

## Environmental and Labor Issues:

**Environmental Classification.** This is a category III project according to the IIC's environmental and labor review procedure because it could produce certain effects that may be avoided or mitigated by following generally recognized performance standards, guidelines, and design criteria. Environmental, social, and labor considerations related to the project include soil and water impacts, effects on local flora and fauna, solid waste and liquid effluent management, personal safety and emergency response, labor practices, and social and community issues.

**Introduction.** The hydroelectric power project has been classified as a Category II project by Panama's national environmental agency Autoridad Nacional del Ambiente (ANAM). The project also includes the construction of a 12-kilometer, medium-voltage power transmission line, classified as Category I by ANAM, and a non-metallic mineral products (aggregates) plant, also classified as Category I by ANAM. All project categories require an environmental impact assessment (EIA) and a public participation mechanism. In Panama, Category I projects are those that are likely to have minimal adverse environmental impacts, whereas Category II projects have medium impacts. The EIA for each subproject was prepared by the consulting firm CAMSA and includes an environmental management plan (EMP) with mitigation plans for the project construction and operation phases. The EMP for the project construction phase has been in place since construction began.

The company has obtained approval from ANAM of the EIAs prepared for the project. The company is also in the process of fulfilling the conditions included as part of the EIA approval. In addition, all other necessary permits and approvals have already been obtained.

The rural communities of Sábalo, Boca del Monte, and Balita, in the Boca del Monte corregimiento, San Lorenzo District, Chiriquí Province, all lie in close proximity to the project's area of influence. As part of the project appraisal process, the project team interviewed the director of ANAM's regional office in Chiriquí, the mayor of San Lorenzo District, the chairman of the San Lorenzo district council, and representatives of civil society in these communities. The team visited the schools in Boca del Monte and Sábalo and talked with their principals and teaching staff. Members of the Comité Pro Obras de Beneficio para la Comunidad community advocacy group for the San Lorenzo corregimiento accompanied the project team during its visit to the area.

Since the San Lorenzo project is the only project approved for the Fonseca River watershed, there are no cumulative effects with other hydropower or river development projects.

The firm is working towards registering the project with the United Nations for securing carbon emissions reduction certificates (ERCs).

**Soil and Water Impacts.** The project site lies in a rural area used mainly for traditional cattle-grazing, with some crop-farming. Most of the area is pastureland. There are no virgin areas or sensitive habitats liable to be impacted by the project. The entire project, including the dam, the raceway, the powerhouse, and the substation, lies within the perimeter of a property owned by the company with a total area of approximately 61 hectares. The 12-kilometer transmission line connecting the hydropower project to Panama's medium-voltage (34.5 kilowatt) national interconnected grid will be built along the public highway without affecting any private property owned by third parties. There is direct access to the project site from the public highway through lands owned by the company. There will be no expropriation of any private property outside the project site.

The EIA characterizes the project's potential erosion and soil compaction impacts as negligible. The construction phase is deemed to pose the highest risk, though its impacts should be temporary

and reversible. The layer of topsoil removed during construction will be kept for subsequent use in restoring vegetation. The construction methods employed by the contractor (SARET) are designed to minimize silting from runoff, to mitigate any such effects during the construction phase. San Lorenzo has designed a reforestation program using native species to restore vegetation in impacted areas. At the point where the river is diverted, protective structures (gabions) were placed on the slopes of both riverbanks to prevent silting.

The project construction phase poses the highest risk of affecting water quality in the river due to the same potential silting effects, causing turbidity and, eventually, sedimentation. As in the case of soil conservation measures, mitigation measures involve the management of earthmoving operations during construction and subsequent reforestation activities. To prevent any possibility of pollution from fuel or oil spills or leaks from equipment used in the project construction phase, the EMP provides for the implementation and monitoring of appropriate equipment maintenance plans and the proper management of storage facilities. All fuel storage tanks have spill containment walls.

**Impact on Local Flora and Fauna.** The project, sited in an area already impacted by traditional cattle-grazing activities, will have negligible impacts on local flora and fauna. The project area consists mainly of highly intervened agricultural lands and pastures, with patches of secondary riparian forest and solitary trees. However, the EMP provides for the restoration of local flora as part of a reforestation plan. A 20-hectare area has already been reforested. The company promoted the creation of a community nursery staffed by local workers to produce seedlings for use in the reforestation program for the project area.

Due to historic anthropogenic pressure on the fauna in the area of influence of the project, the fauna observed in the area is limited and the majority is transitory. Regarding aquatic fauna, the minimum environmental flow rate has been set at 4.89 cubic meters per second (equivalent to 10% of the mean multiyear flow rate) to prevent or mitigate any effects on aquatic life downstream from the intake. To prevent the barrier effect on aquatic life, the same ecological flow rate will be maintained in the area before and after the dam, even at critical times.

**Solid Waste Management.** The majority of the solid waste generated will be during the construction phase; waste generated during the operational phase is minimal. The EMP classifies waste as follows:

- Household and similar waste, to be sent to the municipal dump;
- Nonhazardous metal and plastic waste and used tires, with any recyclable parts to be separated and the rest disposed of according to municipal ordinances;
- Dirt and rubble, to be used in landfills;
- Used oil, filters, contaminated rags, left-over paint, solvents, and batteries, to be handled by licensed operators. These wastes are to be securely packed for transport to the final treatment site.

Project personnel are trained in the proper management, classification, labeling, and storage of waste products. They also receive training in minimizing waste production and in recycling and re-use.

**Personal Safety and Emergency Response.** All personnel hired to work on the project receive training in occupational safety and health. They are furnished with personal protective gear, proper use of which is monitored. Access to work areas is restricted to authorized personnel. There is a contingency plan for incidents such as fires, workplace accidents, animal bites or stings, and human disputes. The plan lays out a communications procedure, the contingency measure to be taken, and the outside organizations to be contacted in each case.

There has already been some dynamiting to divert the course of the river, with plans for more blasting work for excavating the powerhouse to a depth of up to 15 meters below the level of the riverbed. All dynamiting work is being done by a specialized firm following applicable safety protocols required by law. The explosives are transported to the work site with a police escort the day prior to their scheduled use.

**Social and Community Issues.** The communities closest to the project site are Balita and Sábalo. Project construction will not require the resettlement of persons or homes. Current water usage of the River Fonseca in the project area includes water for cattle, washing clothes, and personal hygiene, as well as fishing. These activities will not be affected by the project, as the minimum ecological flow will ensure adequate water flow and people will continue to be able to access the river, as in the past.

When filing the request for project approval, the firm held a series of public consultation meetings with residents of nearby villages at which it made informative presentations, displayed a model of the completed project, distributed handouts, and conducted interviews and surveys of local community members. It also posted notices in local newspapers and on the municipal bulletin board. The consultation process was conducted with the support of the deputy for the area, the district mayor, and the municipal council.

The public notice and comment process produced no major objections to the project but did reveal the concern of local residents about the lack of employment opportunities and the shortage of resources in small rural communities affecting the availability and quality of basic services.

To address the lack of job opportunities, the company is looking to hire local workers to the extent that properly qualified applicants are available. At present, some sixty residents of nearby villages are working on the project, accounting for over half of all hires. They are receiving training and gaining work experience that will help them find other jobs after project completion. The project's employment numbers will fall off significantly during the operation phase, though the firm is hoping to keep on some local workers as part of its permanent staff.

San Lorenzo has committed to donate the equivalent of 20% of its net income from the sale of ERCs for investment in sustainable community development efforts. A citizens committee (Comité Pro Obras de Beneficio para la Comunidad) composed of community representatives from different spheres of activity (such as the health committee, the water committee, the parents committee, the athletics committee, and the church) backed by the members of the municipal council was formed to identify and draw up budgets for these investments.

A number of company-sponsored projects have already been carried out as agreed with the citizens committee. Examples include construction work under way on a classroom for the Boca del Monte school with guidance and approval from the Education Ministry, upgrades to the playground in Sábalo, repair work and painting of the metal structure of the bridge to the village of Balita, the installation of lighting on the athletic field in Horconcito, and the provision of funding for athletic organizations, education institutions, and the organization of several family-oriented events. Construction work is also under way on the first access road open to motor vehicle traffic leading to the community of Balita one kilometer from the project site.

In addition to the committee, a dispute resolution mechanism was established with a written communication process for petitioners to express their concerns and the company to propose solutions. If there is agreement on a solution, corrective action is taken with subsequent follow-up. In the event an agreement cannot be reached, ANAM will serve as arbitrator for the disputing parties.

Under Panamanian law, workers are free to choose and join labor unions.

**Monitoring and Reporting.** Hidroeléctrica San Lorenzo will prepare an Environmental and Social Action Plan (ESAP) to ensure compliance with domestic regulations and the IIC's environmental and workplace safety and health guidelines. It will also submit regular progress reports on implementing the ESAP.