



Generating Hydropower through Sustainable Management of Natural Resources



Sustainable Development Goals Addressed



Organization, Institution or Company
Itaipu Binacional
Location of project site, Country
Foz de Iguazu, Brazil, and Ciudad del Este, Paraguay
Brief narrative description of objective/project/activity/initiative
<p>Itaipu Binacional is an organization created in 1974 by the Governments of Paraguay and Brazil in order to utilize the Parana River to generate hydropower. The Itaipu Hydropower Plant is the largest generator of renewable power in the world with a record annual generation of electricity of 103.1 million MWh in 2016 and a total installed capacity of 14,000 MW. In 2018, Itaipu generated 90 per cent of the electricity consumed in Paraguay and 15 per cent of the electricity consumed in Brazil. The reliance on clean and efficient electricity is greatly contributing to the relatively decarbonized economies of Paraguay and Brazil avoiding large volumes of GHG emissions throughout its 35 years of continuous operation.</p> <p>The Itaipu reservoir contains 29 billion cubic meters of water with about 135,000 hectares of water surface. The reservoir is not only used for electricity generation but also for agriculture, fishing, aquaculture, touristic and leisure purposes and as a municipal water source and for maintaining wildlife and ecosystem services in the relevant area in both countries. Itaipu leads many activities designed to conserve and maintain the quality and conditions of all these water-related ecosystems at optimum levels. In relation to terrestrial ecosystems, about 101,000 hectares of forests surround the Itaipu reservoir. This area represents the protected belt for the reservoir along the Brazilian and Paraguayan margins. Itaipu manages within this area a total of 10 protected areas including biological sanctuaries and reserves that protect native flora and fauna and advance research and conservation initiatives. These areas and the reservoir provide valuable connections among important remnants of the Atlantic Forest located in Paraguay, Brazil and Argentina</p>
Economic, environmental and climate benefits, challenges and lessons learned
<p>Itaipu is currently embarked in a comprehensive technological update and upgrade of its power plant and substations designed to enhance energy efficiency and reliability while reducing costs. This effort includes the digitalization of all the electricity generation and control systems. This modernization process will allow Itaipu to achieve higher levels of energy efficiency and consequently higher efficiency in the use of water.</p> <p>Itaipu contributes to the global efforts on combating climate change and its impacts. The electricity generation from the Itaipu Hydropower Plant replaces the equivalent of 550,000 barrels of oil or 50 million cubic meters of natural gas each day. Itaipu is avoiding the</p>

emissions each day of about 87 million tons of CO₂ equivalent if it is replacing coal and 39 million tons of CO₂ equivalent if it is replacing natural gas. The GHGs fixation by the vegetation of the protection belt and wildlife refuges is estimated at 5.9 million tons per year.

The sustainable development strategy of Itaipu and its comprehensive program of activities related to climate change coupled with the optimum integrated management of water resources and protection of water and terrestrial ecosystems represent an excellent example of an integrated approach to sustainable development and climate change.

Additional information: Website, Addresses and Contacts

ITAIPU Binacional. (2019). *Ensuring Availability and Sustainable Management of Water and Sanitation for All, Case Study: Itaipu and SDG 6*. Paraguay.

ITAIPU Binacional. (2019). *Ensuring Access to Affordable, Reliable, Sustainable and Modern Energy for All, Case Study: Itaipu and SDG 7*. Paraguay.

ITAIPU Binacional. (2019). Sustainability Reports

<https://www.itaipu.gov.br/en/social-responsibility/sustainability-reports>



Itaipu initiatives on rural development and incomes, aquaculture, biodiversity protection and sustainable tourism