



# Sustainable Adaptation Workshop

Delhi, October 2008

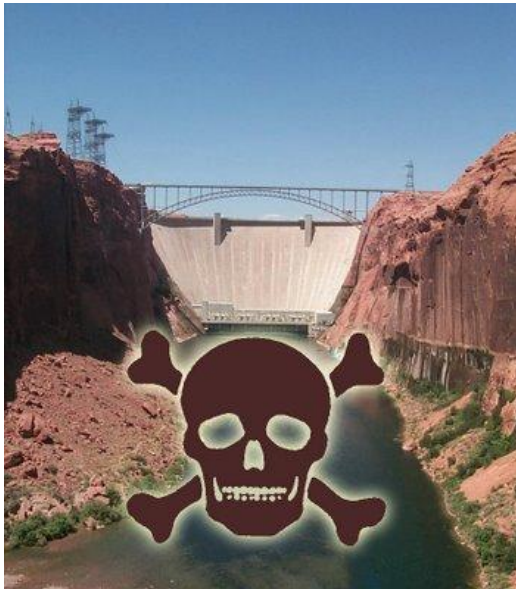
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# Case: The Ribeira Valley

- Located in one of the ecological regions with richest biological diversity – biggest remnant of the Atlantic Rain Forest;
- Complex geology, abundant natural resources, preserved mangrove areas and a huge number of limestone caves;
- The coastal area to be one of the most vulnerable regions to the extreme events of climate change;
- The construction of 4 hydroelectric power plants (HPPs) along the Ribeira de Iguape River is considered a determined ecosystem stress.



# The Ribeira Valley

Location: South of the state of São Paulo and North of the state of Paraná

Population: 485.000 inhabitants

Area: 25.000 Km<sup>2</sup>

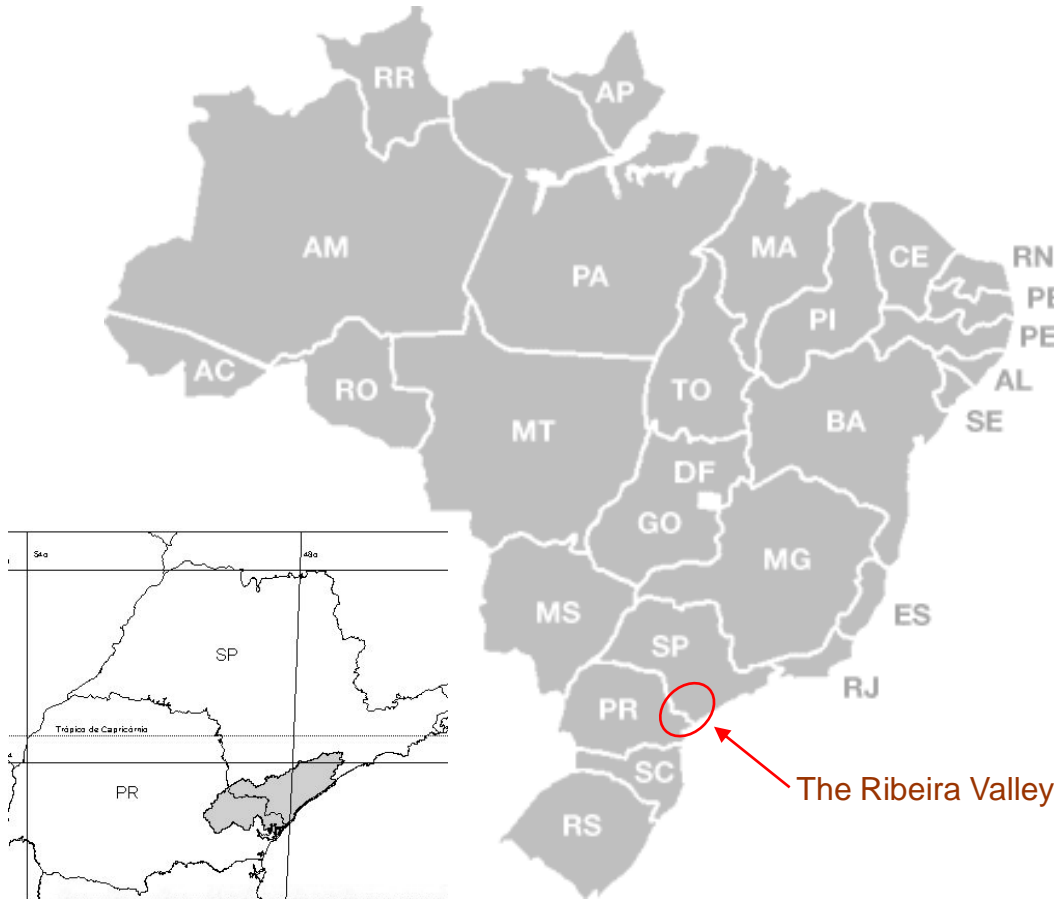
32 municipalities: 23 in SP and 9 in PR;

More than 40% of all forests in the State of São Paulo

Surrounded by two developed and rich states

Poorest region in the Southeast of Brazil

Rich biodiversity area maintained in contrast with poverty and its associated side effects



# Ribeira de Iguape River

**BACIA HIDROGRÁFICA DO RIO RIBEIRA DE IGUAPE**

**Principais Municípios**



# Background

- One of the oldest colonization regions in the country (since the 16th century);
- Hosted promising economic activities until the 19th century, such as mining (between mid-17th and mid-18th centuries), and floodplain rice cultivation (until the mid-19th century)
- Later, the shift of economic focus toward coffee plantations as well as the relocation of the regional harbor, cast the Ribeira Valley out of the economic mainstream;
- Japanese and European immigrants arrived in the early 1900s as an attempt to revitalize the regional economy. However, poor infrastructure and lack of political support turned the region into an island of stagnated economy surrounded by two major metropolitan areas in Brazil — São Paulo and Curitiba.

# Nowadays

- Since the 1970s, infrastructure has been improved with the construction of roads, bridges, schools and health centers in order to minimize the level of isolation of the region;
- International pressure to conserve one of the biodiversity hot spots and support to local groups led to the establishment of 25 conservation units (CUs) covering approximately 50% of the region;
- The CUs are managed at both Federal (seven) and State (eighteen) levels;
- The Ribeira Valley regained attention for economic development programs to improve infrastructure (road, power plants and tourism industry);
- Dualism between development and conservation of the biodiversity poses a challenge for policy makers, government officials, NGO members, and particularly local communities.

# Population

- Fairly high percentage of rural population (around 45%);
- Complex history of human occupation in the region is reflected by the presence of different social groups:
  - Amerindians (Guarani is the major Amerindian groups living in scattered communities along the coast);
  - Caiçaras and Caipiras (small landholders living in rural villages with close links to urban centers. Life strategy based on both maritime and terrestrial resources, and their production system is assumed to be communal);
  - Quilombolas (rural communities of black populations, encompassing slave descendants, whose life is based on subsistence agriculture and cultural manifestations are strongly tied to the past);

# Economic Activities

- Most important activities are:
  - Banana plantation: widespread in the region, produced for the Brazilian market. Low technology, lack of infrastructure and logistical capacities are some important factors that negatively affect the expansion of cultivation in the area, and also makes exporting unviable;
  - Tea plantation: located on the slopes of the Atlantic forests, causing deforestation and soil erosion. Recently, because of the drop in the tea price on the international markets producers have suffered great economic losses;
  - Eco-tourism: it has increased during the last few decades and contribute to approximately 40% of the regions' total income. However, tourism activities are concentrated in the narrow area along the coast, and isn't important for the inland cities;
- Mining is still an economic activity but it has experienced severe decline in the last decade.

# Challenges for Sustainable Development

- In some municipalities most of the surface is included in environmental protection areas. Traditional residents were suddenly forbidden to continue their subsistence agriculture without getting any other option for survival.
- Some of them are now tourist guides, but others are into illegal practices such as palm heart extraction.
- Traditional agriculture could move towards organic or less aggressive techniques
- Lack of education and up to date (social) technologies on traditional agriculture lead to productivity losses and low diversity of crops.
- Proposed construction of 4 hydroelectric power plants (HPPs) along the Ribeira de Iguape River is seen as “economic development” by most of mayors and part of local communities. Strong opposition from several NGOs. Local communities will be directly affected by flooding of a total of 110 km<sup>2</sup>.

# Risks, Impacts and Climate Change

- While the precise direction, timing and magnitude of climate changes remain uncertain for the region, it is clear that climate change will affect ecosystems and human activities;
- The impacts of climate change events expected for the region are:
  - *Increased probability of flooding*
  - *More intense heat during summer*
  - *Major changes in vegetation composition*
  - *Loss of native vegetations and rising salinity (of the soil)*
  - *Rising of the sea levels*
  - *Loss of biodiversity*

# Building Capacities to Sustainable Adaptation

- Many existing systems are highly resilient, and have considerable capacity to cope with higher levels of climate stress. However, in other cases, systems may have little capacity to cope with additional loads associated with climate change, and enhancing these capacities might involve long lead times.
- The vulnerable systems need to be identified, and their capacity to deal with climate change understood.
- The following areas have to be better known:
  - pattern and trend of climatic change in the region;
  - frequency, proximity and severity of extreme events;
  - implications of climate change for natural and human systems;
  - reactive adaptive capacities of current systems;
  - costs and timeframes associated with these options.

# Capacities to Sustainable Adaptation

- Local governments in the region lack from resources and institutional capacities to deal with climate change adaptation. The main limitations for coping with climate change are:
  - Weak coordination mechanisms regarding climate change adaptation;
  - Under-development of a preventive, disaster risk reduction approach;
  - Threat of discontinuity in policies, structures, programmes, plans;
  - Projects that address climate change in disaster management are fragmented and tend to be donor-driven;
- The communities, especially those in closer interaction with the nature, should be heard as they are sensitive populations for climate variability.