

Transboundary Waters & Nexus

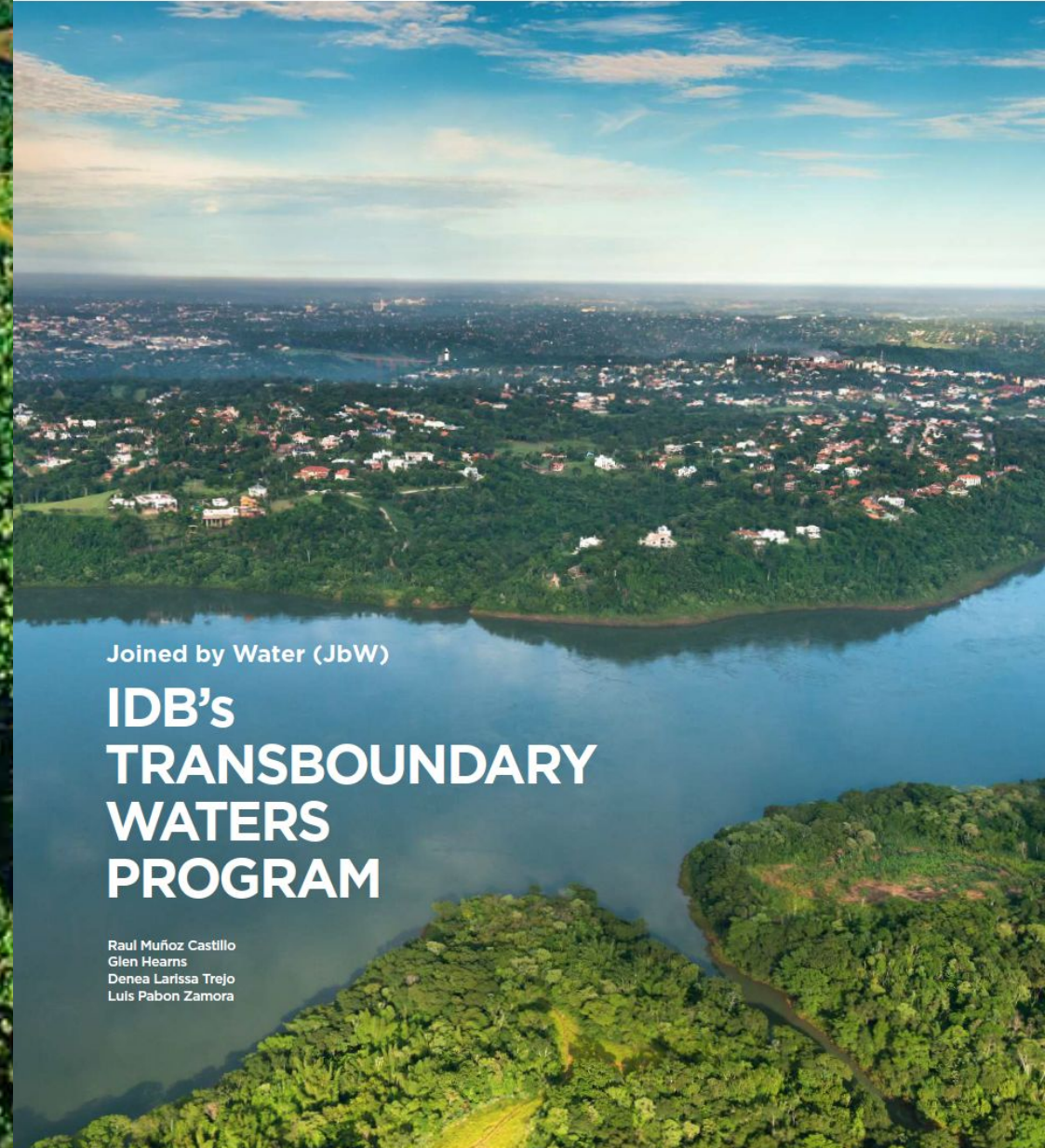
Raul Munoz Castillo, INE/WSA

CODIA, February 2021

Part-I



Banco Interamericano
de Desarrollo



Joined by Water (JbW)

IDB's TRANSBOUNDARY WATERS PROGRAM

Raul Muñoz Castillo
Glen Hearn
Denea Larissa Trejo
Luis Pabon Zamora

Water Security: Holistic Approach



- Strategic plan for the next 5 years
- Increasing portfolio in water resources
- Cross-sectorial team (INE-CSD)
- Participatory process (clients)
- Expanding our scope - International Water approach

Scope.....??: International Waters

WHAT?



WSI: 40% !!!

WHY?

Shared River Basins

- **71%** of the total surface water flow in LAC
- Cover almost **60%** of the territory
- More than **40%** of the population resides
- Just the Amazon: **40%** total freshwater
- SA- **38 TBs** and CA- **29 TBs**

Wetlands & Aquifers

- World's Largest Aquifer: Guarani
- World's Largest Wetland: Pantanal

Lakes

- World's Largest Shared Lake: Titicaca

Lack of governance and coordination

Increasing CC vulnerability and instability

What are the Problems?

**Ineffective
Governance
Frameworks**

**Inefficient
Management at the
Tranboundary Level**

Water Pollution



**Land Use Changes,
Erosion and
Sedimentation**



**Loss of
Biodiversity**



**Alteration of the
Hydraulic Regime**



**Climate Change &
Hydroclimatic
Events**



Objectives

General

Contribute with compliance with **SDG 6.5 in LAC**, and impact SDG 2 & 13

Maximize economic, environmental and social welfare

Strengthened diplomatic relations

Specific



Enhance Governance



Build Awareness & Technical Capacity



**Create the Enabling Environment:
Management**



Unlock Funding



Waters With No Borders

Thematic Components



INSTITUTIONS
Governance



PEOPLE
Capacity Building &
Management



SCIENCE
Data & Information



FINANCING
Sustainable Investment

SDG 6.5.2: Operational arrangements-Criteria

- Existence of a joint body
- Regular, formal communication between riparian countries (at least once a year)
- Joint or coordinated management plans or objectives
- Regular exchange of data and information (at least once a year)

Data are commonly compiled by relevant national line ministries and institutions (e.g. for Water, Environment, Natural Resources, Hydrology, Geology).



Transboundary Waters & Nexus

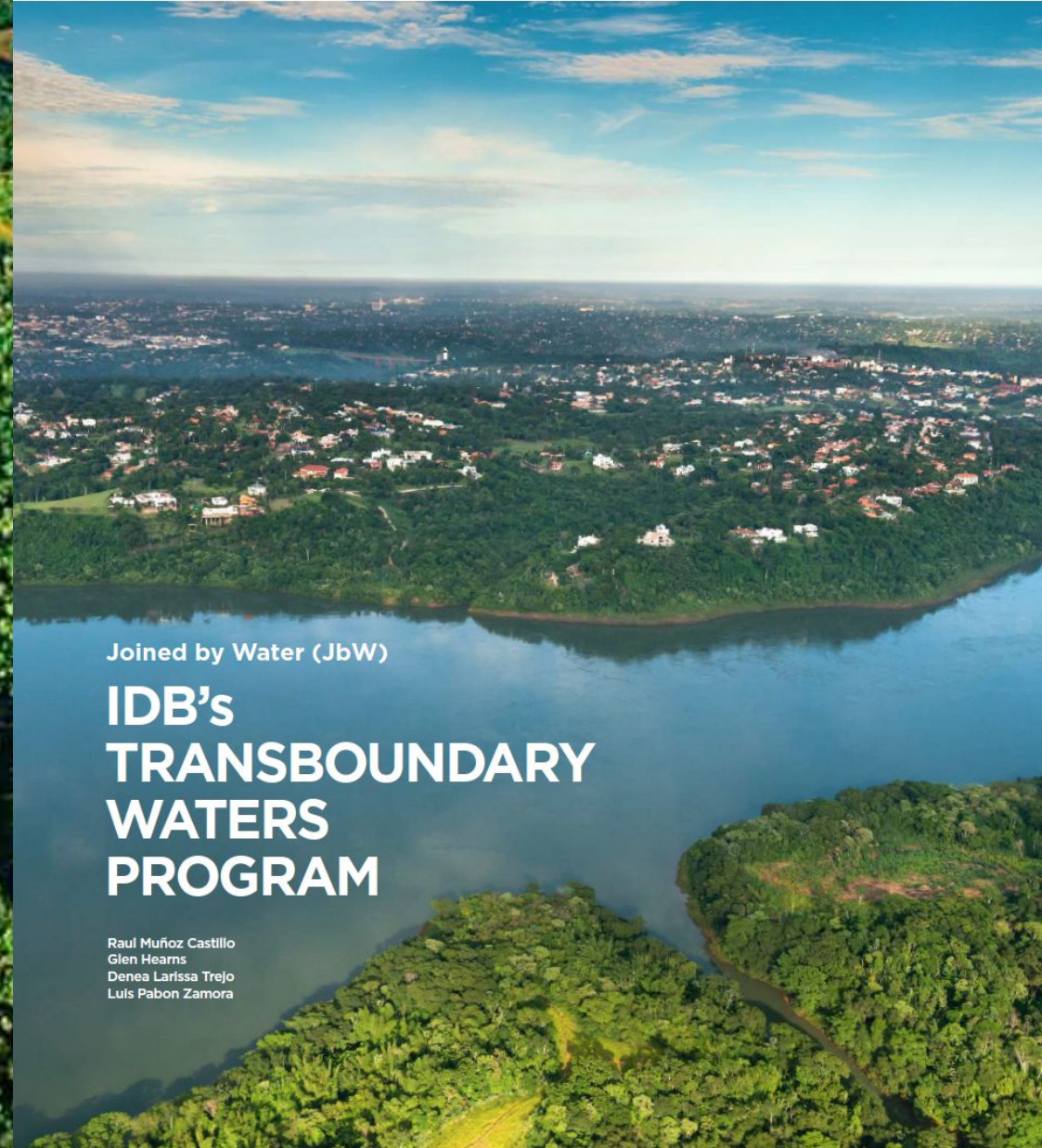
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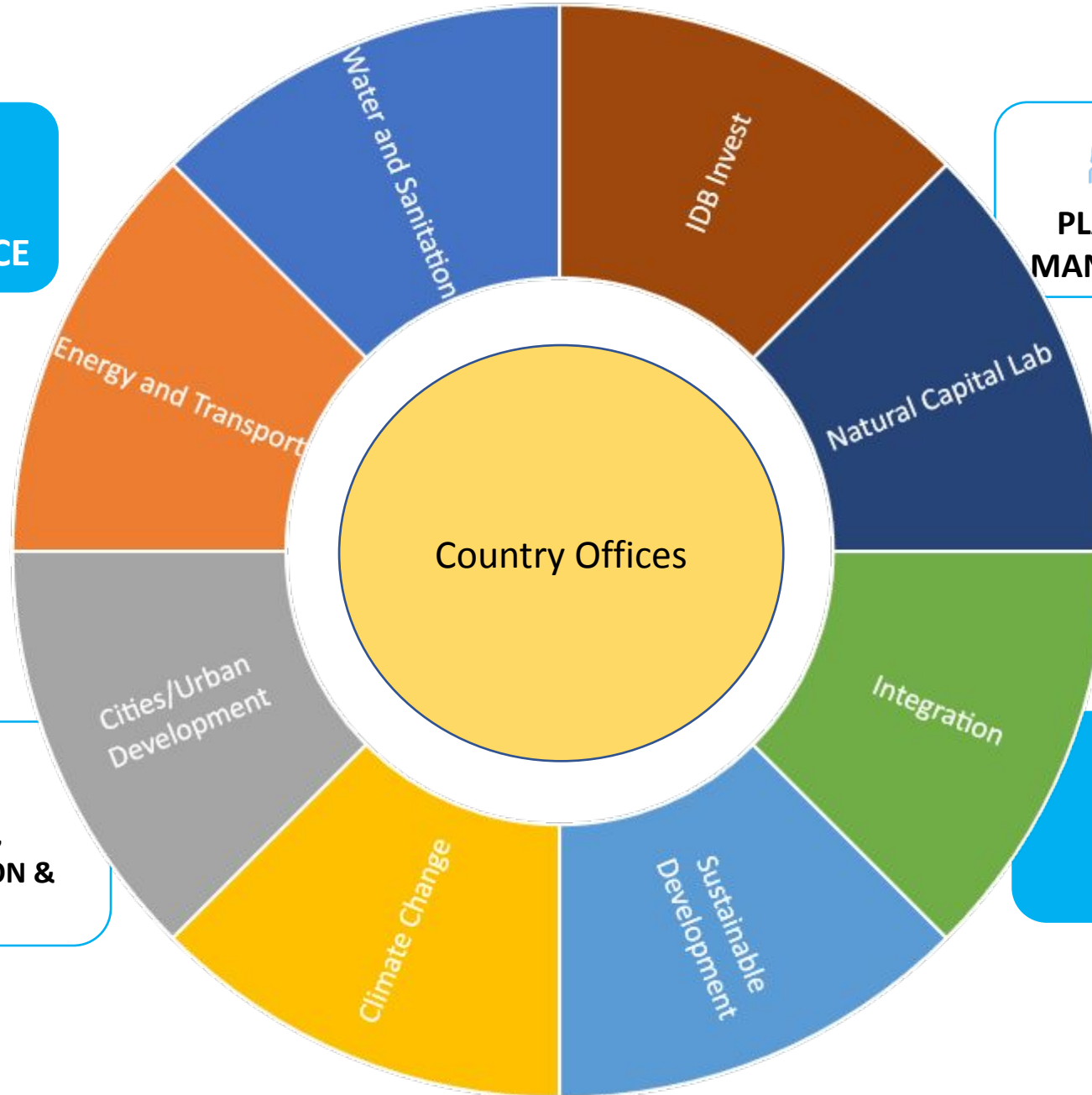
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REGIONAL AND SECTOR INTEGRATION



Nexus Approach:

- Country Offices
- Sectors Strategic Frameworks
- COFs Portfolio



Innovative Finance:

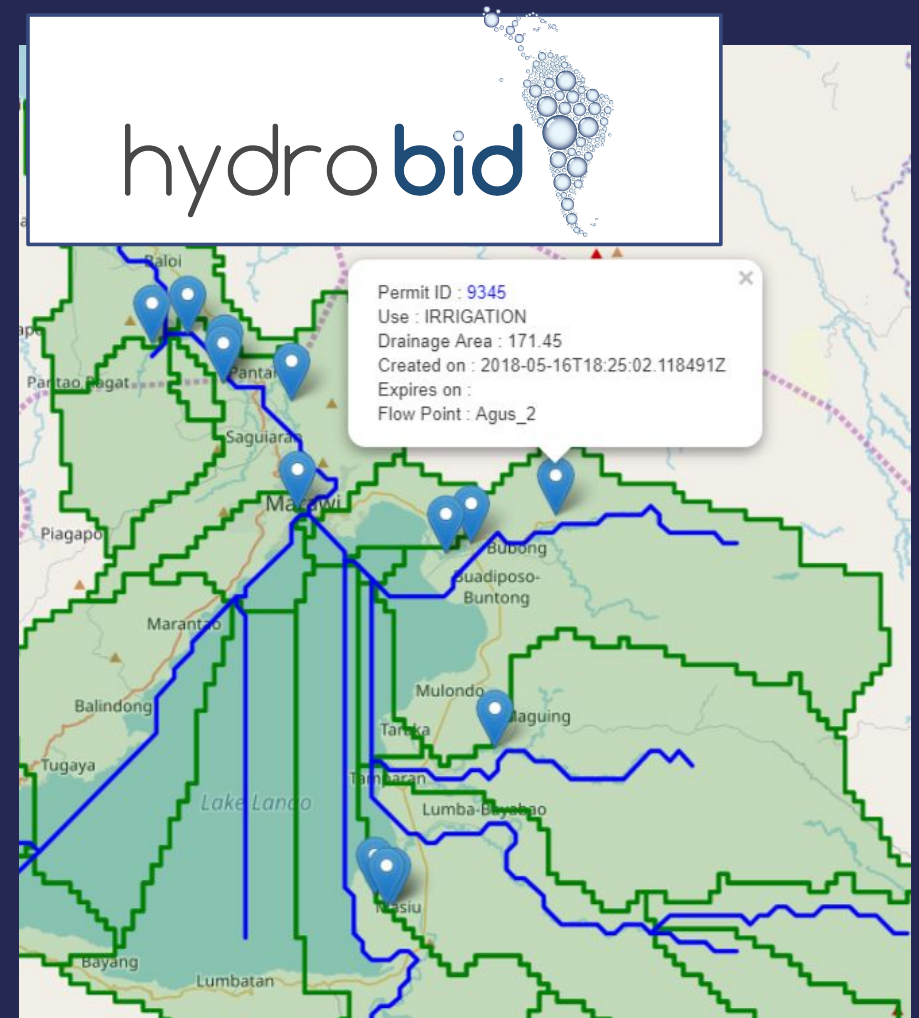
- IDB Invest (PPPs)
- Nat Capital Lab (NBSs)
- INTAL Facility



Concesiones de Agua Hydro-BID

Herramientas de apoyo a la gestión concesiones de agua en cuencas transfronterizas

- Herramienta independiente basada en la web para apoyar la toma de decisiones relacionadas a concesiones de agua
- Objetivos:
 - Identificar, organizar, y gestionar los sistemas de concesiones y asignación.
 - Analizar la asignación de concesiones de agua a diferentes usuarios dentro de la cuenca.
 - Analizar los impactos aguas abajo de cada concesión.
- La herramienta se adapta a la complejidad de necesidades locales



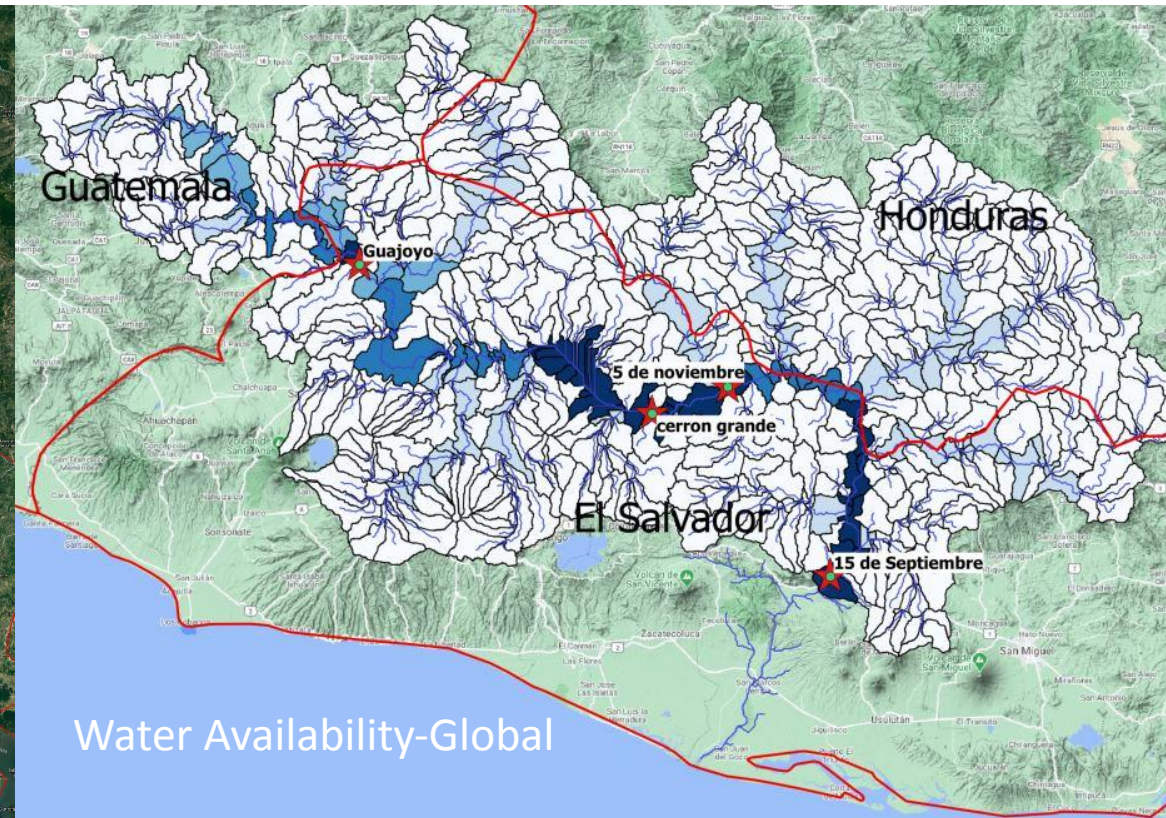
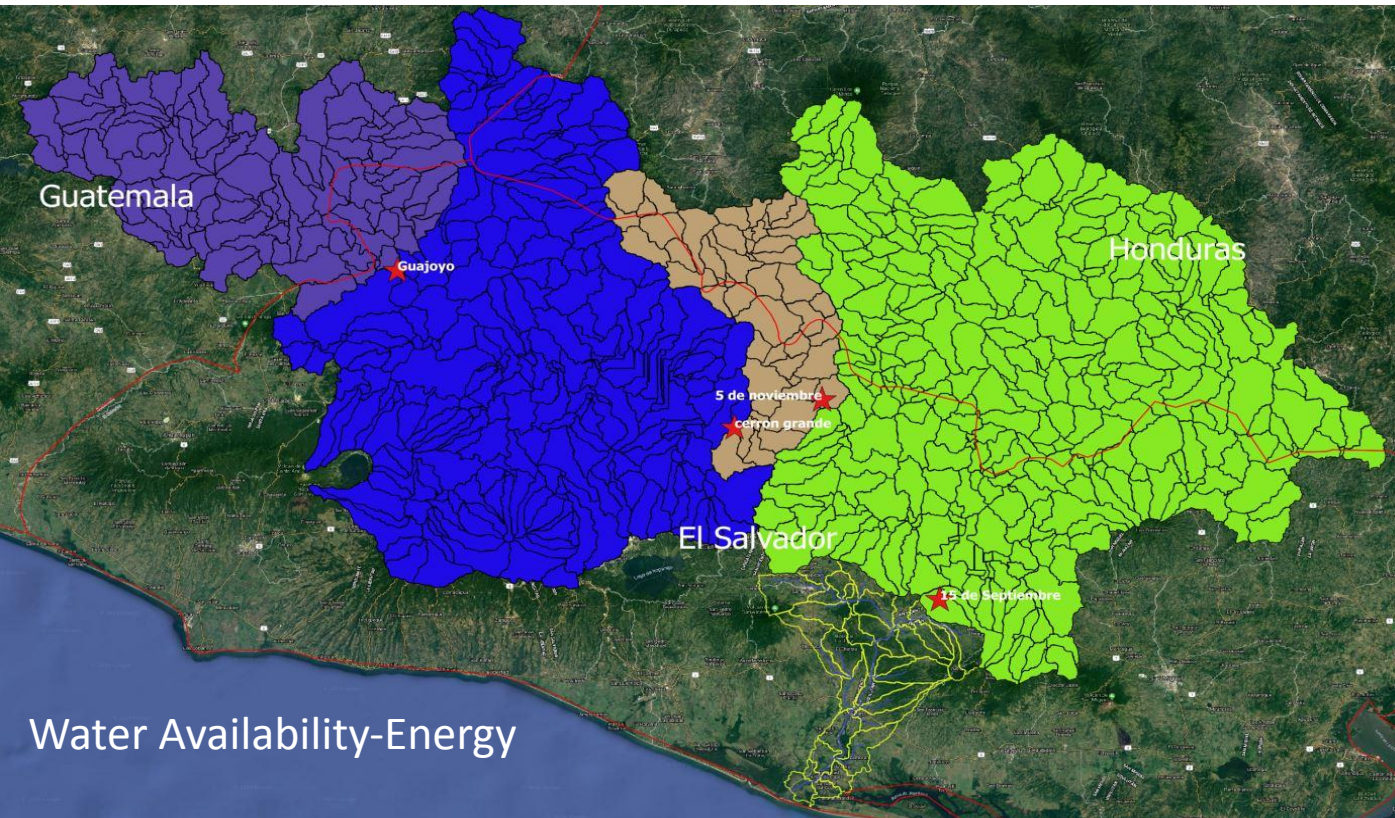
Water Use in Mindanao River



- Irrigation
- Industry
- Domestic
- Power

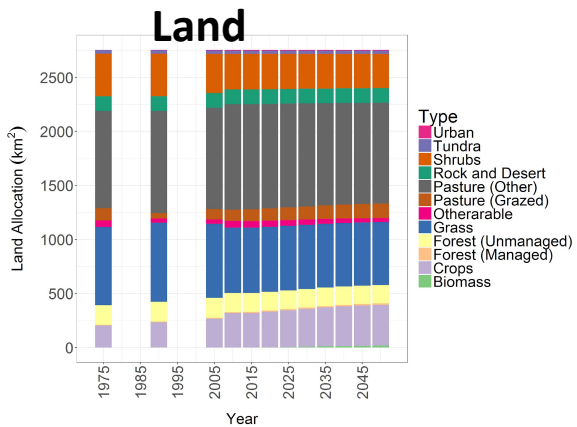
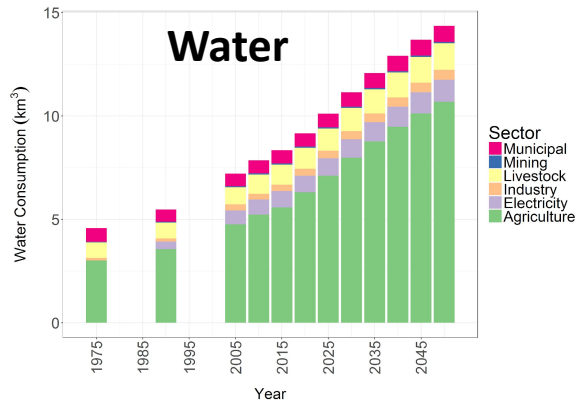
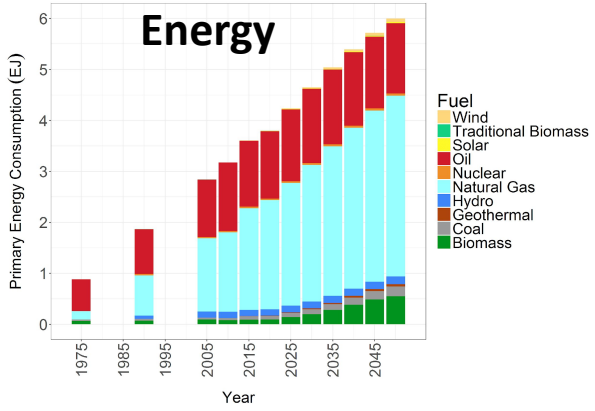
| Purpose | Volume Allocated | % of Total |
|------------|------------------|------------|
| Irrigation | 537 | 61% |
| Industry | 32 | 4% |
| Domestic | 245 | 28% |
| Power | 60 | 7% |

Hydro-BID: Data and Modeling for Nexus Planning in TBs



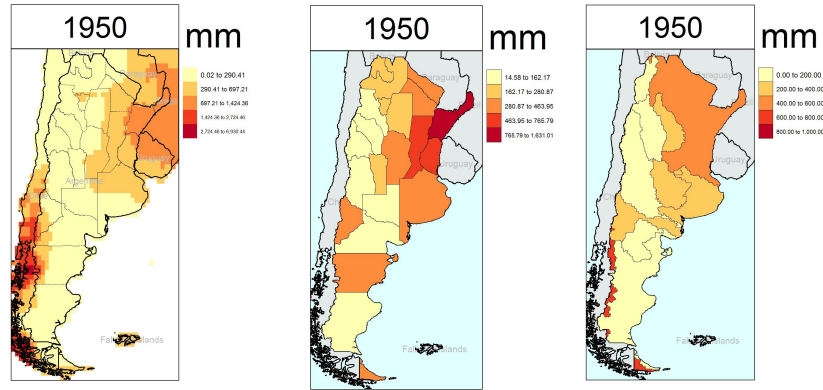
Trinifio System: Guatemala, Honduras, El Salvador
Water Security Analysis: Water availability for multiple sectors

National Aggregated

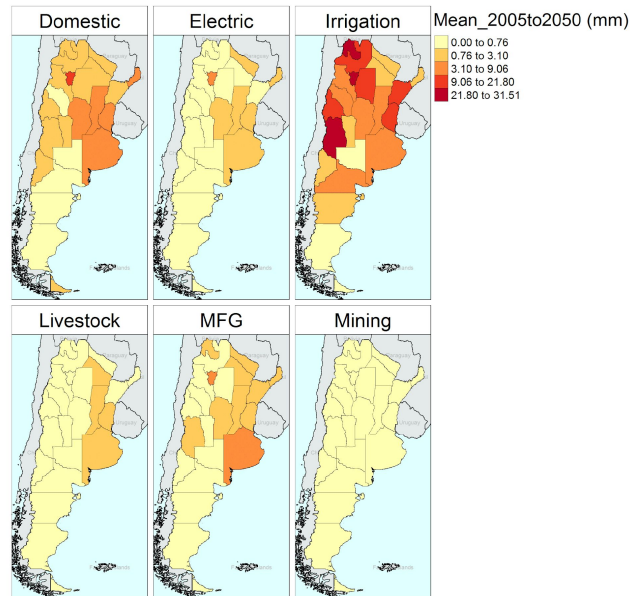


Downscaled

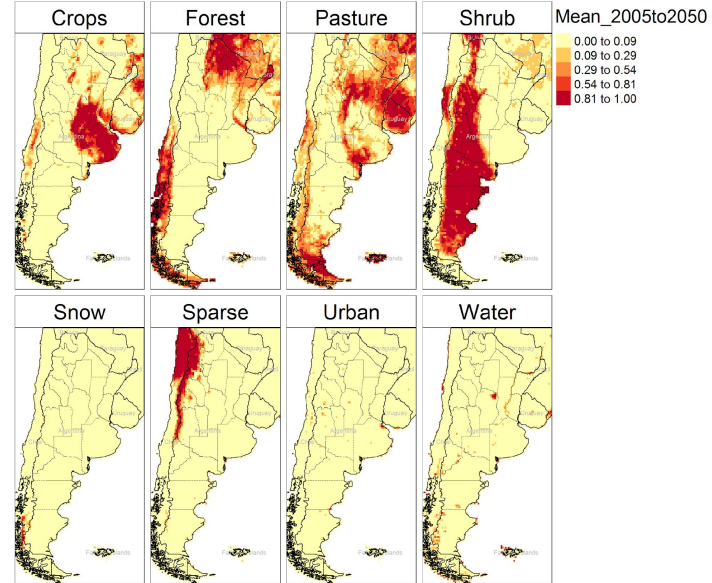
Water - Supply



Water - Demands

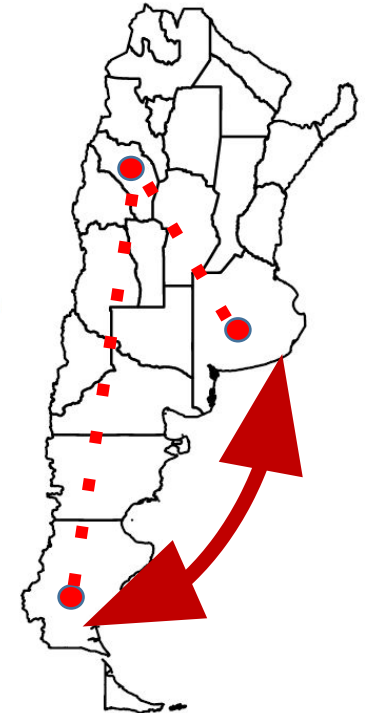


Land Use



Sub-regional Dynamics/Investments

To be developed..
Infrastructure,
investments



Sub-Basin Systems Analysis

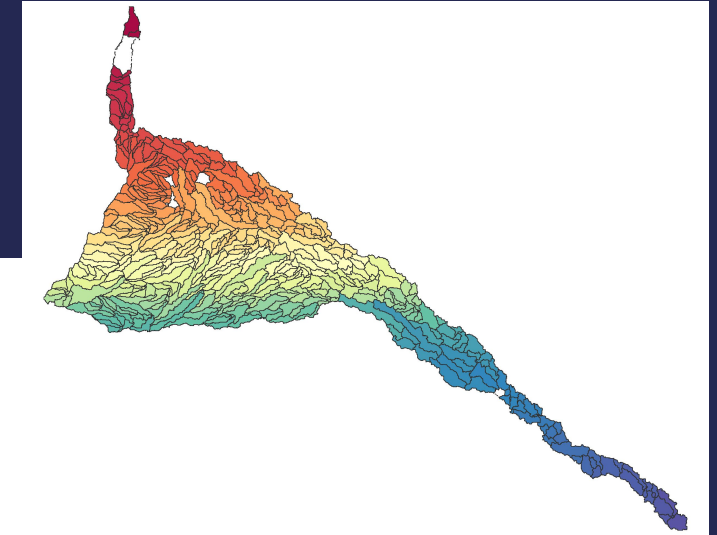
Region



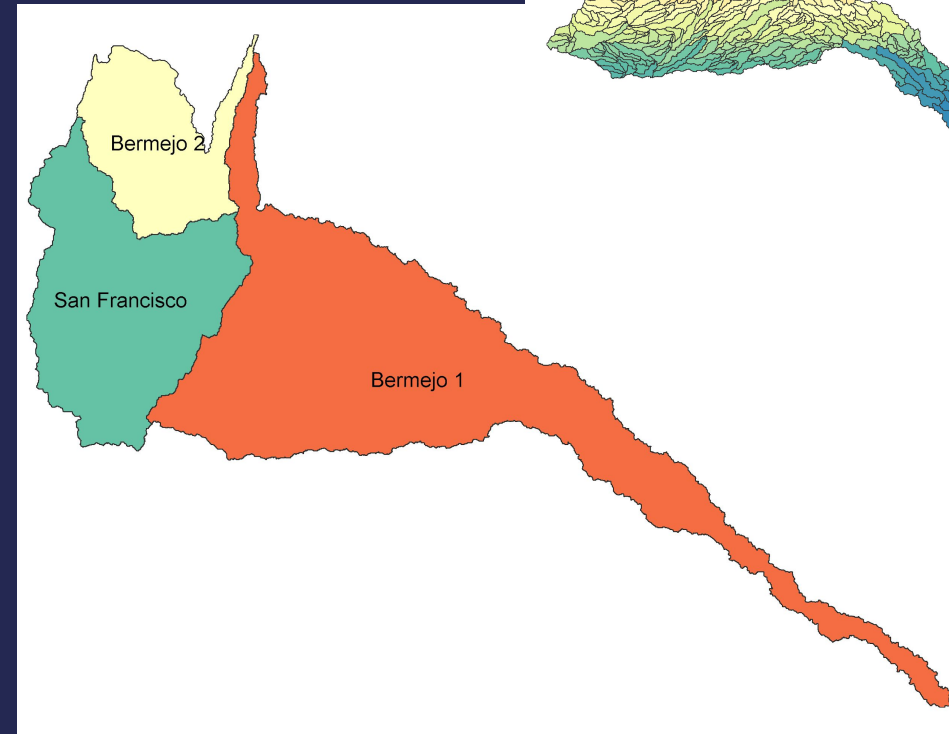
Sub-region Focus



HydroBID catchments



HydroBID Sub-Basins



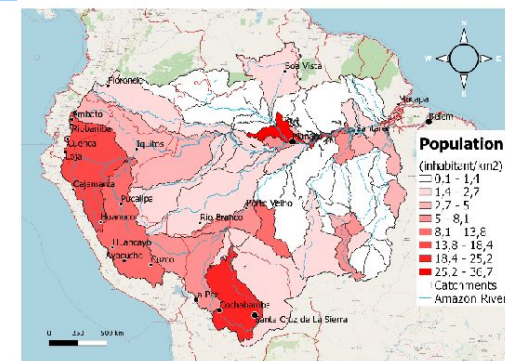
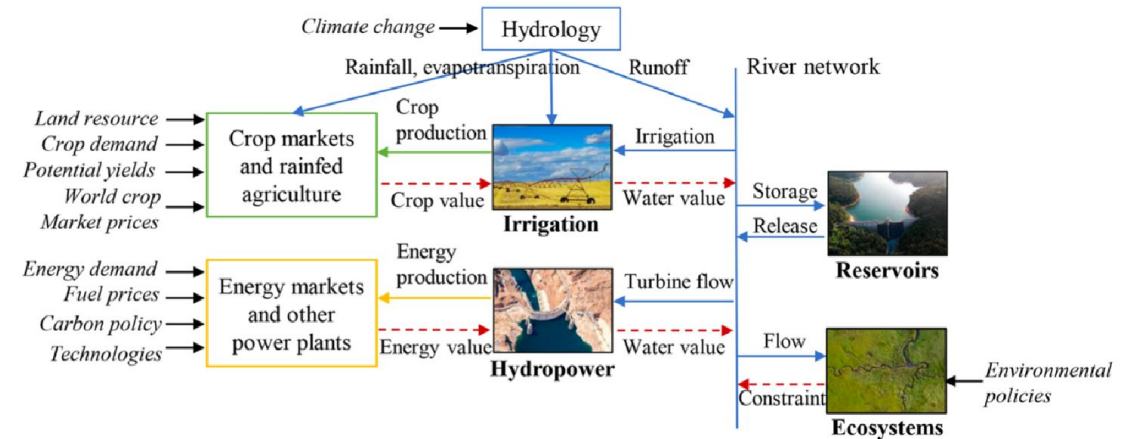
Amazon Basin: Transboundary Nexus Analysis

GEF SAP

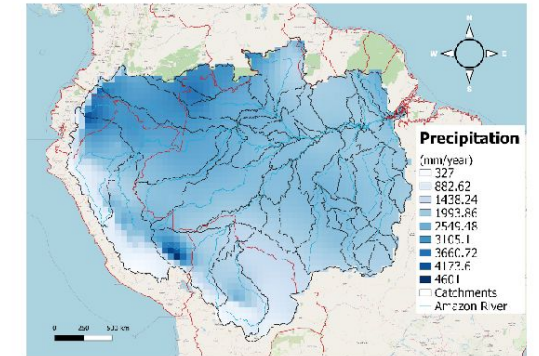
Countries-sectoral investments portfolio

INDCs

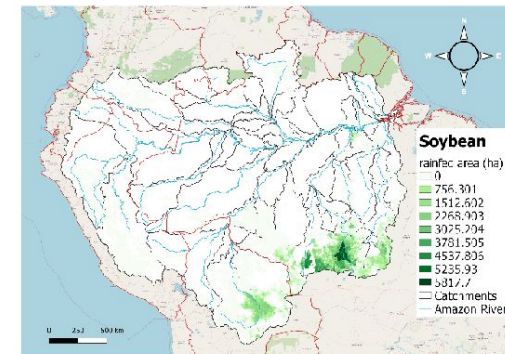
SDGs



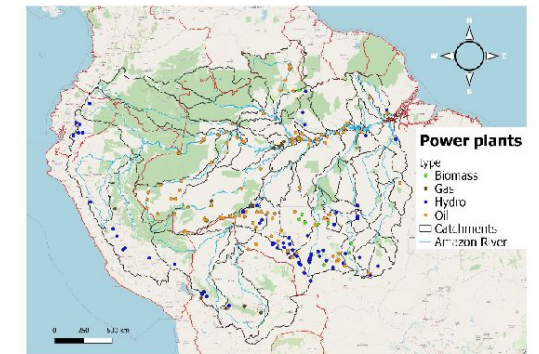
Source: Own production from LandScan and World Cities database



Source: Own production from CRU Global Climate Dataset

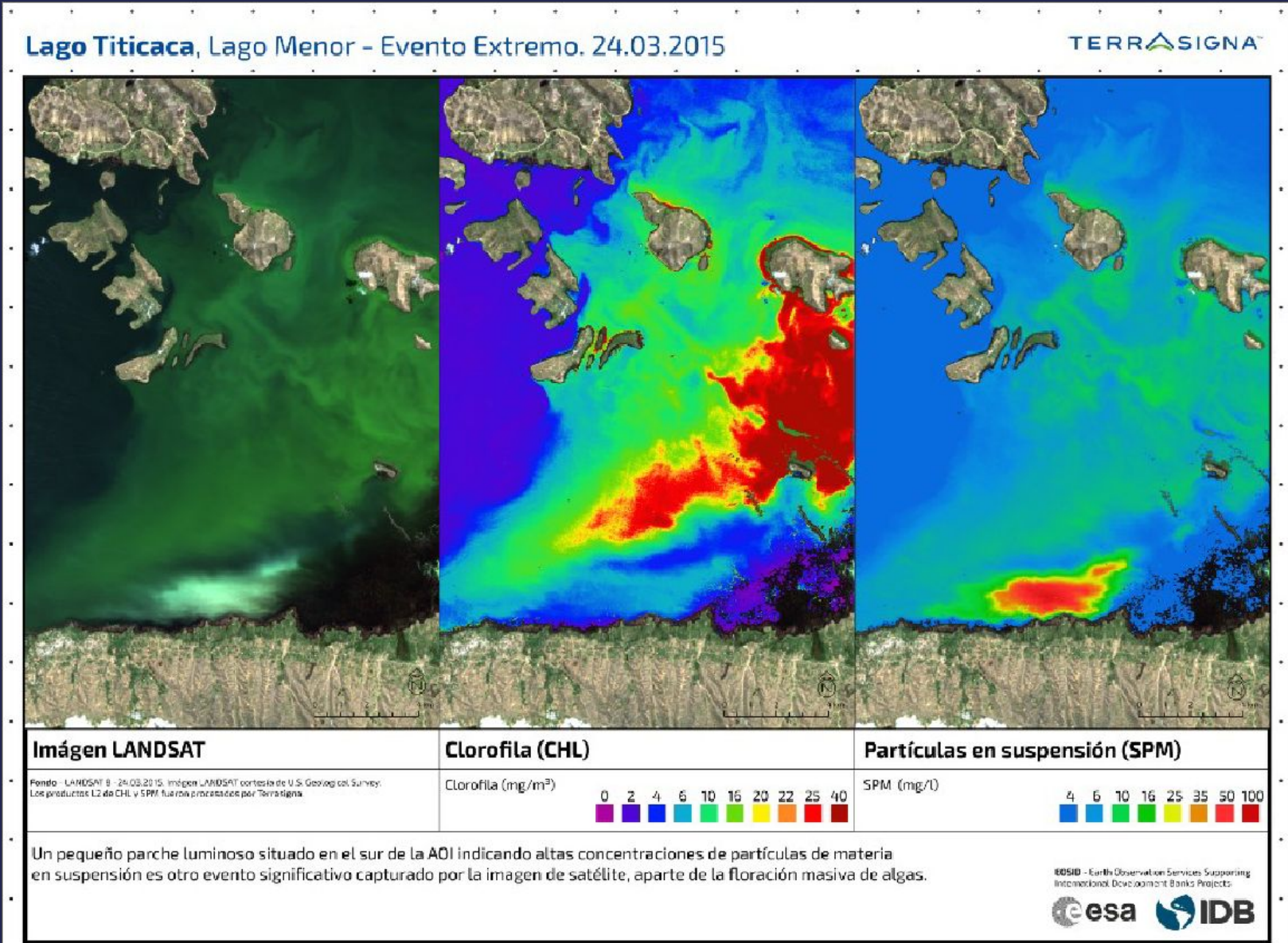


Source: Own production from SPAM 2010

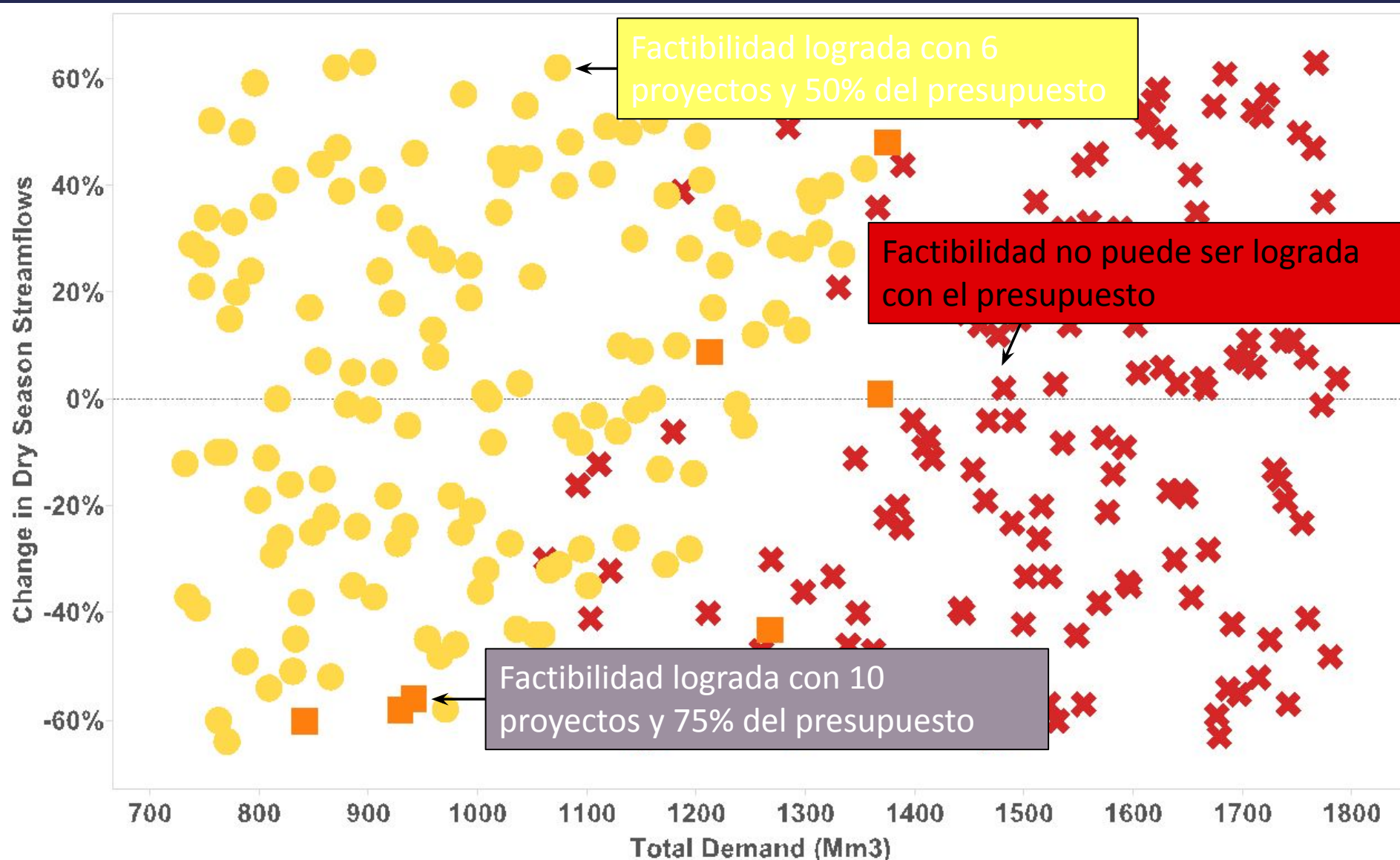


Source: Own production from Global Power Plant Database (WRI)

Big Data: Remote Sensing



Robust Decision Making and Uncertainty- RAND

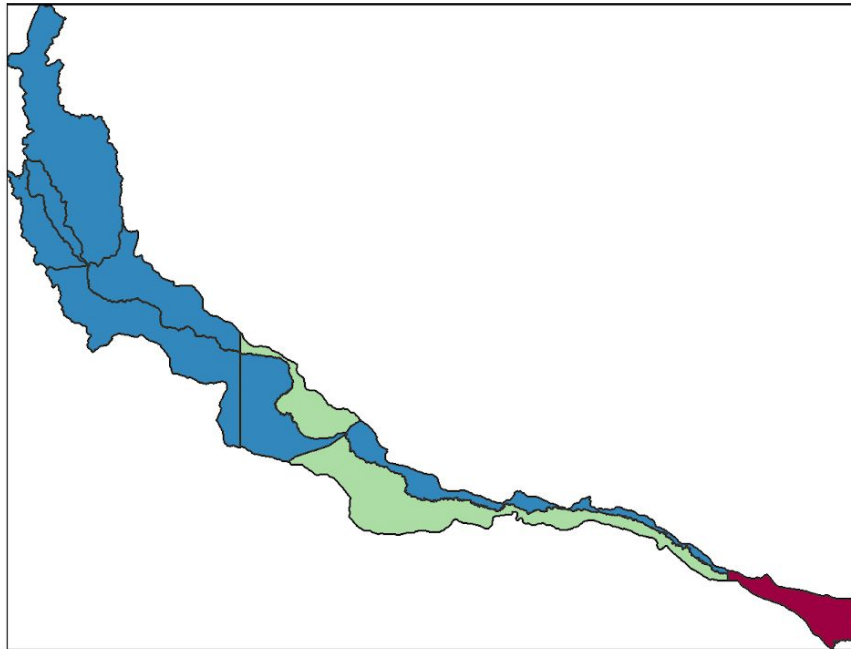


600 futuros plausibles
(300 condiciones de demanda y flujo x 2 condiciones de factibilidad de los proyectos difíciles)

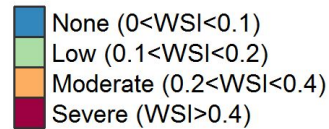
Agricultural Investment Policy Increases Water Scarcity

- 7 New irrigation projects could increase annual revenue by 250 million pesos/yr (~6 million USD/yr). However, these projects carry a risk of worsening water scarcity:

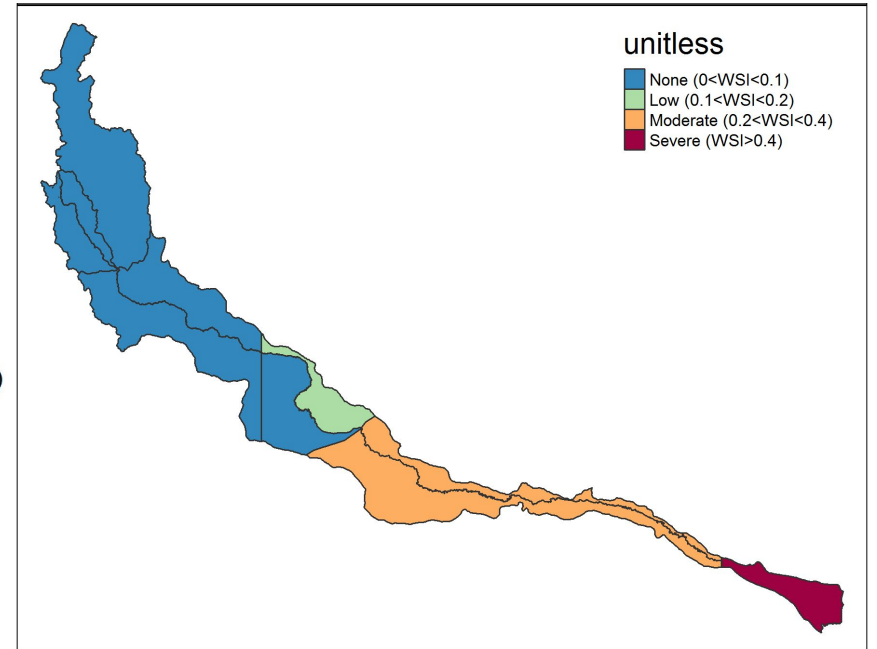
Local data (historical)



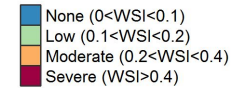
Scarcity



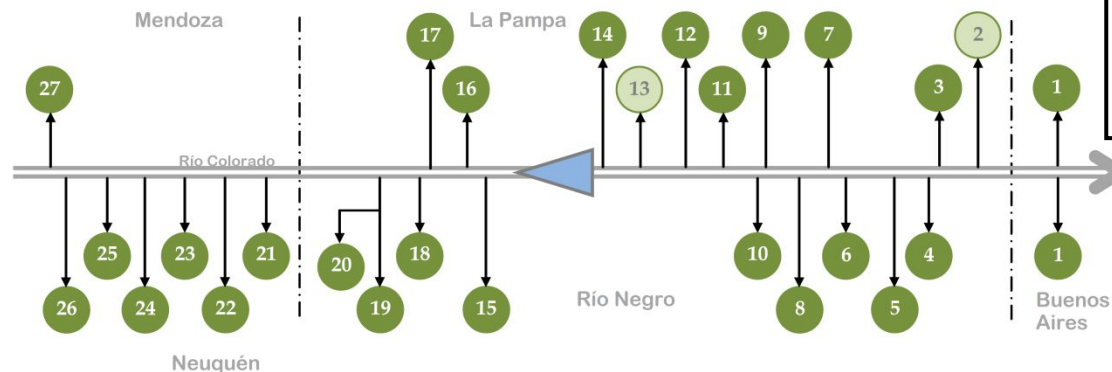
Agricultural Expansion Policy



unitless



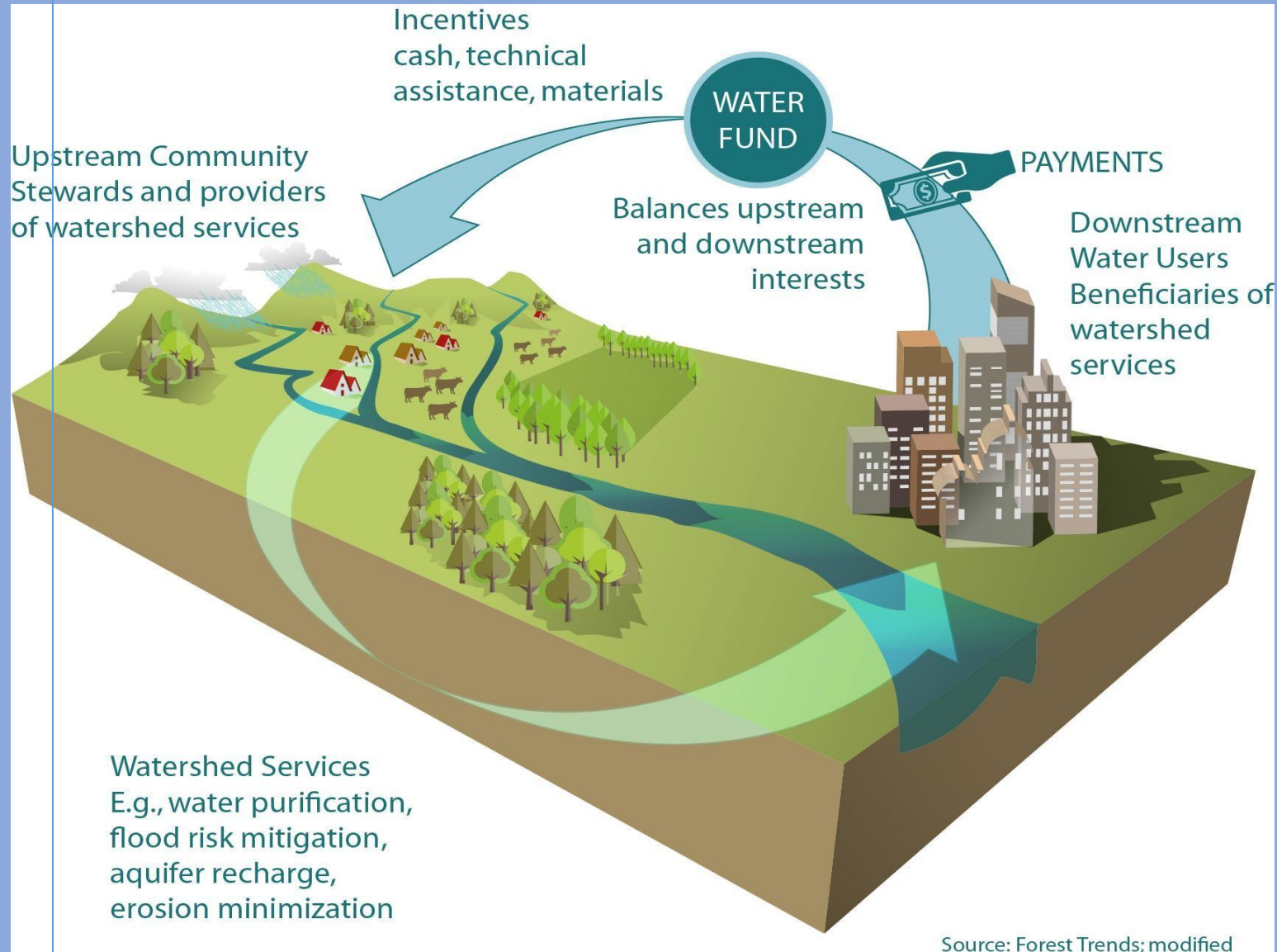
MIT Basin Investment and Operational Plan (1980s)



- Operational
- Planned or under construction

TRANSBOUNDARY WATER FUNDS- TRIFINIO (Central America)

- A financial mechanism for watershed conservation
- An implementation mechanism for conservation activities/projects
- A governance mechanism for watershed planning
- Support to OAS-UNEP GEF Project
- WASH, Irrigation, Blue Energy



Source: Forest Trends; modified



LATIN AMERICAN
WATER FUNDS
PARTNERSHIP

PROGRAMA DE AGUAS TRANSFRONTERIZAS DEL BID

PANTANAL

AMAZONAS

ACUÍFERO GUARANÍ

TITICACA LAKE (US\$ 77 M)

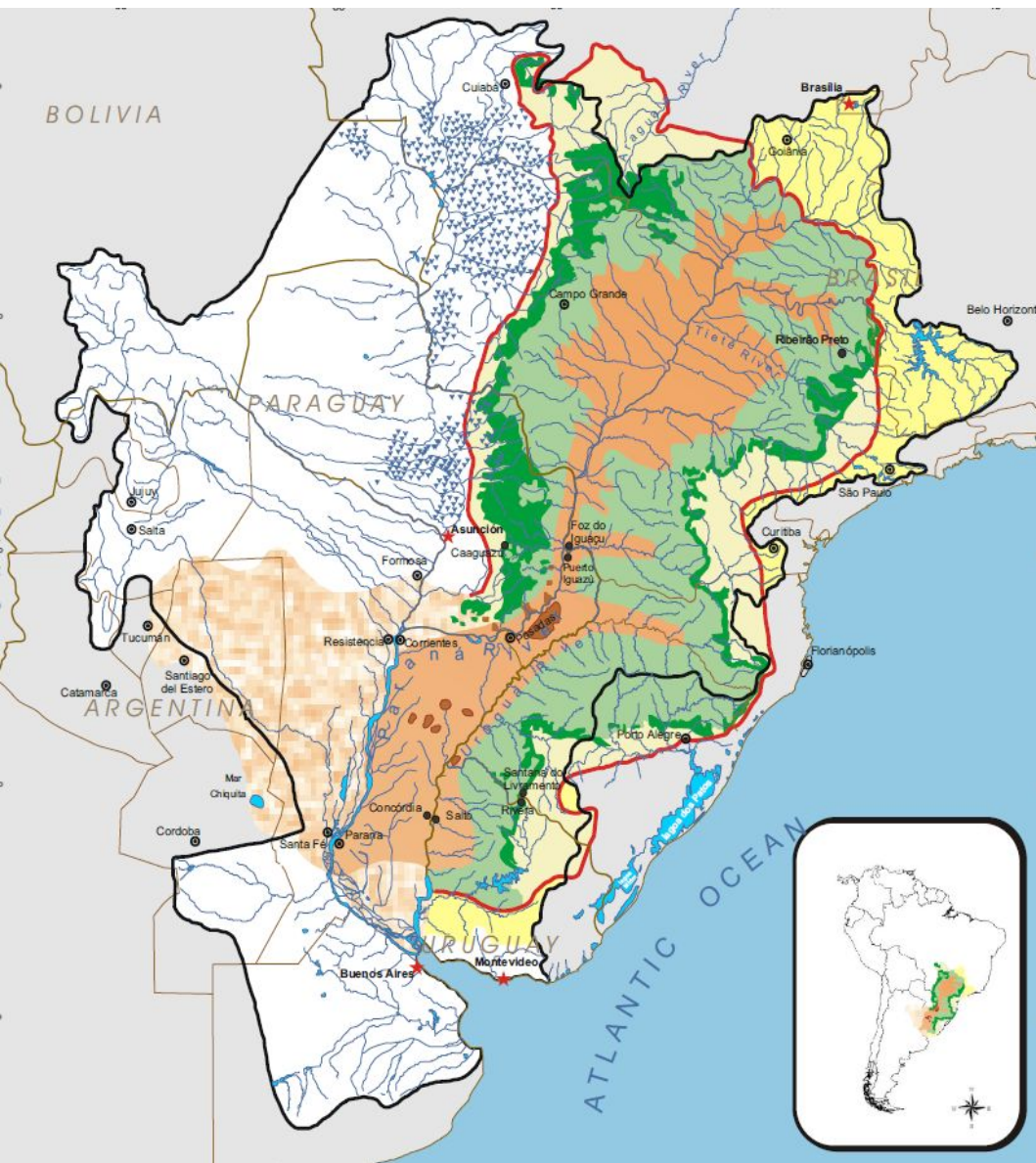
PLAN MAESTRO DE LA CUENCA DEL RÍO PILCOMAYO (US\$ M 1.5 M)

PLAN MAESTRO DE MANEJO DE RECURSOS HÍDRICOS DEL RÍO PARAGUAY

PROGRAMA DE AGUA Y SANEAMIENTO REGIÓN CHACO- ORIENTE PARAGUAY (US\$ 200 M)

PROGRAMA DE SANEAMIENTO DE CIUDADES DE LA CUENCA DEL RÍO URUGUAY/ ENTRE RÍOS (US\$ 80 M)

PROGRAMA DE AGUA Y SANEAMIENTO AMBIENTAL DEL ALTO PARANA



- **Objective:** Improve water quality and resource efficiency use for the Alto Parana River Basin and the Guarani Aquifer
- **Target:** environmental degradation due to high level of organic pollutants discharge (only 5% wastewater treatment)
- **Pre-investment:** CT Project for pre-feasibility studies for a regional transboundary multi-phase decontamination program for the Alto Parana, under a PPP scheme [PY, AR, UR, BR]
- **Phase I (Paraguay): US\$ 200M (US\$ 100M IDB- US\$ 100 M JICA)**
- **IDB TC:** Feasibility, Engineering, EIA, CBA, Socialization...
- **Transboundary:** Basin Master Plan with focus in water quality
- **Nexus:** pre-feasibility for Irrigation, Energy and Navigation

Pantanal



Challenges

Strengthen transboundary governance mechanisms, generate data and information for decision-making, sustainable financing, biodiversity conservation, sustainable infrastructure, long term funding, social and economic benefits

Actions

1. GEF Pantanal Project for Bolivia, Brazil and Paraguay - \$10 M
2. Upper Paraguay River Basin Plan- US\$ 600K CT Project
3. SAP: Green Infra- NBS (Bonds, Funds..)- IDB Nat Cap Lab
4. IDB Invest and PPPs (Agro, Tourism, Energy)
5. Project Preparation Facility ~ US\$ 500M (GCF)
6. IDB INTAL Facility- Sust Transport and productivity