

Natural infrastructure in the nexus and suggested basin assessment indicators

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*water purification
flow regulation
water storage*



water for food



*water supply
water storage*



fisheries provision



*water supply
water conveyance
cultural services*



water for energy

Ecosystems are infrastructure –

part of the “*the stock of facilities, services and installations needed for the functioning of a society*”

Nature is part of the infrastructure portfolio of every country and every economy



1993

- Dead
- Mangrove
- Sporobolus
- Irrigated rice
- Typha
- Hypersaline
- Sebka
- Embankment

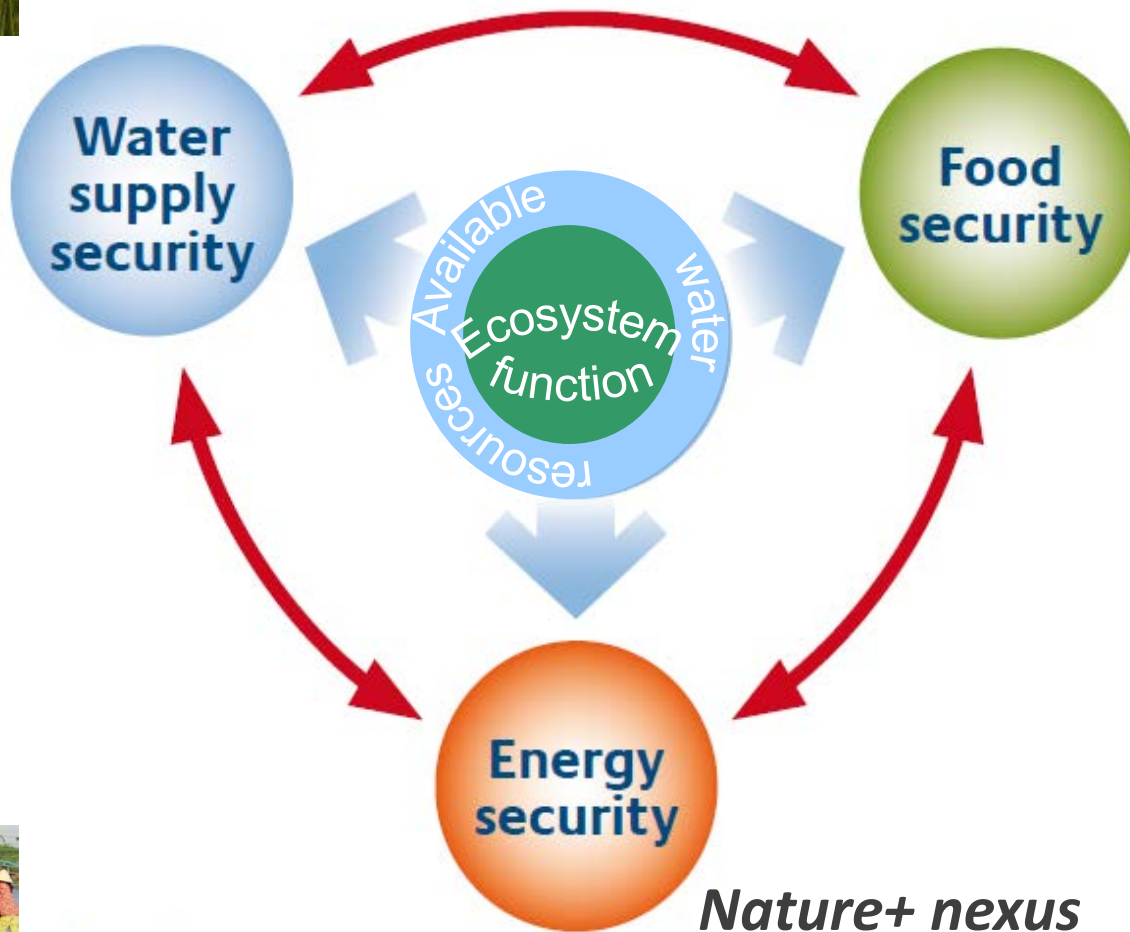
Diama dam

Saint-Louis



“Green” infrastructure	Gray infrastructure	Benefit
Forests and wetlands	Water filtration facility	Clean drinking water
Forests (on slopes upstream of hydroelectric facility)	Periodic sediment dredging	Reliable power and flood control
	Sea walls	Shoreline protection from storms
Mangroves		
Coral reefs	Breakwaters and groins	Reduced beach erosion
Natural floodplains	Dikes and canals	Flood prevention
Wetlands	Tertiary water treatment facility	Clean effluent from municipal or industrial processes





Ecosystem indicators



- **Biodiversity and habitat loss**
 - **Metrics: wetland disconnectivity, Red List Index**
- **Water management impacts on ecosystem integrity**
 - **Metrics: Estimated total river fragmentation, estimated total flow disruption, estimated total density of dams**

Ecosystem indicators (continued)

- Fish threat

- Metrics: Average annual catches of fish, estimated potential fish production, proportion of non-native fish species

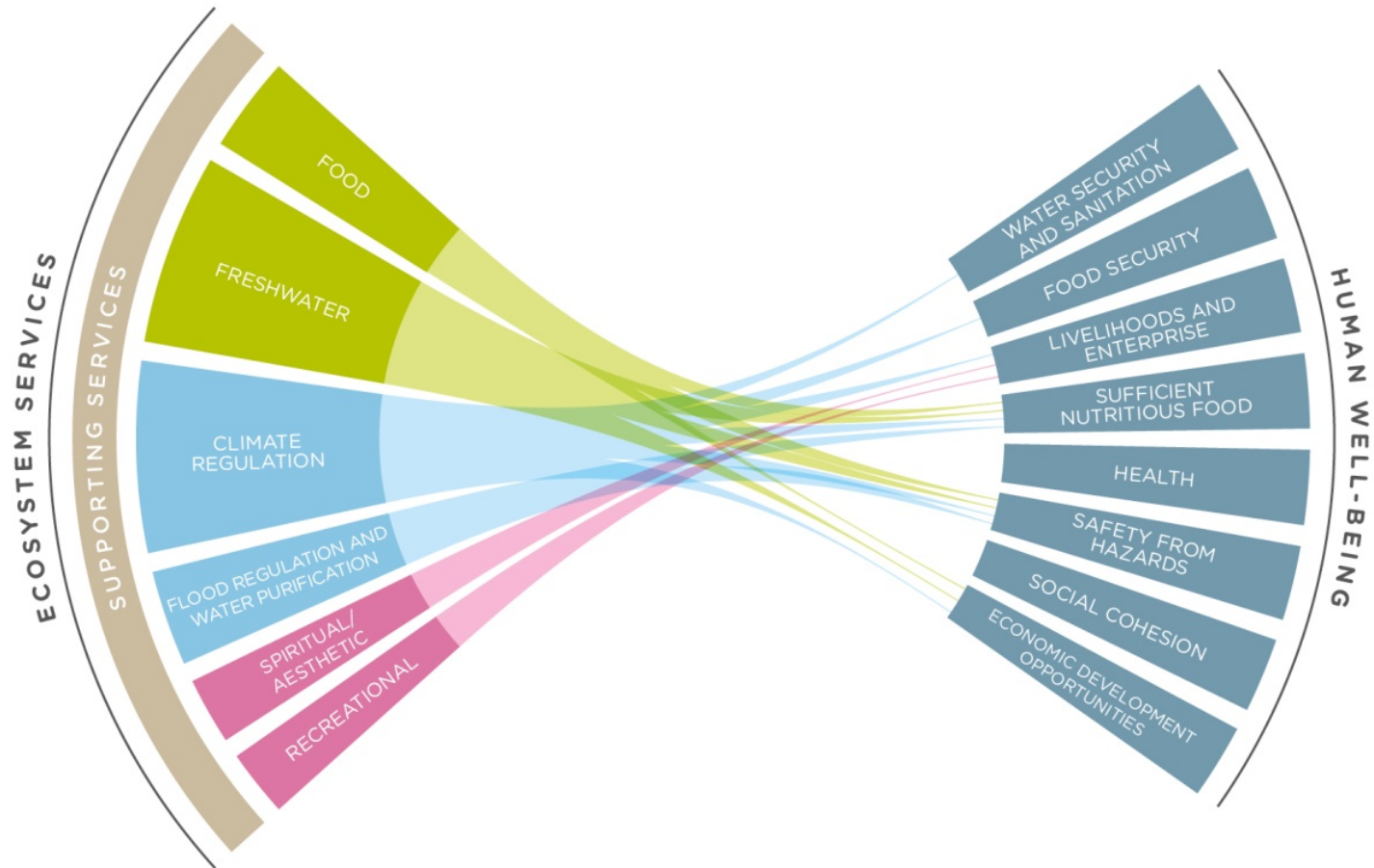
- Basin productivity

- Metrics: water storage capacity, flow variability, and regulation, filtering of water capacity, absorbing and buffering capacities

Understanding ecosystem indicators for the nexus

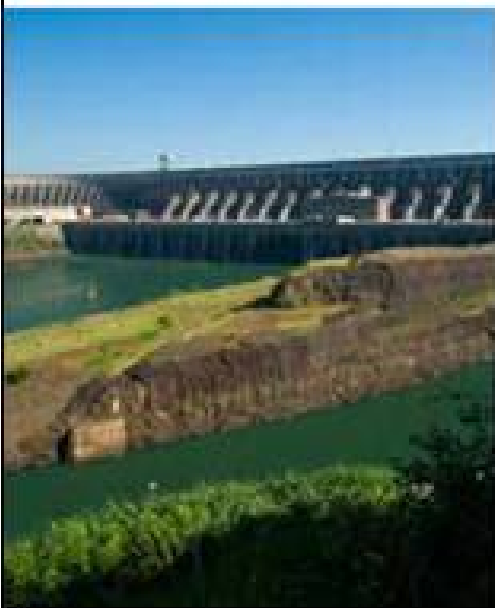
- **Water for food**
 - Agricultural water stress (cropland+irrigation vs. availability)
- **Water for energy**
 - Disconnectivity-Wetland loss and river fragmentation, flow disruption by reservoirs
- **Water for nature**
 - Environmental water stress (ecological requirement vs. availability)
- **Water for people**
 - Human water stress (population vs. availability)

Healthy vs. Degraded approach



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