

Further information
Skanska AB
www.skanska.com

Contact

Noel Morrin,
Senior Vice President
Sustainability
noel.morrin@skanska.se

Ponte de Pedra, Brazil

Case Study 10

The Ponte de Pedra hydropower plant, in western Brazil, has worked to maximise and sustain local benefit by involving communities, fostering partnerships and building local capacity through extensive activities that have often surpassed government social and environmental requirements.

Aspects of Sustainability

This project highlights the following:

Social Aspects

Human Resources
Corporate Community Involvement
Business Ethics
Health and Safety

Environmental Aspects

Energy and Climate
Materials
Ecosystems
Local Impacts

Economic Aspects

Project Selection
Supply Chain
Value Added



Project Introduction

The Ponte de Pedra hydropower plant has been constructed on the Correntes River between the states Mato Grosso and Mato Grosso do Sul in western Brazil. The plant was inaugurated in November 2005 and was considered of strategic importance by the Brazilian government to meet the deficit in energy generation in the mid-west region of the country. Ponte de Pedra has a 176MW capacity, capable of providing electricity for 700,000 people.

Ponte de Pedra Energética S.A. (PPESA) is a special purpose partnership between Skanska do Brasil and Impregilo S.p.A. that was established in 1998 to construct and operate the plant. PPESA has invested a total of US\$250 million in the project and has been granted a licence to operate the plant until 2040.

The project utilises a section of the Correntes River, which descends 243m, to generate electricity in an underground power station and has attained one of the highest power per flooded area ratios in Brazil. Ponte de Pedra consists of a 35m high, 1470m long dam and 14.5km² reservoir, a headrace canal and tunnel that carry water from the reservoir to the power station 240m underground, and a tailrace tunnel to return water to the Correntes River.

Contributing Toward Sustainable Development

The project has aimed to enhance local capacity, improve knowledge and skills, stimulate economic growth and protect local biodiversity through 26 social and environmental programmes, which have often surpassed IBAMA's (the Brazilian

government environmental agency) requirements in terms of quality, quantity and duration. Many activities initiated by PPESA have developed local capacity through partnerships with communities and local institutions, and have continued with local people taking lead roles, such as the environmental workshops. Knowledge and skills will reside with institutions and individuals that have been partnered or have participated in activities, such as local government, employees and students. For example university attendance, particularly for biology related courses, has increased in the area since the project. Ponte de Pedra has contributed to sustained economic growth by directly creating employment and indirectly stimulating other businesses and services in the area. PPESA has strived to minimise inevitable environmental impacts in an ecologically sensitive area and maintain biodiversity by relocating and planting more species than were legally required by IBAMA.

Social Aspects

The town of Sonora, with approximately 10,000 inhabitants, is situated close to the reservoir and has been most affected by the project. Consequently, Sonora has been the focus of the social programmes involving employees, local authorities, schools and residents. Social activities have also taken place in Itiquira and Rondonopolis approximately 80km and 130km from Ponte de Pedra respectively.

Local capacity building

Initial feasibility studies conducted by PPESA found that local government structures were weak due to a lack of local partnerships and Sonora being relatively isolated from state governance. PPESA has worked to develop local capacity by fostering long-term partnerships and supporting local institutions and communities to take lead roles in planning and implementing activities. Working with local organisations rather than contracting large private companies has strengthened local authorities, the local private sector and community organisation, and optimised regional benefit from the social and environmental programmes. However, local capacity building has put greater demands on PPESA to play a coordinating and supporting role, and has involved working with organisations that required initial training or that lacked specialist resources.

Political capacity building

During the initial stages of the Ponte de Pedra project, PPESA experienced significant setbacks

due to a lack of communication between national and regional regulatory bodies, which resulted in a one-year delay for an environmental license. PPESA organised a public meeting in June 2005 involving all levels of government, energy companies and lawyers to discuss how hydropower projects and regulatory processes could be improved in the future. The meeting highlighted PPESA's experience and stimulated discussion among regulatory bodies, and was reported on by the local media and national industry publications.

Community communication

A social communication plan has been implemented to continuously inform and involve communities and local institutions in the project. The plan is linked to the 26 social and environmental programmes with several phases and activities to reach all sections of society affected by the project. Regular meetings and project presentations have been held in town halls to promote active public participation in issues related to the project and to ensure local interests are met. Databases have been created to store all the information collected during the social and environmental programmes and will continue to be used by local and regional government, universities and schools.

Community activities

Free community events such as city anniversaries, a rodeo and an environmental week have been organised and supported by PPESA to generate interest in the project and to provide a platform for dialogue. Information booths, cinema screens and printed materials have been used to inform people about the project at community events.



Community support

PPESA has invested and enlarged Sonora hospital and constructed two new health centres in the area. The company continuously supports local organisations and institutions including schools and charities and is currently in negotiation with the local energy authority over providing power lines to people living in the forest without electricity, following their request for supply.

School education

Local school students have learned about the project through site visits and presentations in schools, which have been facilitated by PPESA staff. As part of the reforestation programme, a seedling nursery and education centre was established in Sonora, which continues to be visited by local schools.

Mosquito-transmitted diseases programme

PPESA launched a project to monitor the incidence of mosquito-transmitted diseases before and after the creation of the lake, in partnership with local health agencies, which did not identify any major risks to the local population. The project involved sampling insects and recording information in a database, which continues to be used by local health agencies. Experts were invited from a Brazilian health organisation, Fiocruz, to evaluate the project and provide training to the local health authorities, which now have skilled personnel to deal with mosquito-transmitted diseases and biological data from 2002.

Worker health

The construction workforce was educated about the dangers of sexually transmitted diseases, which are serious issues in the area primarily due to the transient sugar cane population. Workers were also vaccinated against malaria, yellow fever and other diseases in a PPESA inoculation programme that was subsequently rolled out to local communities and offered free vaccinations.

Occupational health and safety

Health and safety training has included first aid education, emergency drills and how to use all safety equipment in the plant. Worker seminars have ensured that every employee understands all systems and processes in the entire plant.

During the initial construction of the project, PPESA failed to report several health and safety issues to either Skanska or Impregilo due to inadequate reporting procedures. These issues

were only brought to the attention of the parent companies at the end of 2004 when the tailrace tunnel collapsed during test runs of the turbines and external assistance was required for the urgent repair work. Skanska and Impregilo supervised the repair work and conducted a high-level health and safety audit in March 2005, which established thorough health and safety routines along with clearer guidance and reporting processes to improve occupational safety. No further serious incidents have occurred since the implementation of the revised health and safety plan. Rock falls occurred in the access tunnel in September 2006, without incident, and the same team of experts were mobilised to ensure safe repair work.

Economic Aspects

Local economic benefit

The Sonora district is a high unemployment area and throughout the project local labour and services have been utilised wherever possible. The construction phase directly generated approximately 1800 temporary jobs and gave an indirect boost to the local economy leading to the creation of new businesses, hotels and shops, and around 700 jobs. All construction workers obtained a professional qualification from PPESA following their training and gained construction industry experience that may be used to find similar work on other projects. The operational plant has created 70 permanent positions, which are among the highest paid jobs in the area.

Local authority financial compensation

PPESA pays the local authorities of Sonora and Itiquira US\$30,000 per month for the use of the land in their municipalities. Local authorities use this money to fund various education and health projects including a school for mentally handicapped children and a community centre that works with women's income generation and the eradication of local child labour.

Tourism promotion

PPESA has initiated a programme to encourage small-scale regional tourism and has designated an area of reservoir shoreline for the creation of a beach and water sports facilities. Local authorities, hotels, restaurants and businesses have contributed to the planning of the tourism programme, which is still in development.



Environmental Aspects

Reforestation project

The reforestation project, led by a specialist company, has created 492 hectares of permanent preservation around the edge of the reservoir with 650,000 seedlings of 100 native species. 58 more species than IBAMA's environmental regulations demanded were planted in order to maximise biodiversity.

Minimising the impacts of the reservoir creation

Before the creation of the reservoir, species of flora and fauna were catalogued and approximately 50,000 plant specimens and over 5000 animals relocated. PPESA contracted the experienced university research agency IPEM (Instituto de Pesquisas Matogrossenses), UFMT (Universidade Federal de Mato Grosso) and specialist companies to conduct the work along with students from Sonora's high school. University biologists trained 19 high school students, 14 of which are now studying related subjects at university. Plant specimens were given to research institutions or reintroduced through the reforestation project. Animals were relocated in the area and certain species monitored following the creation of the reservoir. A database was compiled along with an academic publication and website to document the biodiversity of the region (www.ufmt.br/resgatedeflora).

Environmental awareness

Ongoing public environmental awareness workshops have been initiated by PPESA, in partnership with the local environment agency and facilitated by schoolteachers. The workshops were not requested by IBAMA but have become a regular community activity in Sonora.

Their aim is to raise awareness of major community environmental concerns and to formulate long-term community projects in response to specific issues. Following the initial round of the workshops, local people selected a tree-planting project for implementation, although despite PPESA support the project has encountered difficulties due to a lack of community organisation.

Environmental issues

The environmental work carried out by PPESA often surpassed what was legally required by IBAMA. However, during the creation of the reservoir human error led to excessive water being temporarily diverted away from the Correntes River, which led to the death of several thousand fish downstream. The local environmental authorities initially placed a claim, although IBAMA was satisfied that the mistake would not happen again and the claim was subsequently dropped without further charge in 2006.

Learning From Good Practice

The PPESA strategy has been to maximise and sustain local benefit by involving local communities, fostering partnerships and building local capacity. PPESA has contributed toward the development of community and local institutional capacity through activities that have created trust, transparency and strong relationships with local and national stakeholders. However, it must be noted that this strategy has involved a great deal of work for PPESA who had to support activities with training, logistics and specialist equipment, and that activities were not always successful due to external factors such as a lack of community motivation.