

Bolivia Private Hydropower Project

Location: Rural Bolivia
Type: Hydropower
Size: 84 MW
Funding: Total: US\$97,400,000
 Private: US\$97,319,000
 Public: US\$81,000
Objective: To provide hydroelectric power and reduce carbon dioxide (CO₂) emissions.
Duration: 1999–2001
Scale: Rural

Summary

The project consists of one refurbished and two new hydroelectric plants that provide roughly 84 MW of clean energy to nearly 100,000 households in rural Bolivia. The plants will also reduce greenhouse gas emissions by 10,000,000 metric tons over the life of the project. The project was developed as a result of deregulation of the Bolivian energy market. Private electric developments are now permitted with payment based on either spot-market prices from firm capacity and energy, or negotiated power purchase agreements.

In-Country Principles That Attracted Nondonor Financing

- Capacity building and informed decision making
- Institution building and access to justice and enforcement of laws

Sound government principles and actions that attracted private involvement in the project included investment and privatization, which followed the creation of comprehensive



legal and regulatory reform and the implementation of successful energy sector restructuring. Also important was a comprehensive energy law that meets key global norms and standards; separates the functions of policy making, ownership, and regulation; and creates a framework for private investment and ultimate privatization.

Capacity-building activities also helped attract private financing. These included the formation of management teams independent of the government; hiring and development of people with skills matched to job requirements; and increased awareness and skills of sector professionals in commercial business practices, cost-based pricing, and competitive market operation. Stakeholder partnerships, dissemination of best practices, and participation in international forums and workshops helped build these skills.

Financing

Total project costs were US\$97,400,000. Private-sector debt and equity funded more than 99% of these costs. Debt financing of roughly US\$78,000,000 came from commercial banks and bond issues. Equity sources included local industrial groups, engineering firms, and foreign groups.

The US Agency for International Development (USAID) provided \$81,000 to partially fund the feasibility study, which led to the US\$97,400,000 investment.

Capital costs were US\$68,700,000, and other costs, such as operations and maintenance, were US\$28,700,000.

The Project

The project provides roughly 84 MW of environmentally sound electricity supply to nearly 100,000 households in and near La Paz. It consists of two run-of-river plants and a refurbished facility along the Taquesi and Unduavi Rivers.

It reduces CO₂ emissions through the displacement of electrical energy produced by single-cycle combustion engines.

Increased electrical power from non-polluting hydropower benefits commercial, residential, and utility sectors in La Paz through improvements in health, education, lighting, refrigeration, irrigation, sewage, navigation, and recreation.

Construction of the project began in 1999 and was completed in 2001. The plants are currently operating.

Technical Data

A 115-kV transmission line connects the project with the Pichu substation located near Yanacachi. From the Pichu

substation, the power is transmitted on an existing 115-kV transmission line to the Kenko substation near the northern portion of La Paz, Bolivia's major load center.

The project's net electrical output is sold under the terms of Bolivia's Electricity Law, which regulates electric power production on the basis of economic dispatch and lowest marginal cost of production

Performance Data

The project serves roughly 100,000 households in and around La Paz.

It generates more than US\$2,500,000 in revenues annually from the sale of electricity production and provides power at reduced cost to the Bolivian national grid, thus allowing growth in all other economic sectors.

Construction and operations of the project have created both temporary and permanent jobs.

The project reduces CO₂ emissions by 500,000 metric tons per year, for an estimated total reduction of 10,000,000 metric tons over the projected 20-year life of the project.

Because of the small footprint of the project facilities, impacts to soil and forest resources are minimal.

Participants and Roles

Tenaska, a private US company, constructed the facility. USAID provided US\$81,000 to Tenaska to partially fund the feasibility study. Private-sector investors funded the project.

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