



The Diquís Hydroelectric Project and the Térraba-Sierpe National Wetlands:
An Analysis of Potential Impacts and Options for the Future

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Executive Summary

(Synthesis and translation by Austin Cruz)

The Diquís Dam is a proposed 631MW infrastructure project that is planned for southern Costa Rica. The dam, which would be the largest in Central America, would be fueled by a large reservoir. With outflow of the dam discharging into the Térraba-Sierpe National Wetlands (HNTS), a RAMSAR site, concerns have been raised about the impact of the dam on both terrestrial and marine ecosystems and biological processes. This report explores the nuanced challenges of the construction of the proposed Diquís Dam, including: the indigenous territory that will be flooded, management of the HNTS, impacts on ecosystems and biodiversity, and economic impacts.

The HNTS is composed of two lower watersheds along both the Térraba and Sierpe rivers, supporting more than 25,000 ha of protected biodiversity. The Térraba wetlands are approximately 14,637 ha of tidally flooded wetlands that are composed of mangroves from five genera and four families. This area is almost completely unaltered except for the activity by a few hundred inhabitants. The Sierpe wetlands are 9,723 ha inland to the Sierpe River and are composed of three distinct and ecologically important zones. The HNTS, the largest wetland in the country, plays a prominent role in preserving the characteristic biodiversity and ecology of the region as it hosts numerous species of mollusks, migratory birds, reptiles and mammals.

Responsible for the vast and biologically productive region are only five employees of Costa Rica's National Parks Service including an Administrator and a secretary, equaling 5,000 ha per civil servant. Work conditions for these five civil servants are precarious: lacking both a proper office from which to work (using instead their housing facilities) and a meeting room and constrained by a \$60,000 budget that includes transportation fuel, they nevertheless endure with alacrity. In 2011, the *División de Fiscalización Operativa y Evaluativa de la Contraloría General* published an audit that highlighted the weak control and vigilance in the HNTS, all of which puts at risk the conservation and protection of its natural resources. A potentially important development area of the HNTS is in tourism, given the park's rich natural and cultural heritage.

Meaning 'Río Grande,' or 'large river' in the language of the Teribe ethnic group, 'El Diquís' dam will cost between \$2-3 billion and will become the largest dam in Central America with a reservoir covering an area of 6,815 ha and generate 631 MW of electricity. Initially, the project

was known as the '*Proyecto Boruca*' and was to be built upon the Térraba river, with a potential of 1000 MW (= 1 GW) of electricity production. Later, it was renamed to '*Proyecto Veraguas*' and re-conceptualized to utilize a smaller reservoir and portion of the Río Coto Brus. Finally, after a contest involving schools in Buenos Aires and Osa, the project was given its current name. The Diquís was to come online in 2016, but was further delayed when the Costa Rican Institute of Electricity ('ICE' in Spanish) announced that an environmental impact assessment (EIA) would not be submitted to the National Environmental Technical Ministry (SETENA in Spanish) until 2014, in which case a final decision on the project will not be determined until 2015. The Diquís dam is now set to come into operation in 2021¹.

The Diquís Dam 'megaproject' would affect the upper and lower watersheds of the Río General, upon which the dam will be built. Important in controlling possible flooding of the HNTS—forming the lower watershed of the dam project—the dam will absorb and partially control water-flow into this area. The average rate of flow of the Río General (without the dam) is approximately 182 m³/s, which represents about 60% of the water-flow into the Río Grande de Térraba before its confluence with the Río Coto Brus, providing the remaining 40% of water-flow. An estimated 200 m³/s of water-flow from the Río General will be used by the dam project. An inevitable consequence of the dam is the additional 200 m³/s of water-flow that would be added to the Río Grande de Térraba, which naturally varies between 40 m³/s in the dry season to around 600 m³/s in the wet season, with an average of 200 m³/s, thus altering the flow to 240 m³/s and up to 800 m³/s. Construction of the dam alone will cause significant disturbance to the surrounding ecology such as the removal of vegetal biomass, the use of explosives for the creation of roads, and the transportation of large quantities of building materials, which will also have an impact on the surrounding communities. Additionally, there are three important types of impact that the dam will have upon the HNTS lower watershed: 1) the reduction of sedimentation; 2) variations in water temperature along the dam; and 3), the change in the hydrological profile that may affect mangrove productivity.

Also affected by the Diquís Dam project will be 'Indigenous Territory' (IT) and the indigenous communities living in this territory. The dam will inundate approximately 658 ha of IT belonging to the Térraba community, and approximately 75 ha of IT belonging to the China Kichá community. Of the total 9,355 ha of IT belonging to the Térraba people, about 12% is inhabited by indigenous communities; of the 1,100 ha of IT belonging to the China Kichá people, about 3 % is inhabited by the indigenous community. Due to the dam and its effect upon the surrounding environment, an estimated 292 families (about 1,100 people from two indigenous communities and six non-indigenous communities) will have to be resettled and duly compensated. Additionally, there are other local and indigenous communities that would be affected by the associated development of the dam, including those in Buenos Aires, Paraíso, Jalisco, Caña Blanca, and Palmar Norte. To help mitigate irreversible cultural and archeological losses and comply with standards set by the United Nations, in 2011 Special Rapporteur of the U.N. James Anaya implored, under Costa Rica's ratification of the International Labor Organization (ILO) Convention No. 169, the government to have had taken the responsibility in having prior consultation with the affected indigenous communities. Similarly, these

¹ Since Costa Rica has reached its debt limit, the dam will more than likely not be coming online in 2021, meaning that the soonest the project could be operational would be in 2023 or 2024, if all approvals are granted.

communities can benefit by the creation of a type of payment for ecosystem services (PES)—to be developed by the ICE—provided by the watersheds.

During the construction of the dam, and estimated maximum of 3,500 jobs would be created, gradually increasing as the project develops, requiring 168 professionals, 383 technicians and administrators, and 2,950 operational workers. Once the project is in operation though, there will need to be a plan for the communities to create and sustain local economic development, a task that may be facilitated in part by the anticipated aquatic tourism industry build around the reservoir itself.

In 1992, the Ramsar Convention (RAMSAR) was ratified in Costa Rica, and three years later, the HNTS was included in the list of protected and ecologically important wetlands, with an original area of 30,654 ha that were subsequently reduced to 25,000 ha. The significance of this is fundamental in obliging the government of Costa Rica to develop management and sustainable resource plans, which it can modify posteriorly but must present sufficient justification in doing so. Relevant to such plans is the creation of the Environmental Law (7554) that legally necessitates environmental impact assessments (EIA). Although the ICE has completed an EIA of the Diquís Dam with specific mitigation and compensation proposals, it has not yet submitted it to the SETENA; once it does, the EIA will be public information and of public character. Controversially though, the Diquís Dam's EIAs, development, and transmission development was declared of national and public interest by Executive Decree No. 34312-MP-MINAE in February 2008, which is currently being challenged for nullity in the Constitutional Tribunal.

Strategic stakeholders involved in the Diquís Dam project range from economic, social, and environmental partnerships. These key actors include The Diquís Commission, the Ministry of Environment and Energy (MINAE), the National System of Conservation Areas (), the United States-Costa Rica Foundation (CRUSA), the Blue Moon Foundation, INBio, and the Costa Rican Coastal Marine Biodiversity (BIOMARCC) Project of the German Cooperation Agency for Development (GIZ). Among the many options available to the ICE in relation to the assessment and potential development of the Diquís Dam, it must comply with RAMSAR Convention requirements. For this task, the Stanford Woods Institute for the Environment has expressed its support to help ensure compliance, including an alternative and proactive approach that minimizes and compensates social and environmental impacts while keeping both as a double bottom line during project development. At the moment, and to its benefit, the ICE has the most current ecological and anthropological data on the HNTS, including detailed land-use maps of the areas to be affected by the dam and its auxiliary development activity.

The financing of the Diquís Dam will most likely require the participation of international financial institutions, such as the Inter-American Development Bank (IDB) and the World Bank with its respective financial services for the private sector, private banks, and the bond market. This study's author, Umaña, suggests that in corroboration in creating robust social and environmental performance that supersedes merely basic and acceptable standards, the World Bank or Costa Rica itself can explore issuing 'green bonds' which represent an investment portfolio in renewable energies and good management of forests and watersheds. Should the ICE's resources and assessments be implemented, the first sovereign 'green bonds' may possibly be issued for the dam project.

Lastly, a number of recommendations are made for both the Executive Branch and ICE with regards to the information and implementation of the Diquís Dam. First, an improvement in the access to information must be made by ICE (early 2014), resulting in the possibility of a public debate based around data and facts of the dam project. This can be facilitated by collaboration with key stakeholders, particularly INBio, BIOMARCC, and CRUSA. Second, Costa Rica must consult with and include its indigenous communities in the assessment and evaluation processes, establishing a clear and direct relationship between the ICE and indigenous communities. The ICE should also consider the development of a payment for ecological services (PES) for other communities affected. Third, the MINAE and the Osa Conservation Area (ACOSA) must implement a management plan for HNTS, including three additional civil servants, ten additional park guards, as well as the establishment of a coastguard station in the area in order to mitigate threats related to land-use and agricultural expansion into the wetlands. And lastly, the integration of wilderness areas into the design and operation of the Diquís hydroelectric project is required so as to avoid conflicts and create potential synergies between other areas and stakeholders.