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Federal Ministry
for Economic Cooperation
and Development

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National cases in LAC: Costa Rica & Brazil

1st Executive Committee Meeting

(29-30 March 2017, Bonn, Germany)

Federal Ministry
for Economic Cooperation
and Development

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1. National case study in Costa Rica

- **Objective**: Description of the relevant WEF interrelations and formulation of policy recommendations for their better management
- National inter-institutional counterpart:
  - Water Directorate (DA) / Ministry of Environment and Energy (MINAE)
  - Ministry of Agriculture and Livestock (MAG)
  - National Irrigation and Drainage Service (SENARA)

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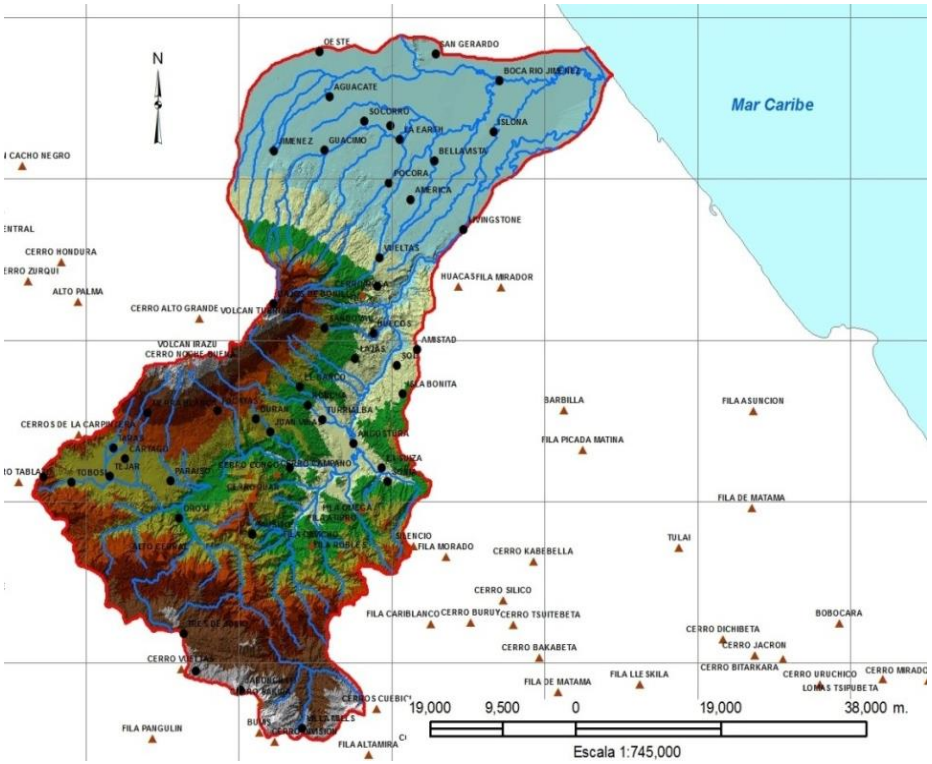
Study area: River Reventazon basin

- 25% of water for drinking water supply in San José.
- 38% of hydroelectricity generation.
- 85% of vegetable production, for domestic consumption and exports and, 30% of meet and milk production.
- The study focuses on the upper part of the river basin.



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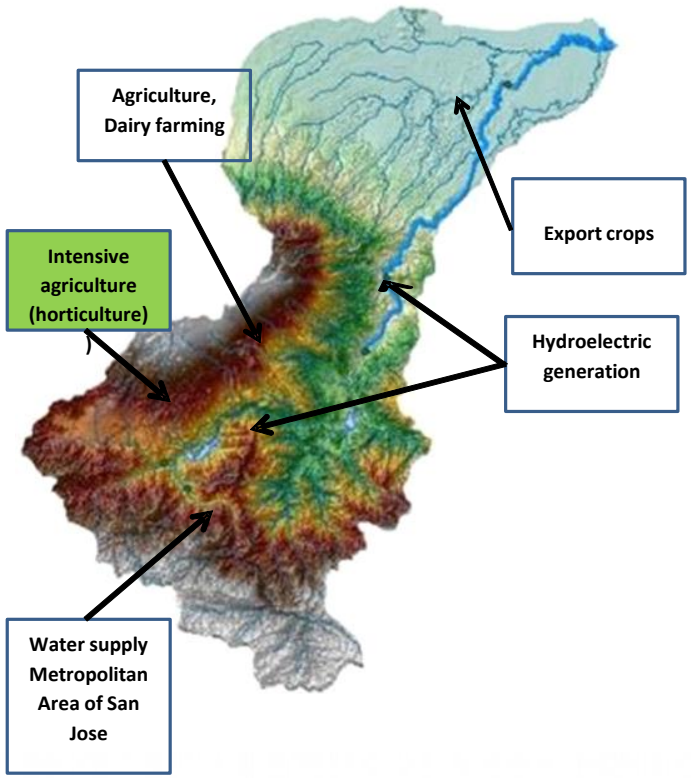

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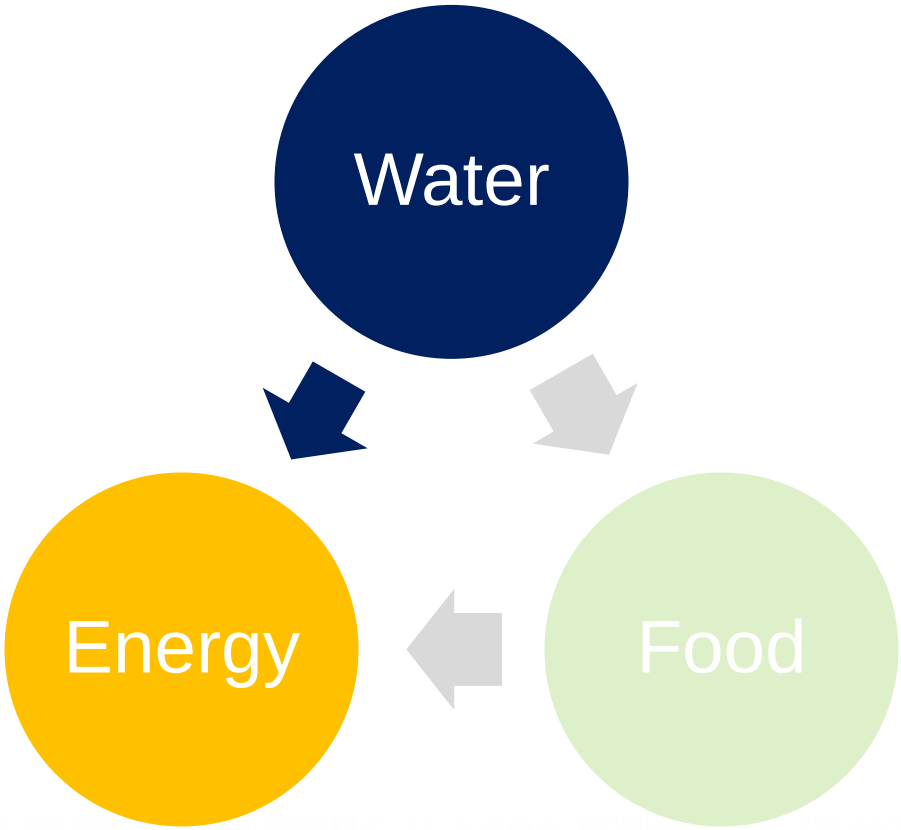
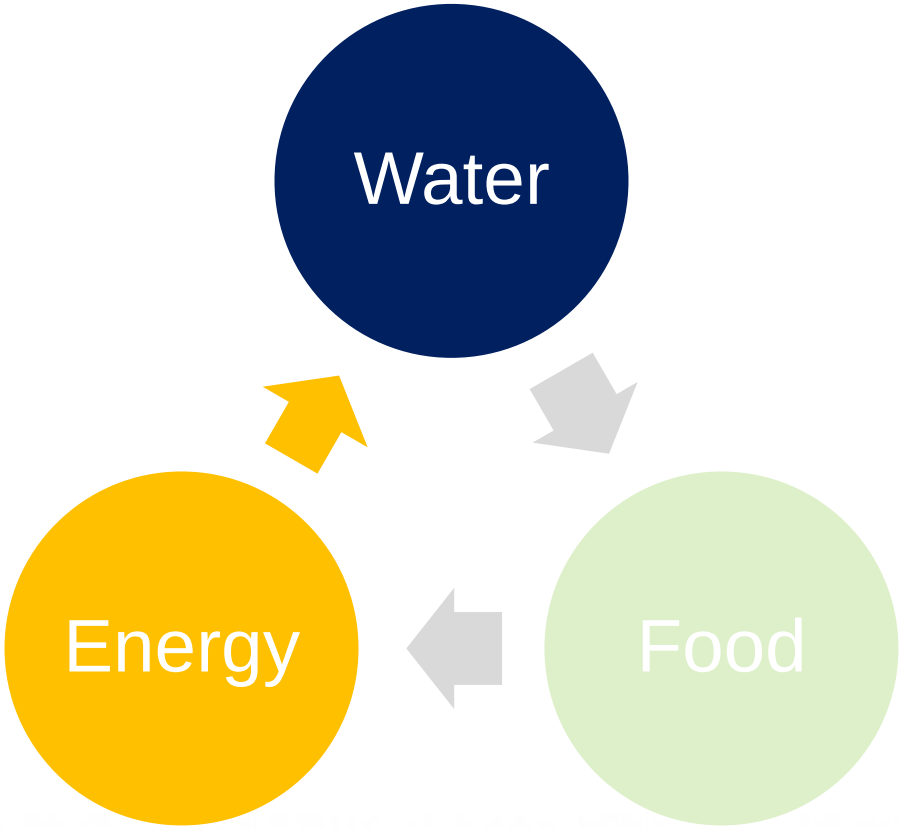
Study area: River Reventazon basin

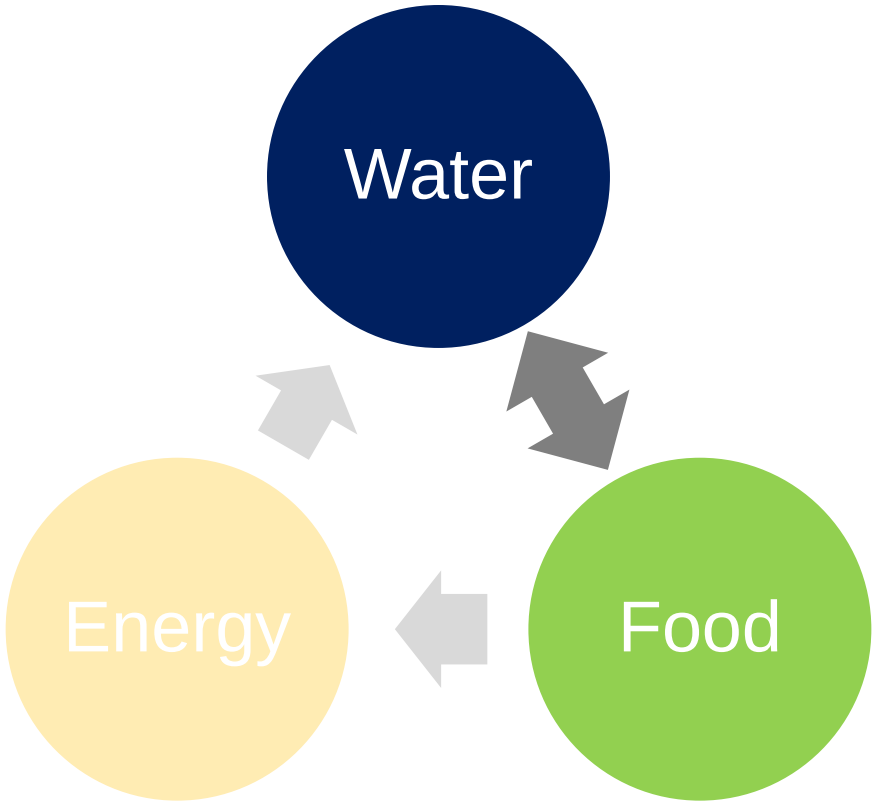
- At least since the 1990s, the country is in a conflictive process to adopt a new water law (1942):
  - In this river basin: Conflicts between water allocation for irrigation and hydroelectricity generation.
  - Irrigation: **low efficiency**. Hydroelectricity generation: **erosion/sediments.**
  - Large degree of **informality** in water utilization.
  - **2nd most contaminated river** in the country:
    - Lack of urban and industrial wastewater treatment and intensive use of fertilizers and pesticides in agriculture.
  - But, In this river basin, exists the only river basin agency in the country (COMCURE).

- **Priority water use is hydroelectric generation** (ICE, JASEC, private companies).
- Competition with other sectors.
- **In practice**, water concessions can be granted by multiple agencies (DA/MINAE, ICE and SENARA).
- **Water transfer** from the Reventazon River basin to Tárcoles River basin for urban water supply to the capital city.
- Environmental impacts of hydroelectric plants and reservoirs.
- Socio-environmental conflicts

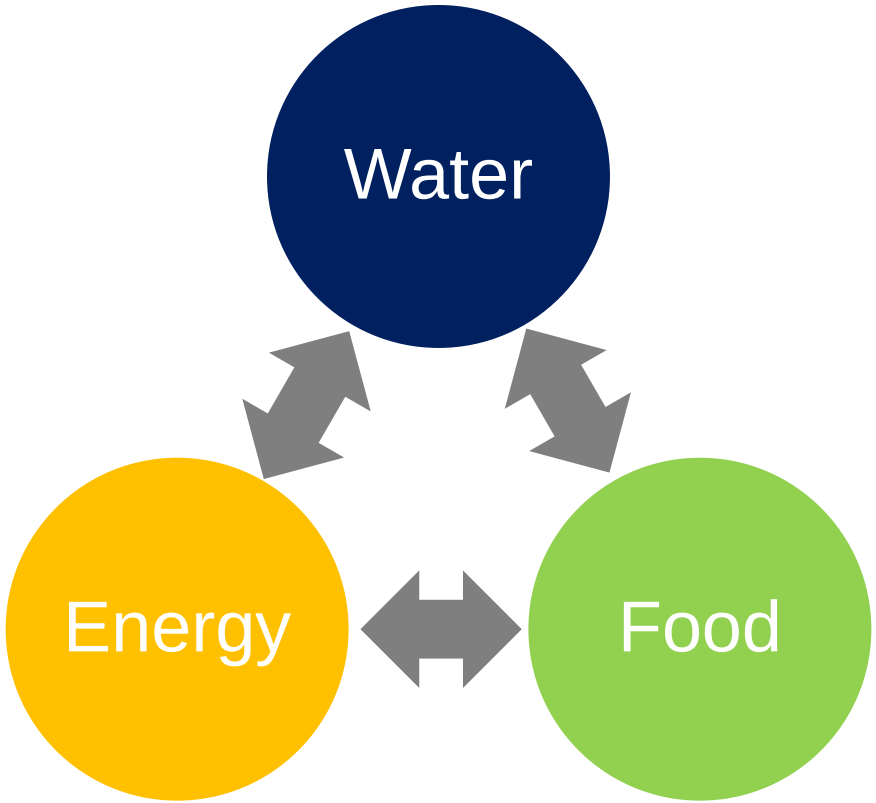


- **Modernization of traditional irrigation systems** towards modern irrigation systems (dripping, micro-sprinklers). Greater demand of energy.
- **Water shortage in the Upper Reventazon basin**. Other options for the transfer of water: Additional energy demand, higher irrigation costs.
- Water service providers do not have wastewater treatment plants.
- Lack capacity for monitoring and control.
- Low level of wastewater treatment.





- Irrigation: Insufficient infrastructure and modern systems. Increased water shortages.
- Poor WWT, wastewater discharges from livestock activities, poor management in agrochemicals use, loss of water quality.
- **Basin degradation due to forest land use conversion to pastures and crops**. Consequences: Maximum flow rates increase, flooding, pollution, erosion, sedimentation and loss of fertility.
- Weak water uses control and monitoring of DA (illegal practices).
- **No water balances in some sub-basins: lack of supply / demand information.**



- Conflict between JASEC (water rights, not use all) and SENERA (small irrigation projects development).
- **Sectoral investments and planning without coordination**. COMCURE nominaly is in charge of coordination but this requires commitment and involvement of the stakeholders.
- Legal frameworks that support institutionalism and actions within the basin limit integrated management.

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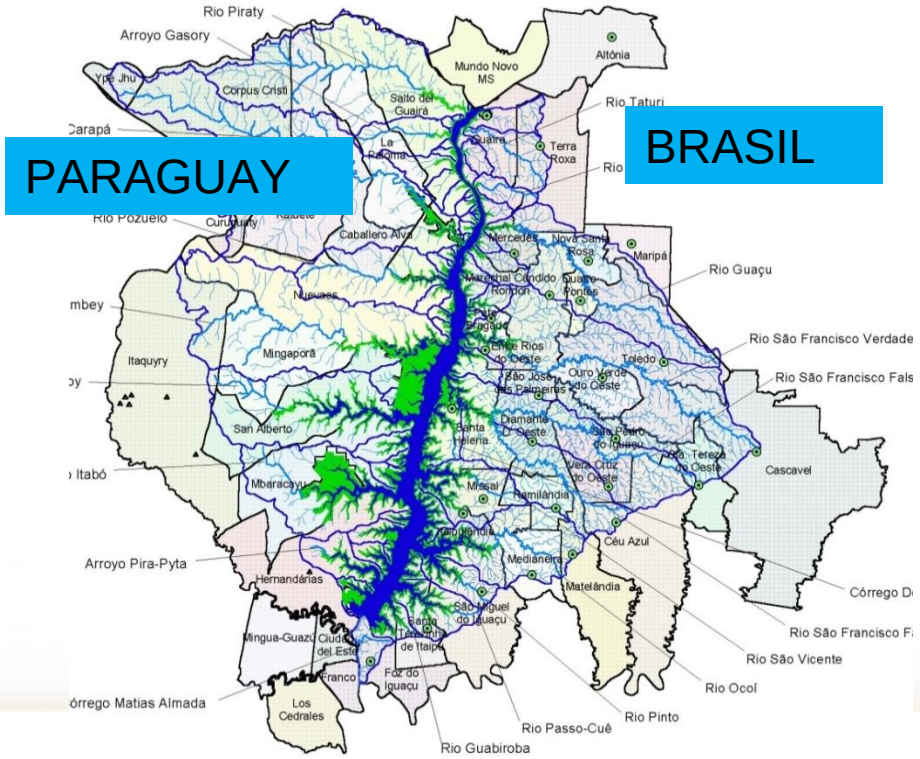
2. Brazil: Itapu Binational

- Hydroelectric power plant (state-owned company) located in the border area of Brazil and Paraguay.
- Installed capacity: 14,000 MW. Generation: In 2016 world record of 103,000 GWh.
- Diplomatic negotiation processes between Brazil, Paraguay and Argentina.
- 80 % of Paraguay's annual energy demand & 15% of Brazil's annual energy demand.



Itaipu: Cultivating good water (CAB)

- Since 2003, Itaipu's mission has shifted.
  - CAB program was initiated.
  - One of its main structural axes: Participatory river basin management.

20 programs
65 actions
2.146 partners

Implemented in the Paraná 3 river basin:

- **Surface: 8.000 km²**
- **Inhabitants: 1 Mio**
- **29 Municipalities**
- **217 micro-basins (implemented)**

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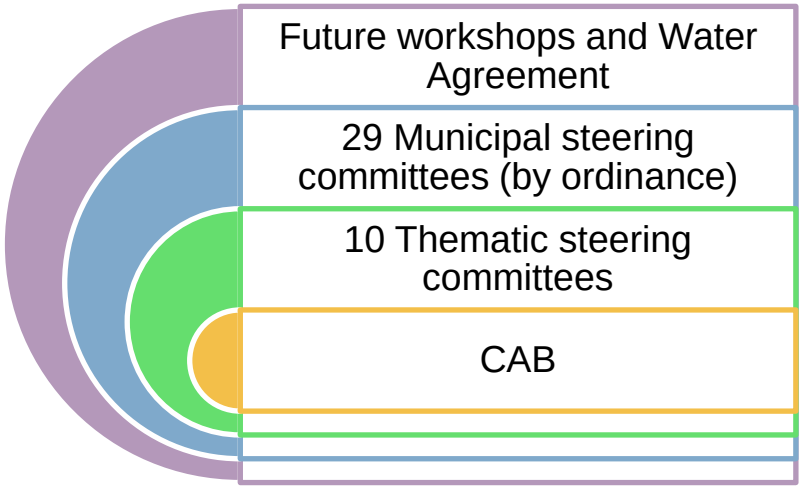

Committee participants:

- Federal, state and municipal authorities
- Companies,
- Cooperatives, NGOs, Universities, Communities, others.

Ministério do
Meio Ambiente

ANA
AGÊNCIA NACIONAL DE ÁGUAS

Cisterns for rain water harvesting

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165 Water suppliers for agricultural machine wash

Green infrastructure: Riparian forrest - Protection zone

Renewable energy platform

Milk Farm Iguaçu Star Milk
Biogas and biofertilizers

Pig Farm Columbari
Biogas and biofertilizers

ETE Villa Shalon
Biogas

Itaipu contributed to the formulation of energy surplus sale regulation

Aquaculture in the reservoir

- 2 associations, 72 producers
- 840 fishermen assisted
- 3 Licensed aquaculture parks, 14 aquaculture areas (colony)

Itaipu worked closer with the ex-Ministry of Fisheries and Aquaculture

Hypothesis: CAB/Itaipu is considered as a Nexus demonstration case

a) In the category of hydroelectric power generation with national and transboundary relevance;

b) For the application of the Nexus perspective (benefit sharing) at both levels: i) Institutional/governance and ii) operation of dams and hydropower plants;

c) For a successful wide involvement of the civil society.

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Thank you very much for your attention!

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