

US collaboration promotes integrated social development in Guatemala

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International co-operation between US hydropower developers and communities in countries with emerging markets, such as Central America and Asia, is helping to further the concept of integrated social development in relation to water resources projects. This article describes the example of two projects now under way in Guatemala, where the benefits for the local communities go way beyond the provision of power.

The US Hydropower Council for International Development (US Hydropower Council) is a trade association with a broad base of member companies and expertise, including developers, financiers and service and equipment providers all working towards the investment and development of hydropower in emerging markets. The US Hydropower Council's goals are to: promote hydropower as a feasible and sustainable source of renewable energy generation in international markets; serve as a point of contact for and liaison to the US federal and foreign governments, multilateral and international organizations; and, provide members with information and networking opportunities to further their international business objectives. Consistent with these goals, US industry has worked to address social development priorities, and the uncertainty in the international marketplace brought about by the privatization and restructuring of energy sectors in emerging markets.

Priorities in the emerging markets

The need for adequate access to energy and water are primary developmental concerns in emerging markets. Energy and water represent basic developmental building blocks required to spur economic growth, national stability, governance, and global sustainability. There is a desperate need for water and energy investment to ensure adequate drinking water, irrigation, rural development, and energy from hydropower. Hydropower is uniquely suited to ensure this infrastructure development and provides a revenue stream necessary to attract much needed investment capital for this development.

Over the last two decades more than two-thirds of hydropower development took place in developed

countries, but over the next two decades two-thirds of all investment will be needed in developing countries. More importantly, most past projects were public sector managed and financed by multilateral development banks. Future investment mechanisms have been restructured, and are expected to come from the private sector. Yet there must be an overall plan applied which is not market driven to achieve the full development benefits to energy and water that hydropower provides.

Case study in Guatemala

An example of a member of the US Hydropower Council embracing this developing strategy is Alaska Power & Telephone (APT). This company has a long-standing policy of contributing to social issues and participating actively in improving the services and lifestyle of the communities it serves in the State of Alaska. AP&T and its wholly owned subsidiaries, Hydrowest International and Hydrowest de Guatemala, SA (Hydrowest) are applying the same policy of social responsibility and leadership through their participation in development and operation of hydroelectric projects, such as the Cangrejal, Pasabien and Rio Hondo II projects, in Guatemala and other Central American countries.

In the development and operation of hydroelectric projects, they apply a long-term business perspective used by AP&T as an electric utility, and see themselves as an integral part of the communities where they do business. As hydroelectric projects are known to require large construction investments, Hydrowest maximizes the use of local labour to help with the construction of all civil works and the installation of the electromechanical equipment. As hydro projects generally operate for more than 100 years and Hydrowest gives priority to hiring and training people from the local communities for that.

Integrated approach

As part of the implementation of hydroelectric projects, Hydrowest plants new trees in the watershed of the rivers they are developing, and provide support for the protection of the watershed. They have already invested in the planting of more than one million trees to reforest more than 160 ha of land purchased. Hydrowest also builds and operates supply and chlorination systems for drinking water to serve many communities in the vicinity of the project.

Because many of the rural communities are in areas with limited access to the main urban centres,



Women washing their clothes in the river in the Zacapa region of Guatemala.

Technical features of the hydro projects	
<i>Pasabien</i>	
Dam type	Concrete gravity
Dam height (m)	10
Reservoir storage volume (m ³)	70 000
Water conveyance system:	
3 tunnels, total length (m)	1600
3 canals, total length (m)	2200
Low pressure penstock (m)	1140
High pressure penstock (m)	1105
Head (m)	600
Discharge (m ³ /s)	2.54
Installed capacity (MW)	12.6
Turbines	2 × 6.3 MW Pelton
Generators	2 × 6.5 kVA
Annual production (GWh/year)	61
Transmission line	5 km of 69 kV
<i>Rio Hondo II</i>	
Dam type	Concrete gravity
Dam height (m)	30
Reservoir storage volume (m ³)	1 447 000
Water conveyance system:	
Tunnel length (m)	1080
Low pressure penstock (m)	1000
High pressure penstock (m)	2100
Head (m)	1060
Discharge (m ³ /s)	3.9
Installed capacity (MW)	32
Turbines	2 × 16 MW Pelton
Generators	2 × 16.5 kVA
Annual production (GWh/year)	131
Transmission line	4.4 km of 69 kV

Hydrowest also provides access to telephone communications, direct support to community schools and health clinics, help in the maintenance of irrigation canals, roads, bridges, and other infrastructure critical to the local communities, and so on. The company also goes beyond the direct and immediate support to provide leadership in the development of medium and long-term programmes for the permanent improvement of the standard of living of the communities and for the recuperation of the environment.

Pasabien and Rio Hondo II

In the Zacapa area of Guatemala, with the actual operation of the Pasabien project and the development of the Rio Hondo II project due to begin in November (see Table above), Hydrowest has, with the support and participation of the partners in each project, taken a leadership role, collaborating with private and public entities in the development of medium- and long-term programmes with the following three main objectives:

- The management and sustainable use of water resources in the Sierra de las Minas Biosphere to preserve its rich biodiversity and ensure the long-term availability of water in the region,
- Develop the physical and institutional infrastructure to provide a regulated and efficient supply of safe drinking water for the many communities living in the region, and
- Develop programs to help people living in the region to move from a condition of minimal subsistence, based on agriculture activities resulting in the cutting and burning of trees, to alternative economic activities consistent with sustainable development and protection of the environment.



The penstock and powerhouse of the 13 MW Pasabien small hydro project.

Drinking water system

The availability of safe drinking water is one of the greatest problems in Guatemala and other Central American countries. The water in most of the rivers in Guatemala is contaminated, and is a health hazard for the population. They suffer continually with intestinal diseases, with children under the age of 10 being the main victims. According to a recent article in one of the main newspapers, 13 597 cases of intestinal illnesses have been reported in Guatemala since the rainy season started in June. This plight also affects the population of approximately 50 000 living in the rural communities in the area where the Pasabien and Rio Hondo II projects are located. Therefore, Hydrowest and its project partners are working to provide safe drinking water to those communities.

The communities in the vicinity of the Pasabien river have for many years used a series of makeshift diversion levies, placed along the course of the river, to collect water for their consumption. The old system used to provide untreated water only when there was high enough flows in the river and used to require continual repair because high flows would destroy the levies. The water supply to those communities was unreliable, mixed with sand and mud carried by the river flows and contaminated making it unsuitable for human consumption. Hydrowest and its partners in the Pasabien project have built a water system to supply drinking water to the communities located in the general vicinity of the Pasabien river. This system includes a water tank with a capacity of 1 million litres located at a sufficient elevation to maintain constant pressure, two pumps and a backup take-off from the project's penstock to keep the tank full at all times. A chlorination system has also been provided.

Enhancing the surrounding environment

As part of the operation of the Pasabien project, Hydrowest is pursuing several tasks. The company has invested in the planting of more than one million trees to reforest more than 160 ha of land purchased in the Pasabien river watershed. Hydrowest is also providing funds to the local NGO organization Defensoras de la Naturaleza, Defenders of Nature (DDLN), to cover costs of forest guards and fire protection. It is also collaborating with schools and community leaders to educate people on importance to preserve trees and not contaminate or waste water resources.

As part of the development of Rio Hondo II project, Hydrowest has provided funds to DDLN to carry out

An irrigation canal which is being repaired as a result of the hydroelectric projects.



an evaluation of the existing conditions in the Rio Hondo river watershed, to be used as a base for comparison after the project is in operation. Hydrowest has also purchased extensive land areas which are currently bare, to reforest them. Furthermore, it is carrying out programmes to inform people in the local communities about the benefits of protecting the forest and not cutting down or burning trees.

As a member of the local communities, Hydrowest is contacting other private and public entities to promote collaboration on the development of the overall program for the Sierra de las Minas Reserve.

Future prospects

Hydrowest is conscious of the magnitude of the work that lies ahead to achieve all the objectives listed above, and cannot accomplish them alone. However, the company knows that it can use its participation in those communities to initiate change toward a better standard of living. By adopting a leadership role, Hydrowest can work with other private and public entities in Guatemala, the USA and other parts of the world to make a very positive impact in this region. US Hydropower is working to replicate this experience in other markets such as India, Mexico, and Brazil.

These investments are critical to social and economic development, and require strong partnerships with host governments and the local communities. US Hydropower believes that public-private sector collaboration which includes community dialogue will greatly enhance foreign government efforts to supply the ancillary benefits of water development and ener-



Children make use of the new drinking water supply in one of the water divisions along the Pasabien river.

gy to rural and urban areas.

Hydropower's unique qualities offer tremendous benefits to the developing world. But, the private sector cannot operate alone. Macro development planning and governance issues needed to achieve the permanent development of the rural communities will require a government-to-government relationship working with local communities, the finance community, and the private sector to develop water resources efficiently and to achieve the benefits that hydropower can provide.

In developing countries where the cost of irrigation and water supply for multipurpose projects in most cases cannot be recovered from the local poor population, the revenue stream created by the sale of hydropower offers unique opportunities to solve development needs. To work at the macro-government level, the industry will need the support of governments to create the partnerships which embrace the goals of global sustainable development. ◇



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Debby Stone is Director of Trade Promotion for the US Hydropower Council for International Development, a trade association working to help industry bridge the uncertainties in new global markets. Membership includes investor-owned utilities and private power producers, equipment manufacturers and suppliers, financiers, and consultants including engineering, design, and legal expertise. The Council provides financial, policy, and advocacy expertise in addition to regular communications and a chance to participate in industry events such as conferences, trade missions, policy initiatives, and emerging market opportunities. Through its Public Private Sector Partnership on Hydropower established by the US Congress in 2001, the US Agency for International Development, the US Hydropower Council works with industry members to enhance energy and water development and investment in emerging markets. The Council is currently working with foreign government representatives and private sector groups in Latin America, Asia, Africa, and Eastern Europe to encourage a competitive environment for hydropower investment.

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