

São João



Summary of basin characteristics

The São João basin covers 2,190km² of the northern part of Rio de Janeiro State, Brazil. The São João River itself is 120km long and flows from mountains and hills to a broad coastal plain with numerous ponds and lagoons, including the 220km² Lake Araruama, the largest coastal saline lagoon in Brazil. The marine zone adjacent to the

river mouth is notable for resurgence of nutrient-rich marine water, which supports a rich fish fauna and the southernmost occurrence of coral in Brazil.

Socio-economic importance

The basin contains eight municipalities and about 100,000 people live in the region. The main economic activities are real estate, beach tourism and fishing in the coastal strip, and agriculture and

tourism (ranch-style hotels) in the rural hinterland. The extraction of salt from Lake Araruama, formerly an activity of great importance, is nowadays in decline.

During the 1970s, the government dammed the São João River at Juturnaíba Lake, which was enlarged from 8km² to almost 40km², thereby creating a large reservoir. This became the main source of water for several cities, including some of Brazil's top beach resorts. During the tourist season, the local population is at least doubled.

Biodiversity values

The remaining native vegetation includes various-sized fragments of Atlantic Forest, swamps, mangroves at the mouth of the São João, and a type of steppe savannah in the coastal hills. The remnant Atlantic Forest is the habitat of an endangered primate, the golden lion tamarin *Leontopithecus rosalia*, of which only one thousand remain in the wild.

There are four protected areas within the basin:

- Três Picos State Park – 46,350ha
- Poço das Antas Biological Reserve – 5,300ha
- União Biological Reserve – 3,200ha
- São João Environmental Protected Area (IUCN category V) – 150,000ha.

Priority issues for river basin management

The key challenges to be addressed are:

- the absence of modern legislation to govern land allocation and land-use planning
- inadequate and inefficient collection, treatment and disposal of solid waste and sewage, contributing to the pollution of soil, rivers and wetlands
- the huge seasonal population increase, which places intense pressure on water, sewage and solid waste services in the coastal zone
- privatization of beaches and the absence of a policy, strategy or action plan to support eco-tourism in the region
- rapid and haphazard development of new seasonal accommodation in the absence of any

environmental criteria or infrastructure, leading to deforestation and pollution

- land fragmentation due to the region's main highway, the *Via Lagos*
- increased erosion caused by poor agricultural and urban land-use practices, and the construction of highways with inadequate drainage systems
- lack of buffer zones for wetlands, leading to degradation from development of adjacent areas
- degradation of Lake Araruama due to constriction of the channels connecting the lake with the sea, as well as the impacts of raw sewage discharge from around 350 point sources and construction in the littoral zone. These factors harm the fishing and tourism industries, as well as basic ecosystem functioning
- the impacts of Juturnaíba Dam: in addition to the loss of native vegetation at the time of construction and commissioning, the dam has caused decreases in downstream sediment loading and oxygen content, and blocked the migration pathways of commercially important fish species to and from spawning grounds, leading to serious population declines
- loss of native forest cover, which threatens biodiversity, especially in the aquatic and riparian zones.

Role of WWF and its partners

Working within the 'Water for Life Programme' established in 2001 with the support of HSBC, WWF has pursued a range of approaches with its two main local partners, the *Consórcio Ambiental Lagos, São João* (São João Lakes Environmental Consortium) and the *Associação Mico Leão Dourado* (Golden Lion Tamarin Association), as follows:

Partnership with the São João Lakes Environmental Consortium

The aim is to establish water resource management mechanisms through the integration of public policies, in particular those related to forests and water, and by promoting decentralized roles for government, water users and wider civil society institutions. In its first phase, the project has worked on:



The Juturnaíba Dam, which expanded Juturnaíba Lake, a source of water for local people. WWF / Edward Parker

- continuous monitoring of water quality (bacteriological and chemical analyses) in the whole basin, and in the São João River in particular, in partnership with the local government's environment agency, FEEMA. FEEMA's laboratory has been provided with better equipment, enabling monitoring of more parameters at a greater number of sites than formerly.
- communications focused on increasing public awareness about environmental issues, working through local radio, television and newspapers. This has included production of three short films and six radio spots currently being aired by the region's major broadcaster, as well as distribution of 50,000 flyers and one prominent film about the basin.
- an environmental education programme for public schools in the basin's eight major cities, including production of a film, leaflets and schoolbooks about the basin.
- institutional strengthening of the São João Lakes Environmental Consortium through training in

the use of economic instruments, aimed at facilitating the implementation of an effective water pricing mechanism for the basin. Intensive contacts and discussions have been held with the goal of establishing a basin-wide committee.

Partnership with the Golden Lion Tamarin Association

To remove the golden lion tamarin from the Endangered category in IUCN's 'Red List', the species' population would have to double, to 2,000 individuals, by 2025. Such a population would require a continuous area of 25,000ha of Atlantic Forest, whereas the fragmented remnants of what is one of the world's most threatened ecosystems currently cover a combined area of just 16,000ha. By taking an integrated, basin-wide approach to forest and water management, the aim is to rehabilitate the ecosystem, and in the process also protect the tamarin. The partnership's aims are:

- Provision of technical expertise and support for establishing Private Reserves – requests for the

establishment of five new private protected areas have already been registered with the government.

- Restoration of gallery forest – riparian reforestation, using native species, has started in a demonstration plot of 7ha, providing much-needed jobs for local workers. Future reforestation will be focused on areas where wetlands provide ‘corridors’ between ecosystems.
- Identification and understanding of the social, economic, environmental and cultural drivers influencing the behaviour of rural communities around the União Biological Reserve.
- Involvement of the local community through a monthly workshop to discuss the programme and agree any changes needed, as well as provision of training in community tree planting and plantation aftercare.

Conservation method demonstrated

The following are the principal means by which WWF has been pursuing conservation in the São João River basin:

- Promotion of integrated water resource management, including efforts to establish water pricing as a means of limiting consumption
- Restoration of priority areas of Atlantic Forest and wetlands through riparian reforestation focused on creation of ecosystem ‘corridors’ along rivers and other waterbodies
- Establishment of new protected areas

- Development of communications and environmental education programmes.

Resources devoted

WWF expenditure from January 2002 to June 2003 was approximately US\$170,000. Projected expenditure until 2005 is estimated at US\$155,000, making a total WWF investment of US\$325,000.

Chronology

June 2002 to mid-2003

- Mapping and start of riparian reforestation.

Ongoing

- Establishment of new protected areas.
- Strengthening of São João Lakes Environmental Consortium.
- Efforts to establish a basin-wide committee.

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Lessons learnt

1. A partner's ability to influence stakeholders locally is crucial

Although the São João Lakes Environmental Consortium has been in existence for less than three years, in the short period it has been a WWF partner it has shown an amazing capacity to motivate and join forces with others. For instance, the new laboratory to test water quality in the basin was built with the help of local mayors, who donated construction materials, boats, and labour. This type of synergy building is important to guarantee the continuity of the project, both in terms of the quality of actions undertaken and the resources required.

2. It is vital to create opportunities for civil society participation in water resource management processes

Prior to this project, local community participation was limited to protesting over decisions made by those in positions of authority. Now, clear mechanisms have been established through the Consortium, to facilitate participation in discussions, planning and decision-making.

3. Transparency is essential

In this case, the maintenance of a transparent and open dialogue enabled conflict resolution among state and municipal authorities, water users and civil society organizations.

4. Conservation action has to be driven by a broader approach to natural resources

As a result of linking integrated conservation action with water resource and forest management, an understanding was reached among stakeholders of the strategic role of the forests and their utilization. As a consequence, the business sector has shown greater willingness to implement economic instruments and innovative technology to reduce pollution.

5. Initiate a broad environmental communications process and mobilize local people through the media, especially local radio stations and networks

6. It takes time to achieve results, particularly where institutional inertia presents resistance to change

In the case of the São João basin, the executive and legislative sectors have been slow to commit to the changes required for more sustainable management of natural resources. Furthermore, fragmentation and inconsistencies within state policies for 'dryland' and 'wetland' areas led to a setback owing to political disputes between the forest and water administrations within the state government. As a result it was not possible to launch the São João Basin Committee in June 2002 as originally planned. The existence of such a basin-wide structure is seen by the project partners as fundamental to improved water resource management.