

# The Cuyamapa Hydroelectric Project

Water is power: how a small-scale hydroelectric project in Honduras is enabling sustainable development with the Clean Development Mechanism (CDM)

## What is Cuyamapa?

In the community of El Salto, Honduras, a small scale hydroelectricity project known as Cuyamapa is currently reducing greenhouse gas (GHG) emissions through the Clean Development Mechanism (CDM). Investment in the community and use of renewable energy has increased, while dependence on fossil fuel has concurrently decreased. As such, Cuyamapa highlights how sustainable environmental and community development can be promoted through the CDM.



The Cuyamapa River.

## Why hydroelectricity?

With an average annual GDP per capita of only \$3,000, Honduras is the second poorest country in Central America, and one of the poorest in the

Western Hemisphere.<sup>1</sup> They are a net importer of electricity, introducing 356 million kWh of foreign power in 2005. From 2000-2003, fossil-fueled power plants grew from 37% to 60% of total electricity production, while hydroelectricity, a clean, renewable energy source, decreased from 63% to 40% in the same period. Concurrently, CO<sub>2</sub> emissions increased from 4.54 Mt to 6.03 Mt CO<sub>2</sub>, a 33% increase in just a 3-year period.<sup>2</sup> In addition to its energy woes, Honduras contains vast biological resources and diversity which are currently being threatened by uncontrolled development and improper land use practices.

In the community of El Salto where the Cuyamapa Hydroelectric Project is situated, there has been a history of significant poverty, unemployment, and environmental degradation. Their livelihood is based primarily on subsistence agriculture and raising cattle. During non-harvest times, inhabitants work as unskilled laborers

or relocate to the north to work in assembly plants.

## Water is Power

Well below 1% of hydroelectricity in Honduras is generated by small-scale projects like Cuyamapa; however, such projects have proven to be a successful and sustainable means of generating clean electricity and mitigating GHG emissions under the CDM. With this in mind, EcoSecurities, in coordination with ENETRAN and CABEL helped to develop and build a 12.2 MW small scale, run-of-river hydroelectric project in El Salto, Honduras, which became operational in September 2006. Run-of-river projects divert only a portion of the water flow, so they are more sustainable and reduce environmental impacts. The project generates 48.19 GWh/yr, therefore reducing dependence on foreign oil and reducing GHG emissions by 35,660 tons of CO<sub>2</sub>e per year. In total, this means that 2,500,000 gallons of fuel per year need not be imported,

<sup>1</sup> CIA Factbook 2007. Available at:

<https://www.cia.gov/>

<sup>2</sup> IAEA EEDRB. Available at: <http://www.iaea.org>

constituting a savings of USD\$43 million over the life of the project.<sup>3</sup>

### Power for the People

Benefits to communities from CDM projects often include job creation and increased economic development in areas that have previously been economically depressed. For the community of El Salto, the Cuyamapa Project generated around 400 direct and indirect jobs, employing a 100% Honduran workforce as bricklayers, carpenters, electricians, welders, and security. Training was also provided to improve and diversify local work experience, improving their earning potential and quality of life.

An integral part of the Cuyamapa project has been the Community Development Plan (CDP), which was created in consultation with the local people to encourage self-managing community projects. Focus areas include teaching aid, community organization, natural resources management, product marketing assistance, and preventative health care. Specifically, the plan ensured technical support, donation of teaching and educational materials for public schools, and 60 thousand free lunches for students through a joint program between ENETRAN and the World Nutrition Program (PMA). The plan has also designed activities for women to improve their quality of life.

### Environmental Sustainability

In addition to the clear environmental benefits of GHG reduction created by CDM projects like Cuyamapa, additional benefits of reforestation and protection of degraded zones has also

resulted. This has been achieved by means of a Reforestation Plan to conserve 118 km<sup>2</sup> of the river-basin, which was designed and implemented after a biophysical diagnosis of the



Community members work on the reforestation project.

area by ENETRAN. Educational and communal plots have been established which contain over 100,000 native plant species, and reforestation of adjacent tributaries has been undertaken in cooperation with the local municipality. The project itself has also been developed with sustainability in mind: pipes were located in areas with little to no vegetation, and much of the infrastructure was located on a cattle ranch with little biodiversity present. Roads were built on existing gaps, developed areas, and on cattle ranching land. Potential reductions in river flow volume were addressed by using a technique that maintains the necessary volume of water for the riparian ecological system. In addition to the aforementioned social and environmental benefits, the Cuyamapa project required no public

funding. The project was also able to overcome a variety of technological and investment barriers which have plagued similar projects, thereby demonstrating how other small-scale hydroelectric projects can be successfully proliferated throughout Honduras and other developing nations.

### Learning from Cuyamapa

Cuyamapa Hydroelectric Project is a prime example of how the objectives of the CDM and sustainable development can be achieved, improving our environment, encouraging community development, and achieving meaningful GHG reductions. Where potential synergies and joint-ventures exist, developers should be emboldened by the success of projects like Cuyamapa. Pursuing innovative solutions to climate change and sustainable development is both important for the environment, and a valuable business opportunity.



Local farmers negotiate the Community Development Plan with representatives from ENETRAN.

<sup>3</sup> "Cuyamapa ya cuenta con represa hidroeléctrica." Available at: <http://www.latribunahon.com/97662.html>.

#### Cuyamapa at a Glance

Project Type	Hydroelectricity
Registration Date	April 23, 2005
Operational Start Date	September 2006
Time Span	15 year contract, 50 year lifespan
Reductions	35,660 t CO <sub>2</sub> e per year
Partner Organizations	Energía y Transmisión, S.A. (ENETRAN) and the Central American Bank for Economic Integration (CABEI)