



Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 31-Mar-2020 | Report No: PIDC28584

**BASIC INFORMATION****A. Basic Project Data**

Country Latin America	Project ID P172893	Parent Project ID (if any)	Project Name Integrated watershed management of the Putumayo-Içá river basin (P172893)
Region LATIN AMERICA AND CARIBBEAN	Estimated Appraisal Date Sep 22, 2020	Estimated Board Date Mar 15, 2021	Practice Area (Lead) Environment, Natural Resources & the Blue Economy
Financing Instrument Investment Project Financing	Borrower(s) Ministry of Environment, Ministry of Environment and Sustainable Development, Secretaria de Estado de Meio Ambiente, Ministry of Environment	Implementing Agency Wildlife Conservation Society	GEF Focal Area Multi-focal area

Proposed Development Objective(s)

Improving capacity of Brazil, Colombia, Ecuador and Peru to manage freshwater ecosystems and aquatic resources of the Putumayo- Içá basin in the Amazon region.

PROJECT FINANCING DATA (US\$, Millions)**SUMMARY**

Total Project Cost	14.00
Total Financing	14.00
of which IBRD/IDA	0.00
Financing Gap	0.00

DETAILS**Non-World Bank Group Financing**

Trust Funds	14.00
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Global Environment Facility (GEF)

14.00

Environmental and Social Risk Classification

Moderate

Concept Review Decision

Other Decision (as needed)

B. Introduction and Context

Country Context

The Amazon is the world's largest rainforest and river system¹ The Amazon as a general term consists of the Amazon Basin and the Amazon Biome, with the former, the hydrographical basin, occupying a major part of the latter. The distribution of the rainforest defines the Amazon Biome, thus does not include important headwaters of the Amazon hydrographical basin. The Amazon Basin contains most of the rainforest comprising the Amazon Biome, the latter including parts of the Eastern Orinoco Basin and the coastal Guianas. With the Tocantins Basin included, the Amazon Basin spans approximately 6.8 million km², of which approximately 15%, or about 1 million km² are wetlands². The Amazon biome covers about 38% of South America, and ranges across eight countries (Brazil 59%, Peru 11%, Colombia 8%, Venezuela 7%, Bolivia 6%, Guyana 4%, Suriname 2% and Ecuador 2%), as well as the overseas territory of French Guiana (1%)³. The Amazon Basin hosts various ecosystems, and these include various combinations of lowland and mountainous forests, savannas and wetlands that are traversed by numerous rivers, including the world's largest, the Amazon. The region is noted for its exceptional biodiversity richness (much of which is still unknown to science). The region includes 210 million ha of protected areas and around 3,000 indigenous territories covering over 200 million ha and hosts 40% of the world's remaining rainforest, including the largest wetland forests. Stretching at least 6,800 km from the high Andes to the Atlantic, the Amazon River is either the second or the first longest tributary in the world. The Amazon River discharges 15-16% of the freshwater entering the oceans annually, with an average discharge of approximately 219,000 cubic meters every second⁴.

Conserving the Amazon biome is of critical global, regional and local importance. Freshwater contributes significantly to the vast biodiversity and ecological equilibrium of the Amazon Basin. Wetlands and wildlife are highly influenced by seasonal fluctuations in river levels, and in turn human populations that depend on freshwater fish and other aquatic resources. Annex 3 includes more information on Integrated River Basin Management to Sustain Amazon Fisheries. The Amazon Basin is home to about 40,000 plant species, at least 2,750 freshwater fish species⁵, 1,300 species of birds, 427

¹ WWF (2016) Living Amazon report, 58pp. – The numbers in this paragraph all refer to this report, unless otherwise indicated.

² ACTO (2018) Strategic Action Program - Regional Strategy for Integrated Water Resources Management in the Amazon Basin. 205pp.

³ Numbers rounded to unit from WWF (2016) Living Amazon report.

⁴ Richey, J. E., Nobre, C., & Deser, C. (1989). Amazon river discharge and climate variability: 1903 to 1985. *Science*, 246, 101-103

⁵ Fernando C.P. Dagosta 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, Number 431 (1-163).



species of mammals, 400 species of amphibians and 370 species of reptiles⁶. Many plant and animal species have evolved with wetlands, including flooded forests, the richest freshwater aquatic habitats in the world. In addition to biodiversity, carbon storage and climate regulation, the complex biogeographic connectivity of the Amazon provides numerous ecosystem services. These services include (a) *provisioning* material goods like wood, medicines and food (e.g., Brazil nuts, fruits, and fish⁷) and clean freshwater; (b) *regulating* hydrological and biogeochemical cycles, regional and global climate, providing and sediment/nutrients to various wetlands; (c) sustaining *cultural* practices; and (d) *supporting* the provision of habitat, contributing to the maintenance and generation of regional biodiversity. Additionally, the Amazon's extensive riverine network plays an important role as a transportation system.

The land-uses of the Amazon are based largely on forest⁸ (80%) and agriculture and livestock production⁹ (20%). Other land-uses accounting for much smaller shares include cities¹⁰, industrial plants and roads. A large number of plant and animal species exploited in the Amazon Basin reach national and international markets¹¹. The region's main economic activities include fishing, mining, hydrocarbon extraction and wild fruits and other plant species. Also, if not more important, are crop agriculture and livestock production, tourism, and large infrastructure projects. Gold mining, both legal and illegal are widespread in the lowlands and mountainous areas of the Amazon Basin. Illegal gold mining is of particular concern because of environmental damage associated with it, and the large number of people directly and indirectly dependent on and affected by this unregulated economic activity. Amazon countries produce approximately 400 metric tons of gold annually, supplying almost 10 percent of the world's demand¹². Artisanal and small-scale gold mining (ASGM)¹³ operations are responsible for 15 percent of Amazon countries' gold production, employing approximately 1.4 million people¹⁴.

The population of the Amazon Basin was estimated in 2007 at 33,485,981 inhabitants. Brazil is home to close to 75% of the Amazon's total population, followed by Peru with 13%. From 1990 to 2007, the Amazon's population grew at an annual average rate of 2.3%¹⁵. The region is home to about 387 ethnic groups and approximately 70 live in complete isolation. Since the 1970s, the Amazon is the scene of an important urbanization process; almost 75% of its population is urban. Although in recent years, poverty and extreme poverty have declined, especially in cities, the Amazon still has higher levels than national rates. Vulnerability and food insecurity in the Amazon are lower where natural resources, that are destined for domestic use, are conserved¹⁶. The intensification of national integration processes has improved access to basic services, but it has also accelerated the loss of native languages (more than 86 in the Amazon) and of traditional knowledge.

⁶ WWF (2018) Rios sanos, gente sana – Abordando la crisis de mercurio en la Amazonia, un reporte para WWF por Dalberg, 50pp.

⁷ A 425,000 tons yield per year from the fishery production chain has been estimated in the Amazon, according to the WWF Amazon Freshwater Strategy 2017-2025.

⁸ The TerraClass project in Brazil mapped land-use changes in Legal Amazonia over the 2004-2014 period. Forest is by far the most important landcover (over 328 million ha of the total 395 million ha² in 2004 i.e., 83%, down to about 81% in 2014).

⁹ According to ACTO "approximately 22% of the Amazon's surface is used for agriculture and livestock production", ACTO (2018) Strategic Action Program - Regional Strategy for Integrated Water Resources Management in the Amazon Basin. 205pp

¹⁰ The main cities in the Amazon are Iquitos in Peru, Santa Cruz in Bolivia, Manaus, Santarem, and Belem in Brazil, three of them being inhabited by more than 1 million people.

¹¹ *Strategic Action Program: Regional Strategy for Integrated Water Resources Management in the Amazon Basin.* / ACTO/OTCA. Brasília, DF, 2018.

¹² WWF (2018) Healthy Rivers, Healthy People

¹³ Defined by the Minamata Convention on Mercury as "gold mining conducted by individuals or small enterprises with limited capital investment and production."

¹⁴ WWF (2018) Healthy Rivers, Healthy People

¹⁵ *Strategic Action Program: Regional Strategy for Integrated Water Resources Management in the Amazon Basin.* / ACTO/OTCA. Brasília, DF, 2018.

¹⁶ PNUD, 2016. La Amazonia y la agenda 2030.



More systematic research is required before any generalizations can be made on how gender relations affect women in the Amazon region differently. However, research and experience highlights the following aspects: the allocation of resource rights within communal lands often follows traditional “customs and practices” that may or may not support gender equality; multiple legal, cultural, structural and institutional mechanisms exclude women from land rights; women’s productive work is often invisible to markets and outsiders due to its association with the home, family, and subsistence and because of limited market access; and, many community forest management initiatives adopt top-down, technologically driven programs focused only on timber, not including activities such as agroforestry and use of Non-Timber Forest Products, that are especially important for women.

Sectoral and Institutional Context

The Putumayo-Içá River is the tenth longest tributary of the Amazon River, and its watershed covers 118,000 km², approximately 1.7 percent of the Amazon basin. Andean countries refer to the main river as the Putumayo. In Brazil it’s called Içá. The Putumayo-Içá drainage includes the Andean countries of Colombia, Ecuador, Peru and downstream, Brazil, where it discharges into the Amazon River (Solimões in Brazil). From the Andean headwaters to the confluence of the Putumayo-Içá and the Amazon River spans approximately 2,000 km (Map in Annex 1). Putumayo-Içá receives water from the Yaguas and Cotuhé, two of the most diverse watersheds of their size in the world in terms of flora, fauna and indigenous cultures. Of the large Andes-Amazon Rivers, the Putumayo-Içá is the only one without plans for large hydroelectric dams.

The Putumayo- Içá watershed includes some of the most remote, economically underdeveloped, lowest population density and also best conserved areas of Brazil, Colombia, Ecuador and Peru. Overall population density of the watershed is < 14 people/km², with density declining from the upper to the lower watershed. The highest densities (75.4 people/km²)¹⁷ occurs in the four Colombian municipalities of the upper Putumayo and the lowest population density in the lower Putumayo is less< 5 people/km²)¹⁸. There are cities and villages of different sizes (some with more than 45,000 inhabitants like Orito and Puerto Asis), these towns provide different services like hospitals, secondary education, and in some cases some technical education. Approximately 45% of Putumayo watershed is comprised of indigenous territories. Indigenous peoples from 18 different ethnic groups¹⁹ as well as non-indigenous *campesino* and *ribereño* communities inhabit the watershed. Indigenous peoples have inhabited the basin for thousands of years, and currently higher percentages occur middle and lower part of the of the river basin²⁰. In the second part of the past century, the upper part of the basin received large influxes of other indigenous groups (e.g. Nasa, Awá, Pasto, Emberá-Chami and Emberá-Katio and Yanakona) and colonists (peasant and afro-Colombian communities). Some of these groups reached the area after being displaced from their own territories in adjacent regions. Traditional subsistence livelihoods revolve around fishing, hunting, non-timber forest extraction, and agriculture, while illegal artisanal mining, primarily by immigrants to the watershed, is a

¹⁷ Plan de Ordenación y Manejo de la Cuenca Alta del Río Putumayo; Corporación para el Desarrollo Sostenible del Sur de la Amazonia- CorpoAmazonia, 2009. Ministerio de Ambiente, Vivienda y Desarrollo Territorial.

¹⁸ See, for example, the Field Museum’s Rapid Biological and Social Inventories #25 (Pitman, N., E. Ruelas Inzunza, C. Vriesendorp, D. F. Stotz, T. Wachter, Á. del Campo, D. Alvira, B. Rodríguez Grández, R. C. Smith, A. R. Sáenz Rodríguez, and P. Soria Ruiz, eds. 2013. *Perú: Ere-Campuya-Algodón*. Rapid Biological and Social Inventories Report 25. The Field Museum, Chicago.) and #28 (Pitman, N., A. Bravo, S. Claramunt, C. Vriesendorp, D. Alvira Reyes, A. Ravikumar, Á. del Campo, D. F. Stotz, T. Wachter, S. Heilpern, B. Rodríguez Grández, A. R. Sáenz Rodríguez, and R. C. Smith, eds. 2016. *Perú: Medio Putumayo-Algodón*. Rapid Biological and Social Inventories Report 28. The Field Museum, Chicago.). Note that data is only partially available for the watershed given its remoteness, as well as conflicts in some of the areas belonging to Colombia.

¹⁹ Murui Muina, Murui, Bora, Miraña, Ocaina, Kichwa, Yagua, Tikuna, Maijuna, Secoya, Cofan, Cocama, Resigaró, Witoto, Tupi-Guaraní, Pebá-Yagua, Quechua, Tucano

²⁰ Note that demographic data is only partially available for the watershed given its remoteness and dispersion of information across national boundaries, as well as conflicts in some of the areas belonging to Colombia.



growing activity in different areas. Communities exist along the main river and its tributaries, with at least 15,000 fishers providing on average at least 26 kg of fish/person/year to the total population. There are a number of small urban areas serving as minor trading and transportation hubs (e.g. Orito, Puerto Asís, Puerto Leguizamo, El Estrecho, Tarapaca, San Antonio de Içá).

The economy of the Putumayo-Içá has been very dynamic, and generally determined by a product or activity in boom: Quinine (1616-1885), rubber (1880-1912), furs (early 1960), coca (1980s present), and oil (from 1957 to present). These activities have largely determined the type and level of pressure exerted on natural resources, including the conversion of natural areas. For instance, Since the 1950's when oil companies Texaco and Gulf started oil explorations in the piedmont region, this extractive industry has been instrumental in defining the population dynamics and landscape configuration of the upper watershed, through the activities such as the opening of roads and establishment and expansion of settlements. More recently, other productive activities, such as agriculture, cattle ranching, mining and logging, particularly in the upper portions significantly contributed to local economies, are drove changes in land cover and water quality.

The socioeconomic conditions and dynamics of the watershed vary along the region. The bulk of the watershed is a nearly entirely roadless wilderness, with the exception of the road network in the upper reaches in Ecuador and Colombia that supports larger towns and oil exploration and exploitation. There are occasional flights to major towns in the middle and lower parts of the basin. Most communities are located along the banks of rivers that are navigable throughout the year, which ensures easy access to both sides of the Peru-Colombia border, and the Peru-Colombia-Ecuador border as well as downstream to Brazil. Communities typically get their drinking water from rivers, lakes, wells, and nearby streams. Public lighting is only available in a few communities, and electricity is generally only available in health clinics and in the houses of those few families that have their own generators. In most communities, trash pick-up and common area cleanup is done by communal work teams.²¹ The middle Putumayo has more traffic and commerce of natural resources (e.g. Fish, timber and non-timber products) and agricultural goods than the lower Putumayo, and there are strong links to the Colombian city of Puerto Leguizamo. Many families own motorized canoes (locally known as *peque-peques*), and communal transportation is often provided.

Indigenous organizations in the region are becoming stronger at national and sub-national levels. This has allowed for growth of local, regional, and national indigenous organizations whose leaders are making strong efforts to train their members in effective governance. These organizations have different organizational foci, but share the aims of improving the living conditions of their members and supporting territorial zoning and development²².

The Putumayo's intact forests provide globally significant biodiversity and ecosystem services. The Putumayo-Içá is one of the last large, intact forests in the world with more than 75% of the basin in indigenous territories, conservation areas, or proposed areas for conservation²³. Approximately 19 percent of the territory comprises national protected areas. The watershed has very high levels of tree²⁴, fish (400-600 species)²⁵, amphibian (>210 species)²⁶, reptile (230 species)³⁰, bird (>1050 species)³⁰ and mammal (>270 species)³⁰ species diversity, standing out as one of the most diverse places in the

²¹ Pitman, N., E. Ruelas Inzunza, C. Vriesendorp, D. F. Stotz, T. Wachter, Á. del Campo, D. Alvira, B. Rodríguez Grández, R. C. Smith, A. R. Sáenz Rodríguez, and P. Soria Ruiz, eds. 2013. *Perú: Ere-Campuya-Algodón*. Rapid Biological and Social Inventories Report 25. The Field Museum, Chicago.

²² *Idem*.

²³ 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.

²⁴ Amazon Tree Diversity Network, data from <http://atdn.myspecies.info/node/2466>. Accessed February 2020.

²⁵ SINCHI; Segundo Encuentro binacional corredor cultural y biológico Putumayo Perú-Colombia; Mesa Peces, Leticia octubre 2018;

²⁶ Species lists downloaded from <https://mol.org/places>. Accessed February 2020.



entire Amazon basin because of its combination of Andean and lowland biodiversity²⁷. In addition, the upland forests of the Putumayo watershed harbor vast stores of aboveground carbon that can mitigate climate change; more than most areas of Peru²⁸ and Colombia²⁹.

Several transboundary environmental challenges affecting the basin can only be addressed effectively through a multi-country, regional approach. The Putumayo-Içá river basin connects the Andes mountains with an intricate web of rivers, lakes and flooded forests in the lower plains. Some of the potential causes of the basin's environmental threats as further explained in the project context include: i) unsustainable agriculture and poorly planned development, mainly in the upper basin, that causes soil loss, erosion, loss of biodiversity and sedimentation; ii) infrastructure projects, e.g., the multimodal Pasto – Mocoa corridor; iii) extreme climate events that increase the frequency of droughts and floods, especially in the upper basin, and increase risk of fire; and iv) water pollution particularly from the use of agricultural pesticides in the upper part of the basin; dumping of solid wastes and wastewater from populated areas; the use of mercury in illegal and legal gold mining. These threats and drivers are interconnected between countries and thus require collaborative action. Compared with forests and other terrestrial ecosystems, few efforts have been made to understand and conserve the water resources of the Putumayo-Içá basin, especially at the necessary large scales. To address drivers of degradation, and the nature of upstream to downstream cumulative impacts, which can originate in either uplands or wetlands, both national actions and collaboration across borders are critical to ensure long-term success.

Institutional context

Current sectoral strategies in all countries support integrated watershed and water resource management. The Brazilian government has historically supported many policies to create a new vision for development in the Amazon and funding is provided to implement them. The Brazilian Government has removed many development-oriented policies that stimulated deforestation. The Legal Amazon Deforestation Prevention and Control Plan (PPCDAM, 2005) is the most comprehensive. The most recent advances in the Brazilian Amazon are framed by the combination of protected areas, the Terra Legal Program (federal lands controlled by the Ministry of Agrarian Development allocated to conservation, indigenous issues, small scale farming regularization and colonization, in order of priority) and the Rural Cadaster and provide new opportunities to discuss the integration of protected areas and restoration on a wider landscape.

Colombia's current interventions in the Amazon are aligned with its Amazon Vision, launched in 2013 by the Government as an initiative that promotes a low-carbon development model. The initiative is structured around five pillars: (i) improvement of forest governance, (ii) development and sustainable sectorial planning, (iii) development of agri-environment, (iv) environmental governance with indigenous populations, and (v) enabling activities. A goal in the National Development Plan (2018-2022) is to reduce deforestation by 30% over the current rate. In addition, Colombia is confronting the illegal exploitation of minerals and is committed in its National Development Plan to strengthening mining closures to guarantee the generation of new productive alternatives in the regions. The Plan supports the diversification of production systems in the Amazon region.

²⁷ 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. The Field Museum, Chicago.

²⁸ Asner, G. P., D. E. Knapp, R. E. Martin, R. Tupayachi, C. B. Anderson, J. Mascaro, F. Sinca, K. D. Chadwick, S. Sousan, M. Higgins, W. Farfan, M. R. Silman, W. A. Llactayo León, and A. F. Neyra Palomino. 2014. *The high-resolution carbon geography of Peru*. A collaborative report of the Carnegie Airborne Observatory and the Ministry of Environment of Peru. Available online at <http://dge.stanford.edu/pub/asner/carbonreportCarnegiePeruCarbonReport-English.pdf>.

²⁹ Asner, G. P., J. K. Clark, J. Mascaro, G. A. Galindo García, K. D. Chadwick, D. A. Navarrete Encinales, G. Paez-Acosta, E. Cabrera Montenegro, T. Kennedy-Bowdoin, Á. Duque, A. Balaji, P. von Hildebrand, L. Maatoug, J. F. Phillips Bernal, A. P. Yepes Quintero, D. E. Knapp, M. C. García Dávila, J. Jacobson, and M. F. Ordóñez. 2012. High-resolution mapping of forest carbon stocks in the Colombian Amazon. *Biogeosciences* 9: 2683–2696.



Ecuador's National Development Plan guarantees the rights of nature, aims at conserving, recuperating and regulating the management of natural heritage; foment a sustainable economy, bio-economy; and promotes environmentally responsible production and consumption. It promotes the protection of the Amazon Basin at a regional level. Policy directions include: b.1. Implement processes for the identification, knowledge, conservation and revaluation of natural and cultural, terrestrial, aquatic and marine-coastal landscapes, which ensure their integrity, connectivity and functionality as a basic condition for generation of environmental services essential for sustainable development; b.5 Prioritize reforestation in the upper areas of the river basins in order to reduce sedimentation and contamination in the lower part; e.1. Articulate and complement the decentralization and decentralization processes for the multi-level management of public goods and services; g.4. Encourage articulated work with neighboring countries for the integral management of transboundary water, fishery resources and associated biodiversity, especially in the Amazon and in the marine-coastal space.

Peru's Strategic National Development Plan (2020-2030) lists a series of policy directions under National Objective 6.3: *Conservation and sustainable use of natural resources and biodiversity with an integrated and ecosystem approach and an environment that allows a good quality of life for people and the existence of healthy, viable and functional ecosystems in the long term.* These are: 2) Promote integrated management of natural resources, integrated management of water resources and land management; 3) Promote the conservation and sustainable use of the country's natural heritage with efficiency, equity and social welfare, carrying out actions to protect biodiversity, control the loss of forests and ecosystems, ensure the sustainability of fishing activity, conserve genetic heritage native and revalue traditional knowledge; 7) Combat illegal logging, illegal mineral extraction, illegal hunting and fishing, and other illegal activities that affect environmental quality; and 8) Strengthen authorization, surveillance and control mechanisms in the life cycle of chemical substances and hazardous materials. In addition, Peruvian National Forestry and Climate Change Strategy takes an integrated landscape approach to forest conservation in the context of climate change mitigation and adaptation. Because standing forests ensure an abundant source of clean water and limit erosion, the headwaters of the Algodón and Mutún rivers, tributaries of the Putumayo River, have been officially designated by the Loreto regional government of Peru as high-priority watersheds (Regional Ordinance No. 005-2013-GRL-CR).³⁰ Likewise, the entire Putumayo basin of Peru has been designated as a conservation priority by the Loreto regional government's 'Strategy for Managing Regional Conservation Areas'³¹.

The existent bilateral and trilateral agreements demonstrate cross-boundary commitment towards collaboration for environmental protection and sustainable use of natural resources. In the Pucallpa Action Plan (27 August, 2019), the Presidents of Colombia and Peru recognized the need "to join forces in favor of the protection and sustainable use of the Amazon region, as one of the most important ecosystems for the planet's resilience, and agreed to promote Colombia's proposal to convene the Amazon countries to establish a Pact that seeks its conservation, development and sustainable use, for the benefit of the communities that inhabit it, with full respect for the respective national sovereignty." The governments formally committed to the coordinated implementation of 14 actions, including those specifically related to conservation and sustainable use of the Putumayo's natural resources, particularly #4-5 and #10 under Eje II³². Prior to

³⁰ Pitman, N., A. Bravo, S. Claramunt, C. Vriesendorp, D. Alvira Reyes, A. Ravikumar, Á. del Campo, D. F. Stotz, T. Wachter, S. Heilpern, B. Rodríguez Grández, A. R. Sáenz Rodríguez y/and R. C. Smith, eds. 2016. *Perú: Medio Putumayo-Algodón*. Rapid Biological and Social Inventories Report 28. The Field Museum, Chicago.

³¹ PROCREL. 2009. *Estrategia para la gestión de las Áreas de Conservación Regional de Loreto*. Programa de Conservación, Gestión y Uso Sostenible de la Diversidad Biológica de Loreto (PROCREL), Gobierno Regional de Loreto, Iquitos.

³² These are: Compromiso 4) Elaborar el Acuerdo que crea el Comité Técnico Binacional para la Gestión Integrada de Recursos Hídricos de la Cuenca Transfronteriza del Río Putumayo; 5) Socializar e implementar la "Estrategia sobre prevención, control y manejo sostenible de los recursos forestales de fauna silvestre e hidrobiológicos en la zona de integración fronteriza Perú – Colombia, con el objetivo de fortalecer el aprovechamiento sostenible de estos recursos; and 10) Fortalecer sistemas productivos sostenibles orientados a promover cadenas de valor compatibles con la conservación de la biodiversidad, en los paisajes amazónicos y las áreas protegidas del Perú y Colombia.



Pucallpa, the Governments of Colombia and Peru formally agreed on 12 August 2015 to closer coordination between their respective protected areas institutions in the Inter-institutional Agreement for the Development of Complementary Actions in regard to Governance, Management and Conservation between the National Systems of Protected Areas. In the Presidential and Seventh Bilateral Cabinet Meeting on 04 December 2018, the Governments of Colombia and Ecuador agreed to the importance of control and prevention of illegal wildlife trade, sharing of knowledge and experiences regarding green business and bio-economics, and joint efforts to mitigate and adapt to climate change.

The Leticia Agreement (Pacto de Leticia), signed on 6 September 2019 by the Heads of State and Heads of Delegation of the Plurinational State of Bolivia, the Federative Republic of Brazil, the Republic of Colombia, the Republic of Ecuador, the Republic of Guyana, the Republic of Peru and Republic of Suriname, is the most recent high level commitment towards the Amazon's conservation and sustainable development. The Agreement lists sixteen actions for the sustainability of the Amazon basin.³³ These include: a) Establish regional cooperation mechanisms and the exchange of information to combat illegal activities; b) Increase efforts associated with monitoring forest cover and other strategic ecosystems in the region; c) Exchange information to improve the monitoring capabilities of climate, biodiversity, water, and hydrobiological resources of the region under a watershed approach; d) Promote initiatives for connectivity of priority ecosystems and mechanisms for biodiversity conservation through sustainable use, restoration, and landscape management; e) Strengthen the mechanisms that support and promote the sustainable use of forests, sustainable productive systems, responsible consumption and production patterns that promote value chains and other sustainable production approaches; f) Strengthen the capacities and participation of indigenous and tribal peoples, and local communities in sustainable development. The Action Plan for the Pact launched in December 2019, will materialize the Pact through five thematic components: (i) Reforestation, conservation, forest and biodiversity sustainable management, and bio-economy; (ii) Security in the Amazon; (iii) Information and knowledge management; (iv) Women and indigenous people's empowerment; (v) Financing and international cooperation.

Based on the nature of the project, location and scope, the institutional context for the project involves the following institutions, (in addition to the local, provincial or municipal governments) that have different levels of responsibility for the conservation and sustainable development of the basin. These institutions will be part of the implementing arrangements to be further developed during project preparation.

Brazil
Secretary of the Environment of the State of Amazonas in Brazil (SEMA)
Secretary of Rural Production of Amazonas State (SEPROR)
Executive Secretariat of Fisheries and Aquaculture of the Amazon (SEPA)
The Amazonas Environmental Protection Institute in Brazil (IPAAM),
The Secretary for Economic Development, Science, Technology and Innovation of the Amazonas State (SEDECTI)
Secretary of planning and economic matters (Seplan)
Colombia
Ministry of Environment and Sustainable Development of Colombia (MADS)
Corporation for the Sustainable Development of the Southern Amazon of Colombia (Corpoamazonía).
The Colombian Amazon Institute for Scientific Research (SINCHI)
National Natural Parks of Colombia (PNN)
Ecuador

³³ For the full list of agreed actions, please see <https://id.presidencia.gov.co/Documents/190906-Pacto-Leticia-Amazonia-Ingles.pdf>



Ministry of Environment and Water of Ecuador (MAE) ³⁴
National Biodiversity Institute (INABIO)
National Fisheries Institute
Peru
Ministry of Environment of Perú (MINAM)
The National Water Authority of Perú (ANA)
The Research Institute of the Peruvian Amazon (IIAP)
National Service of Protected Areas of Peru (SERNANP)

Besides the above, the institutional context is enriched with the existing national and international non-governmental organizations (NGOs) working towards the basin's conservation and sustainable development. Some of these include the WCS (project's executing agency), Field Museum of Chicago, WWF, IBC, ISA, IIEB, GAIA Amazonas, ACT, CEDIA, Frankfurt Zoological Society, Fundación para la Conservación y el Desarrollo Sostenible (FCDS), FEI University Center, CINCIA and FioCruz. Finally, the proposed Project will strengthen the on-going initiatives of the governments and civil societies of the Putumayo-Içá watershed to preserve and sustainably use its resources, as well as build integrated participatory and adaptive management of the overall watershed and its land and hydrobiological resources.

Relationship to CPF

The proposed Project is consistent with the World Bank Group's Country Partnership Frameworks (CPF) in the four participating countries: Brazil: (FY2018–FY2023), particularly Outcome 17 *Expansion of areas under effective protection* under Strategic Objective 4: *Improve Sustainable Natural Resource Management and Climate Resilience*. In addition, IFC is partnering with other organizations together with the Getúlio Vargas Foundation (FGV) on a bottom-up approach to create the Amazon Guidelines, a set of best practices for the implementation of large projects in the region. IFC is also working to guarantee early funding for some local projects to avoid or decrease undesired impacts on local communities. IFC's activities overall seek to support the protection of natural habitats and promote economic alternatives to deforestation. Colombia (FY2016 - FY2021), particularly with Pillar I *Fostering Balanced Territorial Development* and its Objective 2: *Enhanced Capacity for Natural Resources Management in Target Regions*; The Bank is also ready to support GOC in restructuring the mining sector and adopting a National Policy for the Formalization of Mining; such support could range from the preparation of a formal ASM policy to pilot projects for testing new, cleaner technologies for the processing of gold and other minerals. Ecuador: in line with the 2025 Climate Change Targets and the Adaptation and Resilience Action Plan,²² prioritized interventions under the CPF support Ecuador's commitments under the Paris Agreement, the Nationally Determined Contribution (NDC) announced in March 2019 and efforts to implement measures for climate change adaptation; support will also be provided through technical assistance for the implementation of the standards and reporting required by the Extractive Industries Transparency Initiative (EITI). Technical assistance will also be provided to help strengthen the Mining Regulation and Control Agency's (ARCOM's) institutional capacity; and Peru: FY17-FY21, particularly Objective 8 - Strengthen the management of natural resources under Pillar III Natural Resources and Climate Change Risk Management. In the green agenda, through ongoing grants and a future lending operation, the WB will help to pilot good biodiversity practices (e.g., of the Guano Capes, Islands, and Islets National Reserve) as well as forest

³⁴ MAE and the National Water Authority (SENAGUA) were merged in March 4, 2020. MAE assumed all competencies from the former SENAGUA, including the alignment of the project with the national integrated management of water policies.



management in general and in indigenous areas of the Amazon. As part of this agenda, the WB will help improve the management of river basins.

Brazil, Colombia, Ecuador and Peru are Parties to the Minamata Convention, the Convention on Biological Diversity, and the Amazon Cooperation Treaty, as well as a number of sustainable development initiatives. The Project supports the four countries to fulfill their obligations as Parties to the Minamata Convention and aligns with the GEF-7 Programming Directions in regard to the International Waters and Chemicals and Waste Focal Areas. In International Waters the project will promote water security and “cooperation . . . to support the need for water, food, energy, and ecosystems security and increase resilience for each nation”. In the Chemicals and Waste focal area, the project will “develop the enabling conditions, tools, and environment for the sound management of mercury as well as reduce its prevalence in artisanal mining.”

The project is aligned with the GEF-financed *Regional Strategy for Integrated Water Resources Management in the Amazon Basin*,³⁵ particularly in regard to Strategic Actions: *Reducing the vulnerability of bioaquatic ecosystems of the Amazon Basin*; and *Supporting the strengthening of institutional and management frameworks to improve water resources management*. The project will collaborate with the GEF-financed *Implementation of the Strategic Action Programme (SAP) to ensure Integrated and Sustainable Management of the Transboundary Water Resources of the Amazon River Basin Considering Climate Variability and Change*. The project will support some of the priority regional transboundary problems identified in the SAP that are relevant to this basin, and its associated actions including: water pollution by implementing a regional water quality monitoring system and protecting, managing and monitoring aquifers; deforestation by conserving and using water resources sustainably in the headwaters and lowlands; , and the need to support legal and institutional frameworks to improve water resources management. The project information generated through scientific and also traditional knowledge will also support the regional information platform that has been prioritized by the SAP.

C. Proposed Development Objective(s)

To improve the capacity of Brazil, Colombia, Ecuador and Peru to manage freshwater ecosystems and aquatic resources of the Putumayo- Içá basin in the Amazon region.

Key Results (From PCN)

The project will achieve the following results (with preliminary means of verification):

- Traditional and scientific knowledge enhanced and accessible for all basin stakeholders, including Indigenous Peoples and women, to support improved decision making and to inform collaborative action. (Measured by the number of multinational, national, and local plans and programs that draw on knowledge collected and/or systematized by the project)
- Improved governance supporting integrated water resource management and equitable access to resources by women and other vulnerable communities. (Measured by the level of national/local reforms and active participation of the inter-ministerial committees – GEF core indicator, and an increase in the number and scope of coordinated agreements and collaborative actions that align with a shared vision for the basin)

³⁵ Particularly regarding Strategic Actions: *Reducing the vulnerability of bioaquatic ecosystems of the Amazon Basin*; and *supporting the strengthening of institutional and management frameworks to improve water resources management*.



- Reduced impacts from water and environmental pollution by mercury and other contaminants from legal and illegal activities. (Measured by the number of countries with legislation and policy implemented to control chemicals and waste – GEF core indicator)
- Regional water resources and ecosystems sustainably managed. (Measured by population involved in sustainable aquatic resources production systems implemented as well as other proxy indicators that will help measure results in terms of downstream/upstream ecosystem connectivity)

A detailed results framework with agreed upon PDO level and intermediate indicators will be discussed during next stages of project preparation and incorporated in the Project Appraisal Document.

D. Concept Description

The project has been structured to respond to the following immediate and root causes of environmental degradation in Putumayo- Içá basin.

Lack of Synthesized Information and Limited Regional Governance. Limited regional governance, lack of intersectoral and international collaboration and lack harmonized regulatory policies for integrated, basin-wide water resources planning and management puts the resilience of the watershed and the provision of benefits for global and local communities at risk. Information and knowledge about the region are siloed and thus not available to support holistic decision making by all relevant stakeholders. Water resources planning and management occur mostly sector by sector at national levels. This constitutes a barrier to forecasting and management of multi-national and local impacts, including unintended consequences of decisions made by one country on other countries, and on the connectivity and health of the overall freshwater system. The lack of regional policies to ensure basin-wide fisheries and other natural resource management, and the variance in capacity among basin states and among the 18 indigenous communities that manage most of the basin also put the resilience of the basin at risk.

Mercury and Other Chemical Pollution. Water quality in the Putumayo-Içá Basin is generally good, largely because of low levels of deforestation and minimal industrialization. However, oil spills and more recently illegal economies are increasing contaminants, e.g., mercury in water bodies and freshwater resources. Artisanal and small-scale gold mining, mostly illegal, is prevalent in the watershed with limited use of mechanical tools and modern best practices, which leads to low productivity, poor output quality, weak safety standards, and minimal compliance with environmental protection standards (See Annex 1 for map). Practices involve the use of mercury to extract gold from dredged sludge, contaminating soil and water³⁶. In 2014, researchers in Colombia found that thirty percent of fish in the Amazon had levels of mercury above the national standard, since it accumulates in the food chain³⁷. More recently, pollution from other heavy metals has been found at significant concentrations in river water³⁸. Inorganic mercury discharged from ASGM and other sources flows into rivers and streams, is converted to methylmercury by bacteria and plankton in water, is accumulated in fish and flows into humans through fish intake. Among fish, predators that are larger, live longer, and are located high on the food chain have higher quantities of mercury. Given the high consumption of fish by indigenous and local communities, monitoring mercury levels in fish will provide an indicator of health impacts of mercury contamination for humans.

³⁶ 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 per cent of all emissions into the atmosphere and into local water sources.

³⁷ See, for example, Nunez-Avellaneda, Marcela; Agudelo, Edwin; Gil-Manrique, Brigitte; *Un Análisis Descriptivo de la Presencia de Mercurio en Agua, Sedimento y Peces de Interés Socio-económico en la Amazonia Colombiana*; Revista Colombia Amazonica N° 7, 2014.

³⁸ Velloso, Capparelli, 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. Vol 709 20 March 2020, 136088 (accepted for publication)



Inorganic mercury discharged from ASGM and other sources flows into rivers and streams, is converted to methylmercury by bacteria and plankton in water, is accumulated in fish and flows into humans through fish intake. Among fish, predators that are larger, live longer, and are located high on the food chain have higher quantities of mercury. Given the high consumption of fish by indigenous and local communities, monitoring mercury levels in fish will provide an indicator of health impacts of mercury contamination for humans. Consumption of mercury (in the form of methylmercury) bioaccumulated in fish and shellfish causes impaired neurological development in fetuses which affects cognitive thinking, memory, attention, language and motor skills. The impact on population regularly exposed (such as fish dependent communities) may include effects on the nervous, digestive and immune system and on lungs, kidneys, skin and eyes. Brazil and Colombia have tracked impacts on health in some of the Amazon population as a result of high consumption of mercury in fish³⁹. Illegal mining is also associated with increased deforestation that increases sediment loading that can reach ten times the normal baseline load⁴⁰. Increased sedimentation affects the fish who need clear water to find their food, as well as other aquatic species (e.g. otters, dolphins), and also permits mercury to travel further. Most communities eat locally caught fish as a daily dietary staple and health surveys of indigenous communities in the Putumayo-Içá indicate high levels of mercury contamination associated with fish consumption.

Overfishing. Fisheries are a major source of income for the riverine communities of the Putumayo basin. The strategic location of the Putumayo River, which connects the Amazon plains with the Andes, facilitates movement and commercialization of fish and an economic exchange with the larger cities. The main ports of Puerto Asis and Puerto Leguízamo have been the epicenter of this commercialization, with historical volumes of more than 200 tons of fish per year for the latter, although these values have decreased in the last decades (Bonilla-Castillo et al. 2012). The large catfishes like *dorado* (*Brachyplatystoma rousseauxii*) and *lechero* (*Brachyplatystoma filamentosum*) used to be the most important fisheries in the middle Putumayo, but they have been replaced gradually, as their stocks were reduced, by other species like *bocachico* (*P. nigricans*) and other lesser species of catfish⁴¹. The main causes for the reduction of the volumes of capture in the fisheries of the Putumayo include the emergence of more effective and large-scale fishing techniques like nets and long-lines, an increase in the riverine human population, which translates in higher demands an increased effort, the continued capture of non-reproductive individuals, and a poor control and governance of fisheries by authorities.

Risk of expanded deforestation. While the rates of deforestation and biodiversity loss are currently low (estimates vary, some as low as 1% of the total area), they are increasing in the headwaters with growing immigration, and economic activities such as logging, agriculture and cattle ranching⁴².

In some areas of the basin, widespread poverty, development pressure, lack of harmonization of policies and insufficient capacity to monitor and manage basin resources sustainably at local, sub-national, national and multi-national scales all contribute to increasing water stress, water pollution and pressures on fisheries and other natural resources. These will continue to jeopardize water and food security in the basin. In addition, climate change, especially extreme weather events will exacerbate these stresses to the ecosystem and to communities.

³⁹ World Health Organization. 2017. Mercury and Health. [online] Available at: <https://www.who.int/news-room/fact-sheets/detail/mercury-and-health>

⁴⁰ <https://blogs.elspectador.com/medio-ambiente/mongabay-latam/peru-imagenes-satelitales-muestran-impacto-34-anos-mineria-ilegal-rios-madre-dios>.

⁴¹ Bonilla-Castillo, C.A., Agudelo, E.A., Sanchez-Paez, C.L., Gomez Hurtado, G.A. Dinámica de la pesca comercial de consumo en el medio Rio Putumayo: tres décadas de desembarques en Puerto Leguízamo. Revista Colombia Amazónica 5(2012):129-149.

⁴² Murad, Cesar & Pearse, Jillian. (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.



To address the most prevalent environmental problems and drivers, the basin states, together with indigenous and farmer communities, need to take a coordinated approach to building their respective and joint capacity to plan and sustainably manage the future of the basin. The following limitations are present in the basin and are barriers to be addressed in order to improve joint planning and management capacity in the basin for a sustainable future:

- I. Limited and fragmented data, information and knowledge of the resources and ecosystems in the basin and lack of shared access to support integrated decision making.
- II. Limited institutional and technical capacity for joint transboundary policies and management.
- III. Limited engagement of stakeholders and resources users, especially Indigenous Peoples, women and other vulnerable communities, in the planning and implementation of integrated water resources management in the basin in order to address global and local challenges the basin is facing.

The proposed project will improve the capacity of Brazil, Colombia, Ecuador and Peru to ensure water security, preserve and sustainably manage freshwater and associated land ecosystems, and minimize and mitigate the potential impact of water and environmental pollution from mercury and other contaminants in the Putumayo-Içá basin. The project will build on and strengthen the on-going water and land conservation initiatives and efforts of governments and civil society of the Putumayo-Içá basin. The project will build the organizational management capacities of local communities and public entities; facilitate the systematic generation, management, dissemination and exchange of knowledge and information to and between all sectors and stakeholder levels to enable effective, regional, cross-border dialogue, cooperation and coordination; promote and support adaptation, enforcement, management and monitoring efficiency of local, national and regional policies; advance different approaches to address the potential impacts of water pollution from mercury and other contaminants from legal and illegal activities; and identify and strengthen sustainable management of water resources and ecosystems, including market and non-market based approaches.

The Project will be funded by a GEF Trust Fund grant in the amount of US\$ 14.0 million. The project comprises four components, described below and in the theory of change diagram in Annex 2.

Component 1: Enhancing management and accessibility of traditional and scientific knowledge and information. This component will support the development of a knowledge management system⁴³ that will be locally, regionally and globally accessible to support the development of a shared vision for integrated basin management. The system will interrelate with the other components of the project, specifically for an improved international cooperation and multi-level governance in support of the shared vision (component 2); reduced mercury and other chemical pollution from legal and illegal activities (component 3), and for sustainable management of water resources and fisheries (component 4). Knowledge will enhance understanding of the dynamics of the watershed, will support dialogue to identify joint opportunities for action, and will ultimately advance informed decision-making and improve adaptive integrated water resource management. The project will support development of baselines and monitoring of trends and patterns of water resources, and associated ecosystems, by government institutions and agencies, and will help systematize and disseminate information to all stakeholders as the basis for consensus building. Information from this component will be used to develop scenarios for the future to inform the development a shared vision for the region.

Knowledge will come from multiple sources, building on more than two decades of work in the basin by key stakeholders, including inter alia, SERNANP, PNN, Instituto Sinchi, IBC, FCDS, Fundación Gaia, Amazon Conservation Team-Colombia, WWF, the Field Museum, WCS and others. Through scientific and participatory assessments gaps of information will be

⁴³ Sterling, Eleanor & Filardi, Chris & Toomey, Anne & Sigouin, Amanda & Betley, Erin & Gazit, Nadav & Newell, Jennifer & Albert, Simon & Alvira, Diana & Bergamini, Nadia & Blair, Mary & Boseto, David & Burrows, Kate & Bynum, Nora & Caillon, Sophie & Caselle, Jennifer & Claudet, Joachim & Cullman, Georgina & Dacks, Rachel & Jupiter, Stacy. (2017). Biocultural approaches to well-being and sustainability indicators across scales. *Nature Ecology & Evolution*. 1. 10.1038/s41559-017-0349-6.



identified, and through the project, support will be provided for the generation and synthesis of scientific knowledge and the endogenous recovery of traditional knowledge about the Putumayo-Içá basin. Capacity of governmental and civil society organizations to fill in information gaps will be enhanced (for example through the acquisition of equipment and training to assess water quality and the levels of mercury and other contaminants in the environment). Endogenous recovery of traditional knowledge by indigenous communities in the area will receive a particular focus, particularly coming from elder and women. Information and knowledge will be made available through existing platforms (such as IW-LEARN, governmental platforms, Amazon Waters and Citizen Science for the Amazon), as well as in culturally and gender-appropriate formats to facilitate integrated decision-making processes. WCS will centralize the information collected coming from different sources and agencies to ensure it is accessible to all interested parties. Data collection on traditional knowledge will follow culturally appropriate procedures of endogenous research and distribution of knowledge will be properly agreed and consulted with authorities so it serves the purpose of improved management and conservation.

Building on existing governmental and non-governmental information management platforms, this component will establish a set of mechanisms for systematic peer-to-peer information exchange - across national borders within the watershed – to share experience and lessons learned. This will involve participatory, identification of topics to learn about watershed resource management; implementation and support of knowledge sharing experiences; and mainstreaming of the program in national, provincial and local institutions to ensure continual support to peer-to-peer learning. This component will build on and contribute to the GEF's International Waters Learning Exchange and Resource Network (IW:LEARN) for its project-to-project learning exchanges and to leverage its targeted support for the GEF IW freshwater portfolio and partners. Supporting activities for component 3, the project will also promote communication and exchange of knowledge with the existing GOLD projects in Colombia, Ecuador and Peru for those matters that are relevant for the particular context of the basin.

Component 2: Improving multilevel, multi-stakeholder and multi-sectoral governance for integrated water resource management and equitable access to resources by women and other vulnerable communities. The project will assist indigenous, *campesino* and *riberaño* communities, as well as local institutions, environmental authorities and organizations to strengthen local governance, by helping to identify, establish and support relevant governance groups, fostering links and building bridges between stakeholders within and across borders in the basin. Existing or new multi-stakeholder governance groups around themes or particular multinational geographies will serve as platforms for dialogue to advance the constructions of a shared vision for the Putumayo-Içá basin, as well as desired management objectives and associated roadmaps for implementation. To enhance governance, through a gender equitable, multi-stakeholder process: i) a shared vision for water resource management in the basin will be articulated; ii) multinational, culturally appropriate, coordination mechanisms at local, national and regional levels will be designed and strengthened; and iii) multinational roundtables and interest groups, including gendered groupings and groupings by livelihood activity, will be supported. Governance structures promoted or strengthened with the project, involving not only local communities, but also local environmental authorities involved with the basin's water resources management, will help ensure that the bilateral and multilateral agreements are informed by the ground actions developed by the project. In addition, an action plan for coordinated management of pilot conservation areas and/or indigenous territories, will also be developed, especially in key areas for water security.

Enhancing effective governance will begin from the identification and mapping of existing or emergent organizations, governance groups and structures around livelihood activities and specific priority themes (e.g. fisheries, prevention, control and surveillance, indigenous governance, water quality, protected areas, other conservation measures, among others) or multinational geographical areas within the basin. Dialogue and detailed diagnostics of the problems and threats around water will be promoted. The component will build on the [process](#) that has been developed with the



leadership of the governmental entities of Peru and Colombia (SERNANP, *Parques Nacionales Naturales*), *Instituto del Bien Común* (NGO in Peru), *Fundación para la Conservación y el Desarrollo Sostenible* (NGO in Colombia) and the Field Museum and from which a participatory action plan towards binational work in the watershed has already been advanced. This process has involved the participation of Indigenous Peoples, local communities, public organizations, national and international NGOs, and academic institutions, building a community of trust and commitment towards establishing agreed actions in the region. As part of project preparation, this multi actor dialogue will continue adding the participation of Brazil and Ecuador. Based on the information gathered in Component 1, as well as on the policy gap analysis and through the stakeholder engagement process, a shared vision for the basin will be articulated. The shared vision does not imply that everyone expects the same for the future, but rather that the different visions are compatible in the same basin.

Through support to roundtables and interest groups, recommendations to relevant decision-making instances will be made, in an innovative bottom-up governance that will lead to improved management of water and associated natural resources. The project will establish the capacity to promote, advocate and guide the continual development and implementation of integrated participatory watershed management. This component will enable periodic participatory meetings between the different groups in the governance structure to discuss shared challenges and risks and find solutions to potential conflicts with the use of resources in the basin. The project executing agency will stimulate dialogue and consensus building around emerging problems and opportunities, pursue strategic partnerships with external actors, and seek alignment of policy and regulatory frameworks relevant to landscape resource management.

Component 3: Reducing impacts from water and environmental pollution, associated to mercury and other contaminants, from legal and illegal activities. Through a regionally developed strategy, and building on existing efforts in the basin, this component will develop and implement activities to identify, characterize and manage emissions of mercury and other contaminants, and mitigate the potential impacts on human and ecosystem health. Although, increased mercury levels has been detected in water, fish and humans by the project relevant institutions in specific locations along the Amazon and the Putumayo-Içá basin⁴⁴, a comprehensive and systematic understanding of the natural and anthropogenic dynamics of these and other contaminants, and their impacts on the health of humans and ecosystems is required, in order to inform adaptation of laws and regulations, promote harmonization of procedures and protocols, and facilitate their enforcement through a collaborative approach. This is also the basis for communication and outreach campaigns to create awareness on the direct and indirect impacts of water pollution.

The strategy will include the establishment of a participatory monitoring program for water quality involving local stakeholders and government authorities. The component will build on WCS experience with the Citizen Science for the Amazon project to align protocols and develop guidance and methodologies for monitoring within and across the four participating countries; socialize and train local stakeholders and local authorities, implement systematic monitoring; and analyze, evaluate and disseminate monitoring results at all levels. The project will also support the analysis to improve understanding of the dynamics of mercury commercialization in the basin as tools to improve enforcement capacity. The information generated from the monitoring system will serve as the basis for, or will be integrated, into an early warning system for stakeholders about potential hazardous pollution events, quality of water and impact on ecosystems and human health. It will inform measures for preventive interventions in critical sites, and impact on water and other natural resources.

Based on analysis of the region, identification of critical contamination sites and operational project will support the design of measures to control contamination, implementing pilot recovery and remediation measures, developing

⁴⁴ The [publication](#) “El Mercurio en la comunidades de la Amazonia Colombiana” resulting from collaborative effort of public and civil society organizations has been instrumental to raise awareness, promote advocacy, and encourage policy analysis and enforcement. Information has been instrumental for [legal claims](#) that intend to enforce action against illegal mining. The project will allow this at regional scale.



communication and educational campaigns to disseminate the negative effects of contamination of water resources on the people and ecosystems, strengthening capacities to assess and monitor polluting activities, facilitating dialogue and information flow between different sectors and relevant stakeholders (e.g. Ministries and secretaries of environment, health and defense) and informing control measures for illegal activities by relevant authorities. As part of the measures to reduce and mitigate the impacts of other potentially contaminant activities, the project will inform the adoption of best management practices in human settlements (e.g. Waste disposal, local infrastructure) and oil and gas and infrastructure developments, which can be a source of additional contaminants, or can exacerbate the impacts of existing contamination (for instance through the removal of contaminated sediments). The project does not foresee to work directly with mining operations, as mining, in particular gold mining is considered illegal throughout most of the basin.

Building on the existing guidelines provided by the Minamata Convention to develop National Action Plans, the experience and knowledge of the Amazon Alliance for the reduction of Gold Mining Impacts⁴⁵, baseline information gathered as part of component 1, and the establishment of a community participatory monitoring program, local and regional enforcement and policy level actions, the project will be able to inform the National Action Plans for the implementation of the Minamata convention, so as to include considerations that respond to the local context of the Putumayo-Içá and the need for coordinated action between countries. This in turn, will strengthen multisectoral capacity to implement the Convention, enforce the law and mitigate harmful effects of existing mercury in the environment and health.

Component 4: Sustainable management of water resources and associated ecosystems. Through this component, sustainable management and commercialization of freshwater resources, and other key natural resources for local livelihoods, will be supported (Annex 3 includes more information on Integrated River Basin Management to Sustain Amazon Fisheries). To achieve sustainable management of water resources and associated ecosystems: i) coordinated management initiatives of key natural resources across boundaries should be achieved, accompanied by ii) profitable commercialization of sustainable managed key natural resources, including fisheries. While the first output requires strengthened coordination, informed decision-making and harmonized enabling conditions (e.g. regulatory frameworks), the second output requires the development of business cases and the strengthening of capacities for the management, processing and marketing of the prioritized natural resources.

Specific interest groups will be prioritized and meet across national boundaries in the watershed and based on the dialogue and participatory planning, funds and technical support will be allocated to develop strategies and action plans to design environmentally sustainable practices in alignment with an integrated and sustainable management of natural resources at the landscape level. The identification of key natural resources to commercialize (and services like ecotourism), will be done through a participatory process with local beneficiaries, livelihood activity and thematic groups from component 2, and other relevant stakeholders (e.g. relevant governmental entities and civil society organizations). This identification will consider existing promising products as well as new innovative ones that demonstrate to have a potential for commercialization linked to value chains, improved management of the watershed and improved livelihoods. Implementation of the plans will involve development of market analysis to assess the feasibility of selected products to connect to markets with a differential price that reflects their origin and sustainable practices. The analysis will involve the identification of potential challenges and opportunities, innovations to improve the access to market and the evaluation of the involvement of the private sector (e.g. for financing tourism infrastructure), among others. The component will provide financial support for the development of the business case, processing techniques to add value to products and services and marketing strategies. The business case will focus on actions that guarantee environmental, socioeconomic and financial sustainability once the project finishes. Based on traditional and scientific knowledge, the

⁴⁵ The Alliance currently integrates civil society organizations (WWF, FCDS, FZS, Gaia Amazonas, FIOCRUZ, CINCIA and the Colombian National Natural Parks Unit.



project will establish multinational agreements for the management and use of the watershed's ecosystem goods and services, specifying areas for exploitation, for preservation and for subsistence. Value chain working groups will be organized bringing together existing organizations and representatives of local producers, input providers, buyers, market officials, government program officers, credit providers, and any other agents required for the effective functioning of equitable value chains.

A key feature of this component will be the capacity development of producers' organizations and other agents and actors for sustainable production, value-added transformation, and equitable marketing. Producers' organizations will also teach small business management to facilitate re-investment of profits in local sustainable development activities and priorities. Groups will continue to meet throughout the project lifetime and beyond to adapt each value chain development strategy to the results of experience, new information and knowledge, and changes in the economic, social and ecological contexts. Systematization of these experiences will allow for the preparation guidelines for future equitable value chain development. The project will give special attention to empower women and their role in specific value chains.

Component 5: Project Management, Monitoring and Assessment. This component supports cross-cutting activities designed to strengthen coordination, communication, management and monitoring for all components. It aims to ensure project efficiency and efficacy through the establishment of a satisfactory management system and the maintenance of the Project's participation and consultation mechanisms. This component will support WCS as the Project Executing Agency in charge of the technical implementation, financial management and procurement, overall monitoring of project results, production of progress reports, and safeguards compliance, including the establishment of a culturally appropriate grievance redress mechanism. For the project's coordination, the component will support the meetings and administrative requirements for the Regional Steering Committee (RSC) and national implementation committees to be established and become operational. These committees will provide strategic guidance for coordinated actions, approval of work plans and budget, resolution of potential jurisdictional and intersectoral disagreements, among others. Figure 1 below presents the governance structure of the project.. During project preparation, an operational manual that will include the terms of reference for each governing structure will be developed and agreed among the country representatives.

Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	Yes
Projects in Disputed Areas OP 7.60	No
Summary of Screening of Environmental and Social Risks and Impacts	

The Environmental risk and impact have been determined as Moderate under the WB 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, and the fact that the adverse risks and impacts can be preliminarily mitigable, the Moderate risk is due to (i) the environmentally and social sensitive areas where the project will be developed; (ii) illegal armed groups are present and are related to the deforestation and polluting activities to be controlled, such as timber extraction, and land-clearing for expanding cattle ranching activities; to (iii) the complexity and variety of organizations and institutions with presence in



the area, including various national, provincial and local governments, army and police, various environmental authorities, national protected areas administrations, indigenous authorities, national and international companies, and NGOs, all of which produce different kinds of information and which relate to local dwellers with different approaches. This risk can be mitigated, through the coordination of WCS; also, to (iv) the risks attached to potential remediation of heavy metal affected areas may require a good degree of expertise to avoid collateral environmental damages, not only in the contaminated sites, but along the transportation and disposal areas. These risks are low in magnitude as compared to the high pollution risks that are present in the actual baseline, which will be much lower with the project implementation, as not only better enforcement will help avoid pollution in the first place; finally, to (v) in relation to potential value chain developments such as fisheries, these productive activities may need management plans to avoid and manage potential environmental and social risk. Also, these risks are moderate in magnitude, as there are no industrial or infrastructure scale activities to be financed by the project; rather, the activities are linked to livelihoods, and can be mitigated through an Environmental and Social Management Framework (ESMF).

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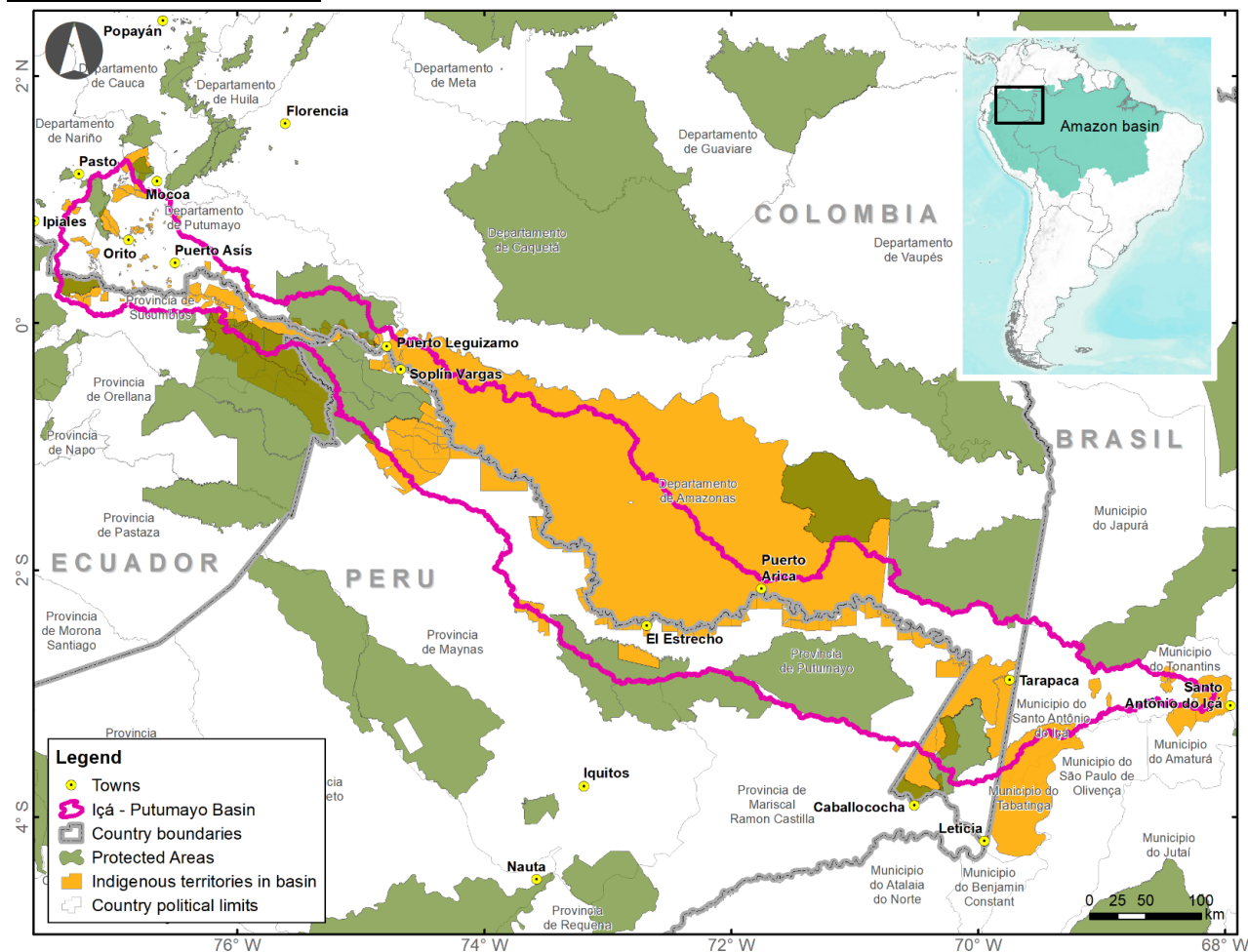
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Country Director:



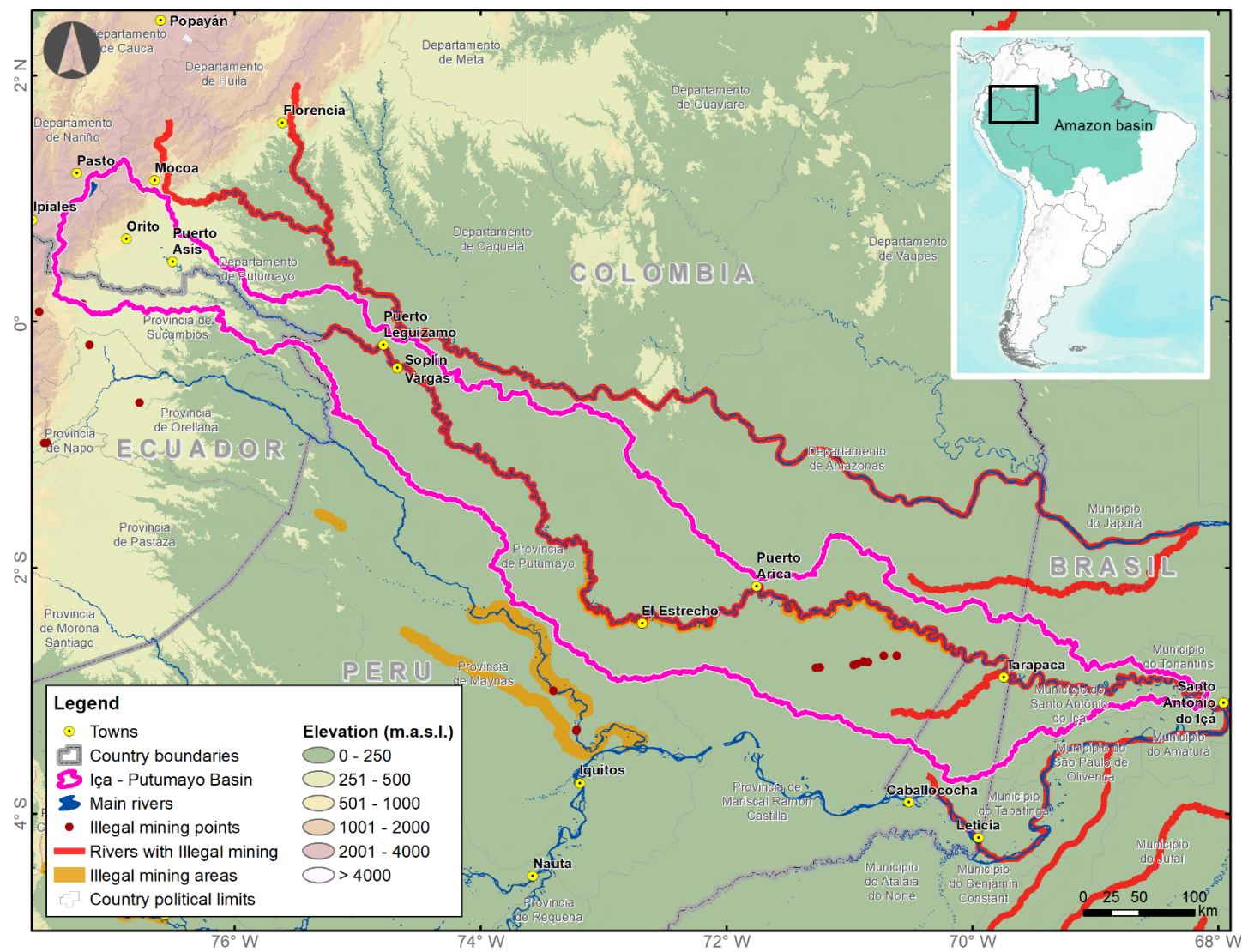
Annex 1. Putumayo region maps

Putumayo watershed



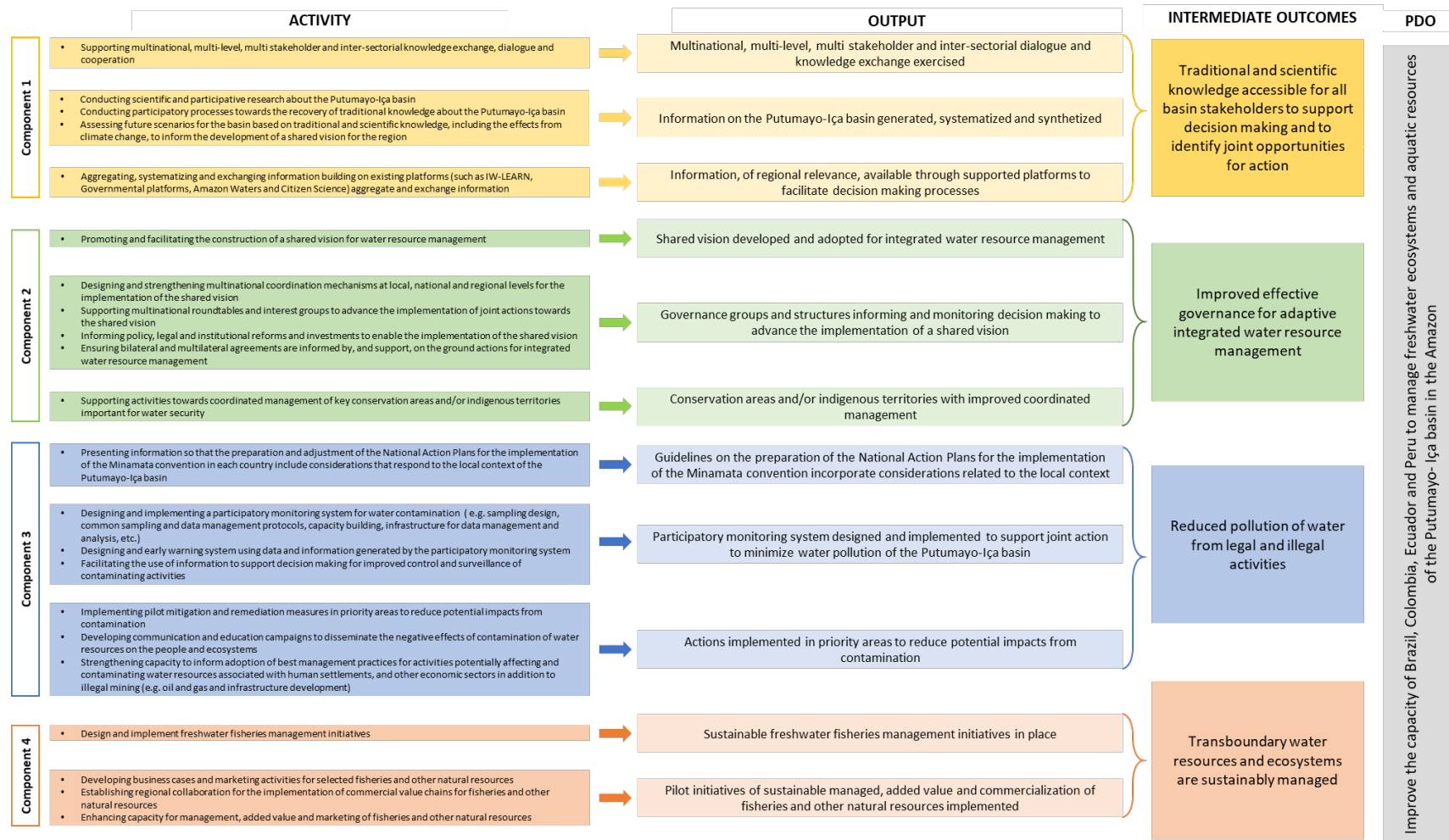


Map of illegal mining in the Putumayo basin (illegal mining points)





Annex 2. Theory of Change





Annex 3. Integrated River Basin Management to Sustain Amazon Fisheries

Integrated River Basin Management (IRBM), sometimes referred to as Integrated Water Resources Management (IWRM), requires a spatial framework to promote ecosystem functionality within natural drainage units, which include various levels of sub-basins and the mainstem into which they flow. Although alternative spatial classifications exist, such as ecoregions, they do not offer the spatial integrity and multi-scale hierarchical adaptability of river basins to a wide array of hydrological considerations, such as the flow of water and the ecosystem functions and services associated with it from headwaters to the ocean. Furthermore, IRBM requires a framework that spatially eliminates the misleading binary of uplands and wetlands as the hydrological cycles connects and depends on both and water quality depends as much on upland drainage as that associated with wetlands directly.

To inform IRBM in the Amazon Basin, the Amazon Waters Working Group of the Science for Nature and People Partnership (<https://snappartnership.net/teams/amazon-waters/>), an international scientific collaboration, has synthesized all available relevant data on infrastructure, water, wetlands and fisheries to provide a foundation for more informed decisions about development and conservation in the Amazon River Basin. This group has developed a spatially uniform, multi-scale GIS framework to inform analysis, management and monitoring of aquatic systems in the Amazon Basin (Figure 1) (Venticiunque et al. 2016).

The Amazon is the largest river basin in the world and several of its tributaries are also among the largest of the planet. Seven of the Amazon Basin's tributaries larger than 100,000 km² span 2-4 countries each and the Basin as a whole extends across 9 countries. All Andean countries share their major tributaries with other downstream countries, and Brazil is downriver of all Andean countries within the Amazon Basin. The Ucayali is the only major Andean tributary in the Amazon Basin that is completely in one country, which is Peru. The political geography of the Amazon Basin thus requires transboundary initiatives to protect water resources and the biodiversity and human wellbeing associated with them. Considering large-scale infrastructure development, and concomitant environmental degradation, in the Amazon that is occurring in nearly all major basins, IRBM initiatives offer a promising approach to address the management of aquatic resources at multiple scales that include both uplands and wetlands, multiple countries and a diversity of cultures and stakeholders. The most promising initial approach to IRBM in the Amazon or its major tributaries is to identify highly specific biodiversity resources that are directly important to various stakeholders over a major part of a large sub-basin shared by two or more countries (Figure 2). Second, rather than attempt the complete ecological, geographical and political coordination of water, land and natural resources across multiple country and state/department jurisdictions and governmental sectors, specific targets should be selected to launch the process and build constituency support for the initiative.

For IRBM in the Amazon, the western sub-basins are of special concern because of their key role in major sediment and nutrient cycles on which aquatic ecosystem biodiversity depends, from the Andes to the Atlantic. As impacts in major sub-basins increase, such as the large dams on the Amazon's largest tributary, the Madeira River, other Andes-Amazon sub-basins that have fewer large-scale impacts, like the Putumayo-Içá, become more important than their relative areas alone might indicate. Collectively, the large sub-basins contribute directly and indirectly to the maintenance of aquatic biodiversity of the Amazon Mainstem, which includes the Amazon River channel and its floodplain and the small sub-basins that discharge directly into it. Likewise, the Amazon River as the accumulator of ecosystem services also produces a connectivity feedback, such as large-scale fish migrations, on which many fish species and human populations depend in the numerous sub-basins.



Fisheries and Integrated Water Resources Management

Of the aquatic natural resources of the Amazon, fish are particularly promising to promote IRBM because, like salmon in the Northern Hemisphere, many are migratory and demonstrate clearly the need to look beyond local communities, urban centers, or even national boundaries. The Amazon has, by far, the most diverse fish fauna in the world, and the largest number of freshwater migratory species, including many that undertake long-distance migrations that define life-cycle ranges that span, not only various basins, but also countries. The extreme examples are migratory catfish that use the Amazon River estuary as a nursery but migrate to the far western Amazon, including Andean foothills, to spawn in all major Andes-Amazon sub-basins, including the Putumayo-Iça (Barthem et al. 2017). These migrations include life cycle total migratory distances of 4,000-5,000 km. Numerous other species with somewhat shorter migrations, but still very long compared to those in other rivers in the world, also migrate between major basins and countries. Nurseries, feeding and spawning areas are often in different regions and countries and can include some combination of non-protected areas, protected areas, indigenous territories and private holdings. Migratory fish represent approximately 80% of the annual commercial catches in the Amazon, thus their transboundary management is essential to fisheries production and human wellbeing. Fisheries offer a win-win to launch IRBM because fish provides an essential source of protein for human populations in the Amazon and fish are telltales of the ecological health of rivers and indicators of infrastructure and other impacts on water quality related to pollution and upland and wetland deforestation. Furthermore, fisheries offer a highly specific and concrete example of the necessity to address transboundary management scales that involve multiple stakeholders, including consumers of fish protein, government agencies, the fishing industry, local riverine communities, urban peoples and indigenous societies. No other aquatic biodiversity resource satisfies as many essential criteria that necessitate IRBM.

Why and what needs to be done, how to do it and at what scales?

The Putumayo-Iça offers an excellent opportunity to demonstrate IRBM for a major Andes-Amazon sub-basin. IRBM is a relatively new concept for the Amazon and the overwhelming focus on local community management as the major conservation strategy mitigated against it in the past several decades. Fisheries community management can be a conservation strategy for some species, but it is not the only one and it is insufficient for the conservation of migratory fish or the management of a basin. To implement management at a scale that is relevant for the entire aquatic ecosystem, the first step is to recognize an explicit spatial framework for organizing a multitude of hydrological, biological, cultural, social, human-caused impact and political variables in order to assess the various types of connectivity considerations required for ecosystem analyses. A hierarchical and scalable river basin framework provides a logical spatial context for this, and specifically for IRBM, as it allows the mapping of any variable within the context of the flow of water and exploitation of aquatic resources. For example, the basin hierarchy can inform political jurisdictions, protected areas and indigenous territories associated with migratory fishes for the Amazon as a whole to smaller sub-basins occupied largely by an indigenous group.

Stakeholders should first agree on an explicit basin framework that will be the basis of most analyses to understand ecosystem connectivity. Second, a resource that is important, both in and of itself, and also as a proxy for a wide range of connectivity considerations is needed for implementing IRBM. Third, the production of a GIS database is essential to integrate the large number of variables and to produce analyses to inform and educate stakeholders through through a variety of outreach activities. Fourth, in addition to scientific knowledge, traditional knowledge provides an important lens through which to view the ecosystem at a large sub-basin level, and thus must be integrated with scientific knowledge. Finally, there should be direct links to those governmental sectors in each country essential to the management of water and fisheries resources in order to develop a sectoral roadmap needed to develop and implement IRBM at transnational levels.



Wherever possible, all scales of the hierarchical river basin classification are relevant to IRBM. To use the Putumayo-Içá sub-basin as an example, and beginning at the largest scale, the Amazon Basin, there will be connectivity from the Andes to the Atlantic. The Putumayo-Içá is an important source of water, sediments and nutrients for the Amazon River. Likewise, migratory fish originating in the Amazon River estuary, and farther upstream, migrate to the Putumayo-Içá to spawn, thus further establishing the importance of the sub-basin to a large part of the entire Amazon Basin. Various jurisdictions and cultural groups within the Putumayo-Içá Basin exploit the fisheries resources in a variety of wetland categories linked to fish species life histories. Protected areas and indigenous territories may or may not include important floodplain nurseries for a wide variety of fish species, whereas long-distance migratory catfish spawning areas may only be located in river channels of Colombia that currently have no protection. Explicit consideration of the various interactive basin scales on which the fish and fisheries depend, and the wetlands associated with them, as well as their relation to jurisdictions and cultural groups, will enable implementation of IRBM in a highly specific and dynamic manner.

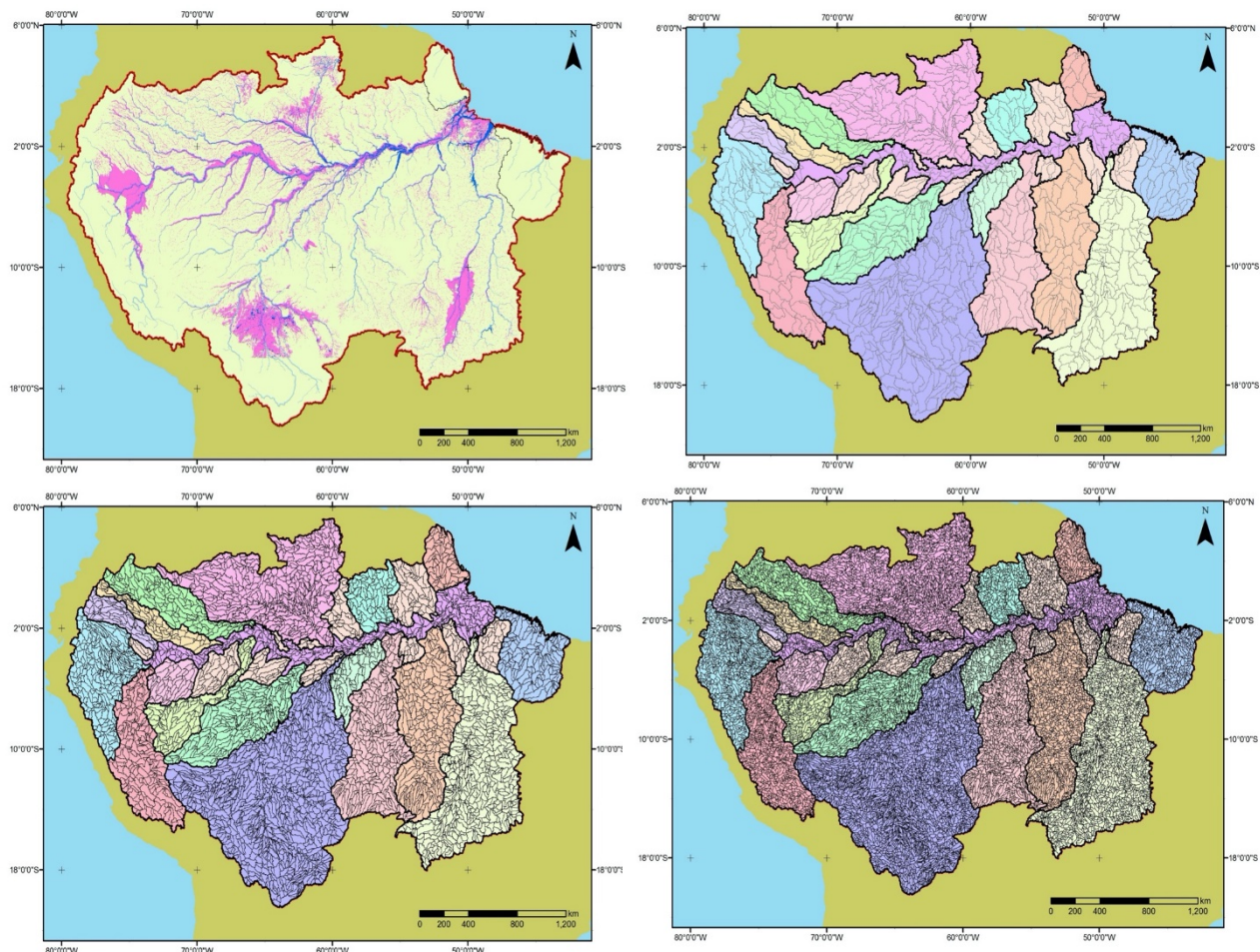
References

Barthem, R. B. *et al.* Goliath catfish spawning in the far western Amazon confirmed by the distribution of mature adults, drifting larvae and migrating juveniles. *Sci. Rep.* **7**, 41784; doi: 10.1038/srep41784 (2017).

Shao, X., Y. Fang, J.W. Jawitz, J. Yan and B. Cui. 2019. River network connectivity and fish diversity. *Science of the Total Environment* 689:21-30.

Venticinque, E., Forsberg, B., Barthem, R., Petry, P., Hess, L., Mercado, A., Cañas, C., Montoya, M., Durigan, C., and Goulding, M. 2016. An explicit GIS-based river basin framework for aquatic ecosystem conservation in the Amazon, *Earth Syst. Sci. Data*, 8, 651–661, <https://doi.org/10.5194/essd-8-651-2016>.

Figure 1. A scalable basin framework for the Amazon (Venticinque et al. 2016).



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