities. Conservation efforts toward healthy watersheds will protect a myriad of ecosystem services that produce life-sustaining benefits such as biodiversity conservation, water quality, carbon sequestration, and soil improvement, among others.^{108,109} Capacity-building efforts for all basin stakeholders on IWRM will contribute to maintain and enhance watershed functions for future generations.

Additionality of the Project

2. Without GEF financing: (a) there would be no strengthened governance structures working in coordination along the whole basin, or an analysis that assesses the feasibility of a regional basin governance structure; (b) information and knowledge about the region would continue siloed and thus not available to support basin and transboundary scale decision-making; (c) duplication would remain in terms of actions and projects developed by private and public agencies without an intentional cohesive dialogue along common themes; (d) emphasis would remain on understanding and conserving land and forest ecosystems, with diminished attention given to the basin's water resources at regional scale; and (e) water resources planning and management would remain mostly sector by sector at national levels, without taking into account upstream and downstream dynamics.

3. GEF funding will add incremental value to existing actions in each jurisdiction and bring it up to the basin-level scale. Some examples include the following: (a) The Project will scale up the efforts so far achieved between Colombia and Peru toward an integrated plan for a cultural and biological corridor for the basin, by integrating key stakeholders from Ecuador and Brazil and bringing the IWRM perspective. (b) The Project will also complement baseline projects such as the Special Project for the Integral Development of the Putumayo River Basin operating between Colombia and Peru, enhancing its accomplishments and involving the other two neighboring countries. (c) GEF funding will also support monitoring, control, and vigilance efforts in the area of neighboring PAs between Colombia, Peru, and Ecuador, adding value by harmonizing protocols for joint action. (d) The Project will scale up existing experiences in natural resources value chains and fishing agreements (like those supported in the Peruvian Loreto region by NGO *Instituto del Bien Común*) that remain national or, in a few cases, binational. (e) The Project will expand the network of community leaders (citizen scientists) in charge of

¹⁰⁸ Montagnini, F. (2005). *Environmental Services of Agroforestry*. Binghamton, NY: Food Products Press.

¹⁰⁹ Jose, S. (2009). "Agroforestry for Ecosystem Services and Environmental Benefits: An Overview." *Agroforestry Systems* 76: 1–10. DOI: <https://doi.org/10.1007/s10457-009-9229-7>.



monitoring the status of the basin's biodiversity and the sustainable use of its natural resources. (f) GEF funding will provide the means to scale up the existing few national-level endogenous research processes that are strategic for IP cultural survival and, in turn, their sustainable practices. Learning that otherwise occurs at the national level will be accelerated and enriched via the Project's knowledge exchange activities among the four countries and with other projects, making it accessible to all stakeholders and promoting decision-making.

Ecosystem Services	Lower Bound				Ecosystem Services (tropical areas)	Upper Bound		
	Siikamäki et al. (2015)							
	Peru	Brazil	Colombia	Ecuador				
Recreation	\$31.50	\$14.00	\$14.50	13.8				
Habitat	\$0.50	\$1.70	\$1.40	0.7				
NTFPs	\$78.40	\$6.50	\$16.60	23.4				
Water	\$17.20	\$96.10	\$55.90	32.2				
Total	\$127.60	\$118.30	\$88.40	\$70.10				
	Source: Own elaboration from Siikamäki et al. (2015, p.43) and Carrasco et al. (2014, p. 167).							

Source: Own elaboration from Siikamäki et al. (2015, p.43) and Carrasco et al. (2014, p. 167).

4. GEF funding is a strategic opportunity to address the threats in time—before they reach higher levels requiring larger investments to repair environmental damage and cause further social/health negative impacts. The current opportunity provides the political and institutional commitment to strengthen enabling conditions for collaborative management beyond national scale approaches, in a context where building trust and collective action has been initiated and is capable of being scaled up.

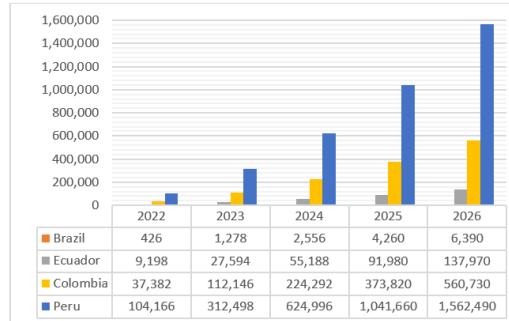
Methodology, Main Assumption, and Cost Factors

5. To conduct the EFA, assumptions were made considering the possible benefits in the Project sites. The Project is expected to provide three economic benefit streams, as follows.

Economic Benefits Generated by the Project

6. **Watershed benefit stream by ecosystem services.** Healthy watersheds provide many ecosystem services necessary for social and economic well-being, including water filtration and storage, cleaning of air, nutrient cycling, soil formation, recreation, food, and timber.¹¹⁰ To estimate the benefits associated with this stream, the total number of hectares of PA benefiting from the Project is considered. For the calculation, it is assumed that the benefits in total PA within the basin are homogeneously divided and based on the triangular number distribution for a five-year Project;¹¹¹ that is, the Project is divided by 15 to obtain the factor that is each year added to the growth of the previous year (figure 1).¹¹²

Figure 1. Distribution of the increase of protected areas under sustainable management (in ha)



Source: Own elaboration by the World Bank Task Team.

7. Monetary values associated with ecosystem services of forest areas are taken from recognized studies. Two meta-analyses are considered—an upper bound analysis and a lower bound one for forest areas. The upper bound provides a higher-end global estimate of US\$1,312 per hectare, based on 30 studies of ecosystem service values in tropical forests from The Economics of Ecosystems and Biodiversity

¹¹⁰ EPA (United States Environmental Protection Agency). (2012). *The Economic Benefits of Protecting Healthy Watersheds*. EPA 841-N-12-004. Washington, DC: EPA.

¹¹¹ The triangular number is $n(n+1)/2$, and for five Project years, $5 \times 6 / 2$.

¹¹² The formula for year n is therefore: $n \times n(n+1) / 2$.



database,¹¹³ while controlling for economic, environmental, and methodological variables. The lower bound provides global estimates based on 123 robust analytical studies and Project estimates per country, including Colombia, Peru, Ecuador, and Brazil.¹¹⁴ Table 1 shows the lower and upper bounds.

8. **Carbon Storage Benefit Stream.** Improved management of watersheds leads to a reduction in carbon emissions, contributing to carbon storage. The forests of the Putumayo-Içá watershed act as carbon reserves and sink. In addition, peatlands can be found in the lower parts of the basin. The social cost of carbon (SCC) was used to measure the economic benefits of GHG emissions reductions.¹¹⁵ In this Project, SCC represents the social benefits of emissions reduction attained by avoided deforestation and unsustainable practices in prioritized areas.

9. Forest lands offer carbon services as natural scrubber systems that capture CO₂ from sources of GHG emissions, such as the power, industrial, and transportation sectors.¹¹⁶ Estimates for benefits from carbon capture were taken from the value per hectare provided by the Amazon Fund's conservative parameter of 100 tCO₂-eq/ha for above-ground biomass (data literature ranged up to 320 tCO₂-eq/ha).¹¹⁷ Monetary values were taken from the WB (2017)¹¹⁸, which estimates the carbon social price. The analysis considers US\$60/tCO₂-eq as an upper bound and US\$40/tCO₂-eq as a lower bound.¹¹⁹ The incremental carbon benefits were modeled over a 20-year period, although it is expected that the impact would last longer. Shadow prices were considered (US\$60/tCO₂-eq and US\$40/tCO₂-eq) with the conservative parameter of 100 tCO₂-eq/ha. The benefit for carbon sequestration is calculated as follows:

$$EBCS = \sum_i^n PtCO2_i * tCO2_i$$

Where:

EBCS: Economic benefit for carbon sequestration

PtCO2: Price per tCO₂-eq sequestered in year *i*

C02: tCO₂-eq sequestered in year *i*

10. **Avoided High Mercury Level Concentration Benefit Stream.** Academic literature shows that high concentration of mercury produces neurodevelopmental deficits and negatively impacts cognitive ability in children in Peru and the United States.^{120, 121} The implementation of pilot activities is expected to reduce these impacts.

¹¹³ Carrasco, L. R., T. P. L. Nghiem, T. Sunderland, and L. P. Koh. (2014). "Economic Valuation of Ecosystem Services Fails to Capture Biodiversity Value of Tropical Forests." *Biological Conservation* 178 (2014): 163–70.

¹¹⁴ Siikamäki, J., F. Santiago-Ávila, and P. Vail. 2015. *Global Assessment of Nonwood Forest Ecosystem Services*. PROFOR.

¹¹⁵ Newbold, S., et al. 2010. *The "Social Cost of Carbon" Made Simple*. Working Paper No. 10-07, August, 2010. Washington, DC: EPA.

¹¹⁶ FCWG (Forest Climate Working Group). 2015. *Forest Carbon Solutions for Mitigating Climate Change: A Toolkit for State Governments*. FCWG.

¹¹⁷ Sandker, M., et al. 2015. *Technical Considerations for Forest Reference Emission Level and/or Forest Reference Level Construction for REDD+ Under the UNFCC*. Rome: FAO.

¹¹⁸ World Bank. 2017. *Guidance Notes on Shadow Price of Carbon in Economic Analysis*. Washington, DC: World Bank.

¹¹⁹ Ibid.

¹²⁰ Reuben, A. et al. 2020. "Elevated Hair Mercury Levels Are Associated With Neurodevelopmental Deficits in Children Living Near Artisanal and Small-Scale Gold Mining in Peru." *GeoHealth* 4, e2019GH000222. <https://doi.org/10.1029/2019GH000222>.

¹²¹ Zagorsky, J. L. 2007. "Do You Have to Be Smart to Be Rich? The Impact of IQ on Wealth, Income, and Financial Distress." *Intelligence* 35, no. 5: 489-501. <https://doi.org/10.1016/j.intell.2007.02.003>.



11. A study by Reuben et al. (2020)¹²² found that children living near ASGM sites in Peru with 1 unit higher natural-log hair mercury levels scored 4.68 IQ points lower in cognitive ability than their peers. Children living in rural settings may be uniquely vulnerable to harm from even low levels of mercury exposure, owing to the presence of numerous interrelated development stressors. In addition, Zagorsky et al. (2007)¹²³ studied two individuals in the United States with similar characteristics except for a 10-point IQ difference. They found that this difference in IQ level represented a difference of between 9.7 percent and 17 percent in median income.

12. In the basin, each country presents different amounts of mercury-level concentration and income level. Some relevant studies of mercury levels (measured by samples of hair) in the Putumayo-Içá basin show higher levels of mercury than the limit estimated before which detrimental impacts on neurodevelopment occur (2.0 µg/g hair mercury). Mercury levels found were as follows: 10.6 µg/g in Tarapaca village and Putumayo River in Colombia;¹²⁴ 6 µg/g in the Brazilian Amazon;¹²⁵ 8.71 µg/g in Napo River Valley, Ecuador;¹²⁶ and 2.43 µg/g in Madre de Dios, Peru.¹²⁷

13. Information on income levels came from national household surveys focused on municipalities in the basin. The household yearly income per capita (converted to US dollars¹²⁸) was US\$1,124 for Mocoa District, Putumayo Department, Colombia;¹²⁹ US\$1,790 for Amazonas Unidade da Federação, Brazil;¹³⁰ US\$1,209 for Sucumbios Province, Ecuador;¹³¹ and US\$2,470 for Putumayo Province, Peru.¹³²

¹²² Reuben, A., H. Frischtak, A. Berky, E. J. Ortiz, A. M. Morales, H. Hsu-Kim, et al. 2020. "Elevated Hair Mercury Levels Are Associated With Neurodevelopmental Deficits in Children Living Near Artisanal and Small-Scale Gold Mining in Peru." *GeoHealth* 4, e2019GH000222. <https://doi.org/10.1029/2019GH000222>.

¹²³ Zagorsky, J. L. 2007. "Do You Have to Be Smart to Be Rich? The Impact of IQ on Wealth, Income, and Financial Distress." *Intelligence* 35, no. 5: 489-501. <https://doi.org/10.1016/j.intell.2007.02.003>.

¹²⁴ Alcala-Orozco, et al. 2019. Mercury exposure assessment in indigenous communities from Tarapaca village, Cotuhe and Putumayo Rivers, Colombian Amazon. *Environmental Science and Pollution Research*. 26: 36458-36467.

¹²⁵ Santos Serrão de Castro, N., and M. De Oliveira Lima. 2018. "Hair as a Biomarker of Long-Term Mercury Exposure in Brazilian Amazon: A Systematic Review." *International Journal of Environmental Research and Public Health* 15, No. 3: 500. <https://doi.org/10.3390/ijerph15030500>.

¹²⁶ Webb, J., N. Mainville, D. Mergler, et al. 2004. "Mercury in Fish-Eating Communities of the Andean Amazon, Napo River Valley, Ecuador." *EcoHealth* 1: SU59–SU71. <https://doi.org/10.1007/s10393-004-0063-0>.

¹²⁷ The annual per capita consumption of fish from hydrobiological resources in the department of Loreto is 44.02 kg/inhab, whereas in the department of Madre de Dios it is 13.12 kg/inhab (ENAHO, 2019). <https://ogeiee.produce.gob.pe/index.php/en/shortcode/oee-documentos-publicaciones/publicaciones-anuales/item/949-anuario-estadistico-pesquero-y-acuicola-2019>.

¹²⁸ The exchange rate of 1 USD were 3,523.12 Colombian pesos, 5.71 Real brasiliense, 3.30 Peruvian soles.

¹²⁹ DANE: Dirección de Síntesis y Cuentas Nacionales. COLOMBIA: Encuesta Nacional de Presupuesto de los Hogares—ENPH July2016–July 2017. Retrieved from http://microdatos.dane.gov.co/index.php/catalog/566/related_materials.

¹³⁰ IBGE, Diretoria de Pesquisas, Coordenação de Trabalho e Rendimento, Pesquisa Nacional por Amostra de Domicílios Contínua—PNAD Contínua 2020. https://ftp.ibge.gov.br/Trabalho_e_Rendimento/Pesquisa_Nacional_por_Amostra_de_Domicilios_continua/Renda_domiciliar_per_capita/Renda_domiciliar_per_capita_2020.pdf.

¹³¹ Instituto Nacional de Estadísticas y Censos (INEC). National Survey of Income and Expenditure of Urban and Rural Households. <https://www.ecuadorencifras.gob.ec//encuesta-nacional-de-ingresos-y-gastos-de-los-hogares-urbanos-y-rurales-bases-de-datos/>.

¹³² INEI: Peruvian Institute of Statistics. Censo de Población y Vivienda 2017, ENAHO 2019. PNUD/Unidad del Informe sobre Desarrollo Humano. Perú.



14. For this benefit stream, the percentage that represents the additional income due to the reduction of mercury level in local communities (measured with hair samples) was considered. First, the loss of IQ per inhabitant was calculated by multiplying the average level of mercury ($\mu\text{g}/\text{g}$) and the decrease of 4.68 IQ points per 1 log mercury ($\mu\text{g}/\text{g}$), based on the study of Reuben et al. (2020). Second, the study of Zagorsky et al. (2007) indicates that an IQ increase of 10 points boosts incomes by 7.3 percent. Third, the additional percentage of income was calculated based on the equivalence of the first and second steps (table 2). The Project will benefit 6,300 direct beneficiaries, of which an estimated 5,000 are being affected by mercury. Assuming an equitable distribution of beneficiaries from the four countries, the benefit in additional income is calculated by multiplying the number of beneficiaries, mean income, and percentage of additional income by the avoided high mercury level concentration along the 20-year Project.

Distribution of Costs and Benefits Over Time

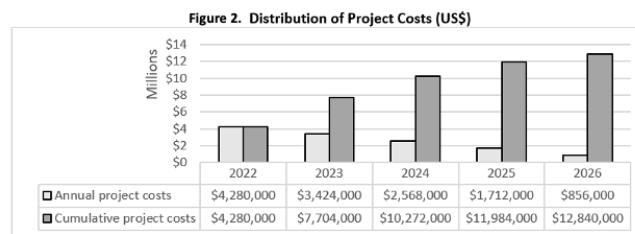
15. To assess the economic feasibility, a 20-year period was assumed, as well as no further incremental changes in Project-generated benefits beyond the 20-year Project. Although the Project costs are only assumed to emerge for the five years of Project implementation, the benefits and operating costs were considered beyond this period. Project costs consider the US\$12.84 million from the GEF. Also, an assumption of 2 percent, as an additional operating cost, was added along with the projection of a 20-year Project evaluation. A sensitivity analysis was applied for the main simulation parameters, notably the discount rate and Project horizon, to assess Project robustness. For the discount rate, alternative rates of 6 and 9 percent were applied. In addition to varying discount rates, simulation results were tested against changing the Project horizon (15 and 20 years). All sensitivity analyses were run for all discount rate scenarios. The distribution of Project costs follows a reverse pattern, based on the triangular number for five Project years;¹³³ that is, the Project is divided by 15 to obtain the factor that is each year added to growth of the previous year.¹³⁴ A higher investment cost in the early years and a fading out of Project investments in later Project years was considered (figure 2).

Results

16. Table 3 shows baseline results and sensitivity analysis for 20- and 15-year baseline scenarios. All the scenarios are positive, suggesting that the Project creates more benefits than costs. Increasing the discount rate from 6 to 9 percent, reducing the carbon social price by 33 percent (from US\$60/tCO₂-eq to

Amazon Countries	A	B	A x B = C	D	E	(-C x E)/D = F
	Mean T-Hg level ($\mu\text{g}/\text{g}$)	Reuben et al. (2020)	Impact on IQ per country (IQ points)	Zagorsky, J. (2007)	Increase on incomes (%)	Additional Income per country (%)
		Increase of 1 log mercury on IQ (IQ points)		IQ points		
Colombia	10.60	-4.68	-49.61	10	7.30%	36.21%
Brazil	6.00	-4.68	-28.08	10	7.30%	20.50%
Ecuador	8.71	-4.68	-40.76	10	7.30%	29.76%
Peru	7.29	-4.68	-34.12	10	7.30%	24.91%

Source: Own elaboration from Alcalá-Orozco et al. (2019, p. 36458), Reuben et al. (2020, p.1), Santos Serrão de Castro, N. & De Oliveira Lima, M. (2018, p.1), Webb et al. (2004, p. 59), Zagorsky, J. (2007, p. 496).



Source: Own elaboration by the World Bank Task Team.

¹³³ The triangular number is $n(n+1)/2$, and for five years, $5 \times 6 / 2$.

¹³⁴ The formula for years n is therefore $n \times n(n+1) / 2$.



US\$40/tCO₂-eq), adopting the carbon market price (US\$18/tCO₂-eq),¹³⁵ and using more conservative estimates for the value of ecosystem services provided do not substantially affect the estimates.

Conclusions

17. The incremental economic analysis for the Project shows substantial benefits. Overall, the NPV is projected to reach US\$2.48 million (lower bound) and US\$14.17 million (upper bound) in the baseline scenario (20 years, carbon market price of US\$18/tCO₂-e, and 6 and 9 percent discount rates). The investments evaluated for the EFA will generate a benefit-cost ratio between 1.20 and 2.02, and an IRR between 12.31 percent and 20.20 percent. The EFA thus shows that if Project implementation is effective and efficient, Project-supported investments will bring substantial financial and economic benefits to IPLC in the Project area and to the population of Amazon countries in general.

18. The results of the quantitative simulations are robust in terms of sensitivity analyses, assuming a 15-year Project, that the NPV varies between US\$464 thousand and US\$11.95 million, a benefit-cost ratio between 1.04 and 1.89, and an IRR between 9.81 percent and 22.62 percent (carbon price between US\$18/tCO₂-e and US\$ 60/tCO₂-e, and 6 and 9 percent discount rates). Estimates correspond to a lower bound as they represent the benefit streams derived from Components 1 and 2, for a conservative approach. The economic value of the Project is likely to be higher because the calculations did not include other noneconomic global and local benefits such as increased food security and improved fisheries value chains, among others. It is expected that Component 3 will have additional benefits, but they are difficult to measure due to the socio-environmental qualitative approach. In summary, this Project will benefit the sustainable development of the Amazon countries, providing long-term benefits to local communities and global public goods.

Table 3. NPVs (US\$) and BC Ratio under Different Scenarios

Carbon Price (US\$/tCO ₂ -eq)	Discount Rate	Upper Bound		Lower Bound	
		NPV	BC-Ratio	NPV	BC-Ratio
US\$ 60	6%	\$17,239,986	2.24	\$9,064,443	1.65
	9%	\$11,224,037	1.89	\$4,945,672	1.39
US\$ 40	6%	\$15,780,106	2.14	\$7,593,834	1.55
	9%	\$10,059,592	1.80	\$3,772,987	1.30
US\$18	6%	\$14,174,238	2.02	\$5,976,164	1.43
	9%	\$8,778,702	1.70	\$2,483,034	1.20

Robustness Check 1, project implementation of 15 years and project costs included.

Carbon Price (US\$/tCO ₂ -eq)	Discount Rate	Upper Bound		Lower Bound	
		NPV	BC-Ratio	NPV	BC-Ratio
US\$ 60	6%	\$11,955,196	1.89	\$5,263,085	1.39
	9%	\$8,013,313	1.65	\$2,636,193	1.21
US\$ 40	6%	\$10,721,760	1.80	\$4,020,868	1.30
	9%	\$6,986,442	1.57	\$1,602,266	1.13
US\$18	6%	\$9,364,982	1.70	\$2,654,428	1.20
	9%	\$5,856,884	1.47	\$464,945	1.04

¹³⁵ S&P Global Market Intelligence about California carbon allowance, reported in December 2020.