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Population displacement

Salto Caxias, Brazil

Overview

New Brazilian legislation regarding environmental impacts was introduced in 1986, 1989 and 1990. This required that environmental impact studies (EIA) and an environmental impact report (EIR) and environmental basic project (EBP) be prepared. Under these COPEL implemented 26 programmes including impacts on biota, socio-economics and cultural aspects. Salto Caxias was the first electricity project to be undertaken in Brazil that complied with all phases of the licensing required by the new environmental legislation.

In order to discuss and negotiate solutions for the issues raised by the environmental plans and programs, a group was set up during the planning and design stage of the project, three years before construction started. This Multidisciplinary Studies Group (MSG) was composed of representatives from 140 organisations including COPEL, governmental bodies, the affected population, scientific and research institutions and social and environmental NGOs. Of particular note are the agreements that were reached regarding resettlement.

The environmental plans and programs were approved in 1994 and construction commenced in 1995.

Scheme Specifications

Dam Name

Scheme operator

Companhia Paranaense de Energia
(COPEL)

Size of scheme (MW)

1,240 MW
(5,431 GWh average annual output)

Country

Capitao Leonidas Marques Municipality,
State of Parana, southern Brazil

Catchment area

57,000 km²

River

Effective reservoir capacity

River Iguaçu

3 600 ML

Construction years

1995-1999. Commenced operation in 1998

Reservoir size

144 km²

External recognition

2003 IHA Blue Planet Prize

Details on sustainability aspect

Approximately 1 200 rural families would be displaced by the reservoir of Salto Caxias. Expropriation and Resettlement Programs were implemented at a cost of approximately US\$100 000 000. A survey of land was carried out by a commission formed by COPEL technicians and representatives of the owners with the mediation of the Paraná State Environmental Institute, IAP, the state environmental authority to determine the payment for land acquisition at market value. The Resettlement Program was directed towards small farmers, owners of properties smaller than 30 acres, and rural workers with no tenures, or “landless” workers. Of the approximately 1 200 families, 858 were in these targeted categories and were eligible for the Resettlement Program. About 230 families chose to relocate independently.

A Resettlement Committee was formed with the non-government organisation CRABI (*Comissao Regional de Atingidos por Barragens do Iguaçu*, or Regional Commission of People Affected by Dams Construction in the Iguaçu River) to facilitate the process and provide pathways of communication for the remaining 626 families. The developer, COPEL, acquired 40 000 acres in the nearby region, with strong public participation in the selection of the areas, and 19 communities were formed with an average of 50 families in each one. Each family received a minimum of 40 acres (depending on the size of the group), a brick house with 3 or 4 bedrooms and a barn.

Infrastructure was developed to support these farms, including housing, storage, water supply, roads, soil preparation, electricity, telephone, education and health services, and schools. Specific considerations in the resettlement program were:

- conservation of remnant forest areas including tree planting;
- preparation of farmland to minimise erosion and protect waterways from sedimentation (roadworks and terracing of land);
- support and education for the development of organic agricultural practices, to replace the use of pesticides, highly soluble fertilisers, hormones and antibiotics;
- education for both adults and young people designed to assist the growth of both individuals and the community;
- improvements to local healthcare through developing two health centres and a family doctor program and an emphasis on preventative medicine; and
- cultural growth and preservation of cultural and social heritage through supporting annual cultural events.

Resettlement occurred from 1996 to 1998. Agricultural and social assistance will be provided for three years after relocation. While the transition period may not have been as smooth as possible, overall the resettlement process has been successful. In 2001 the farming communities were producing substantial crops, a significant proportion of which were organic soy and corn.

Other Aspects

Demonstrated need

In 1986 Brazilian electricity consumption drew level with generation, overtook it in 1988 and the gap continued to widen. The planning for Salto Caxias occurred in this climate of power deficit.

Environmental assessment and monitoring

Salto Caxias was the first dam to comply with the newly legislated environmental impact assessment (EIA) process. That the EIA process was applied is commendable, but it was carried out after project approval and land acquisition, consequently the baseline data is not as rigorous as possible. This has had ramifications for ongoing studies in various disciplines. The EIA review process was also fast-tracked, being completed in 30 days. The EIA process did bring about the instigation of the Multidisciplinary Studies Group which has had far-reaching implications for the planning and implementation of the scheme, as it was a forum for discussion and resolution of conflicts that arose from the EIA process.

Community engagement and acceptance

Throughout the planning and design stages COPEL sought to engage the community in the process through such mechanisms as the MSG. The MSG met in the affected region; all meetings were open to anyone; and all costs associated with the functioning of the MSG were met by COPEL.

Biodiversity and threatened species

Brazilian legislation requires that a minimum of 0.5% of the total costs of the project will be spent creating a Conservation Unit within the affected watershed. Two thousand hectares was acquired to set up the Guarani River Ecological Station. A management plan for handling this unit of conservation has been developed. In areas of acquired farmland that had been previously degraded, 3,000,000 native saplings were planted.

Environmental flows

A small modification was made to include an “ecological” sluice gate that allows a minimum flow of 150 cumecs – which is the minimum monthly average flow from registered data at the Iguaçu Falls site.

Local capacity building

With the formation of the Salto Caxias reservoir, a 40 MW hydroelectric power plant, Foz do Chopim, would be flooded. In the village of Foz do Chopim, the powerstation was the only formal employer and there were fears that the small businesses in the village would no longer be viable when these 40 jobs were lost. The local community demanded compensation from the company. The company entered into negotiations with them, however there were huge implications for the entire region and the case

ended up in court. The company was given 90 days to come up with a viable solution. SEBRAE, a governmental organization that helps and supports the creation and development of small businesses, was engaged by the company to undertake an assessment of the village and identify market and business opportunities. Their ideas were developed and the farmers now produce organically certified produce to the entire region. The women were provided with new sewing machines and a warehouse was built; quality clothing was produced at a competitive price and the co-operative received support from a clothing company in Sao Paulo. A co-operative responsible for tree-clearing now carries out work for municipalities in the region. Training and support were provided to all these groups and almost 100 new jobs were created over six months.

Due to the success of the project in Foz do Chopim it was decided to extend it to cover the entire region affected by the project. The regional development plan became known as the PROCAXIAS project. The brief was to help small businesses, boost the economies of the cities and encourage municipal governments to streamline their businesses. As with Foz do Chopim, an initial survey was conducted to determine the current socio-economic status of the counties and available resources and then to identify possible market and business opportunities. For instance it was found that all the small domestic products such as brooms, pans, plastic cups and plates, came from as far as away as Sao Paulo (800 km). The story was similar for furniture and small plastic toys. Financing the new small businesses was an issue.

Brazilian legislation provides for compensation to be paid to the municipalities for loss of land caused by the formation of a reservoir to feed a hydroelectric power plant. The amount is determined by the area flooded and the amount of energy produced. How this money is used is a local matter. SEBRAE and COPEL persuaded the county representative houses to pass a municipal law obliging the municipal governments to pass 10% of this money to a newly created Municipal Development Fund to be managed by a commission composed of community and municipal authority representatives. Potential businesses would submit their proposal for a loan to the commission, if approved by SEBRAE representatives it would then be put before the Commission for final approval. In the year 2000 the nine Municipal Development Funds helped create more than 50 new small businesses in the affected counties, with more than 300 new direct jobs and almost 1,000 indirect jobs.

Further Information

IHA (2003) The Role of Hydropower in Sustainable Development
http://www.hydropower.org/Downloads/IHA%20White%20Paper_260203_LowRes.pdf

IHA Blue Planet Prizes award for Hydropower 2003

Website: http://www.hydropower.org/3_1b.htm

Also see: <http://www.worldwatercouncil.org/download/blueplanetprize.pdf>

COPEL: Companhia Paranaense de Energia

Website: <http://www.copel.com>

World Commission on Dams: Dams and Development Report 2000

Website: <http://www.dams.org/report/>

http://www.hydropower.org/Downloads/IHA%20White%20Paper_260203_LowRes.pdf

<http://www.deh.gov.au/assessments/eianet/eastudy/casestudies/studies/cs55.html>

<http://www.eia.doe.gov/emeu/cabs/brazil.html#elec>