IWRM Action Hub

CASE STUDY

Costa Rica: Better water allocation in the Lake Arenal Watershed

Summary

There were concerns that Lake Arenal in Northern Costa Rica was threatened due to problems of deforestation and possible premature sedimentation, leading the government to take action, resulting in successful national and local benefits in terms of energy produced and area irrigated. The most important lesson learned is the importance of consulting all parties involved before initiating the project to achieve the best result.

Background

The lake Arenal in Northern Costa Rica, the country's largest water reservoir was created for the dual use (energy and irrigation) of the water resources and an increasingly important tourist destination. The Arenal reservoir was created to provide energy and irrigation. The 8,300 ha artificial lake, with a storage capacity of over 2,400 M m^3, can supply 25% of the nation's electricity demand, and irrigate some 30,000 ha, about 77% of the total area of Costa Rica under irrigation.

The construction of the dam and irrigation structures was financed by an Inter-American Development Bank (IDB) loan of $ 575 million. Environmental studies carried out since inception suggested the importance of protecting the watershed and its forests. As a result, the Ministry of the Environment (MINAE) became involved in the project. It expanded the Arenal National Park and others parks in the catchment and irrigation areas; these areas were merged into a single "Conservation Area" in the 1990s. The project has had a large social payoff, but some groups have benefited more than others.

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groups have benefited more than others. The whole country benefits from emissions-free and economical hydroelectricity. However, the environmental outcomes have been mixed. On the one hand there were the negative disruptions, caused by construction of the dam and irrigation project. On the other, the project attracted the attention of government authorities, and particularly MINAE, who has done a good job at protecting the forests and introducing a vision of sustainable development.

Actions taken

In 1996 the Ministry of Energy and Environment (MINAE), through the Arenal Conservation Area, and with support from the Canadian Government, WWF-Canada and the InterAmerican Development Bank (IDB) developed the Arenal Lake Watershed Management and Development Plan (Plan de Manejo y Desarrollo de la Cuenca Laguna Arenal). To implement this plan, the “Commission for the Implementation of the Development and Management Plan of the Arenal Reservoir Watershed” was

created by Executive Decree in 1997. It was seen as a temporary entity, until a Watershed Agency, proposed in the Plan, could be instituted. The Commission consisted of representatives from MINAE, ICE, SENARA, IAYA, the Foundation for the Development of the Arenal Conservation Area, and a local catholic priest. The spirit behind the Commission was clearly cross sectoral, seeking to bring together different key stakeholders.

However, the legislation was flawed by the absence of producers' groups or local development associations and the omission of allocation of funding to keep the Commission functioning. Also missing were the identification of mechanisms for discussion such as public forums where all parties could come together. The intent was to involve all the interested parties and institutions to make the best use of all resources. However, after four years, the Commission has virtually disappeared, lacking funding and political support.

Outcomes

The project has yielded successful national and local benefits in terms of energy produced and area irrigated. But these outcomes have not been integrated, either with each other, or with conservation of ecosystems and other environmental sectors. Not only is the Arenal Lake the only reservoir capable of multi-year regulation but it also supplies almost a third of the country's total electricity demand. "The reliability and robustness of the interconnected system depends on Arenal" says Carlos Obregon, ICE's Executive President. At the same time, using the water that has already generated electricity, SENARA has been able to double the productive capacity of more than 25,000 hectares by allowing production in the dry season. Even though irrigation efficiency is still very low, and there are no economic incentives to use less water, current production is generating additional income to hundreds of producers.

Lessons Learned

The Government's intention was to involve all parties, and they were consulted in the development of

Lake Arenal Watershed Management and Development Plan. However, during implementation, one party – (ICE) – had so much influence and power, that other parties.

Funding issues were ignored. Legislation creating the Commission omitted all mention of a financial plan for its functioning. Nor was it suggested that the main water users should pay for millions of cubic meters of water used for power generation.

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