

Environmental and Labor Issues:

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, or design criteria. The main environmental issues associated with the project are: permits and environmental management system, fuel handling and storage, air emissions and noise, liquid effluent management, solid and hazardous waste management, and occupational safety and health, as well as labor practices and social issues.

Puerto Cabezas Power's thermoelectric power plant is located in the municipality of Puerto Cabezas in Nicaragua's Autonomous North Atlantic Region. The project is expected to reduce the environmental impact of air emissions and noise from the plant, since three of the current generators will be replaced with two new generators factory-designed to operate with low fuel consumption and low nitrogen oxide emissions (NOx) and noise levels. The new generators will be installed on the same grounds as the thermoelectric plant that currently supplies electricity to the city of Bilwi and neighboring communities. The new generators will meet the standards in the International Finance Corporation's Small Combustion Facilities Emissions Guidelines for particulate matter and sulfur oxide (SOx) emissions.

Permits and environmental management system: PCP is licensed to operate by the Nicaraguan Energy Institute (INE) and has environmental permits from the Secretariat of Natural Resources and Environment (SERENA) and the RAAN's local environmental authority. Pursuant to decree 45-94 of the national regulations, which requires an environmental impact assessment (EIA) for the construction and operation of thermoelectric power plants with a generating capacity of over 5 MW, in 2006 the project's EIA was conducted and the respective environmental management plan was prepared, along with a contingency plan and environmental monitoring and training programs. During the project with the IIC, the company will continue to implement its environmental management plan, which includes installing filters in smoke stacks to reduce air emissions from the current generators; controlling rainwater runoff through the construction of gutters, and mounting a groundwater surveillance program to monitor water quality in the plant and surrounding locations. The chief of occupational safety and health is responsible for implementing the environmental management plan under the supervision of the thermoelectric plant's manager.

With the aim of improving the environmental practices that PCP has been introducing at the thermoelectric plant, the IIC will request the company, as an additional mitigation measure, to prepare an Environmental and Social Action Plan (ESAP), whose environmental and occupational safety and health measures will consist, among other things, of: i) a baseline study that will include the monitoring of conditions in the work environment through the measurement and analysis of noise and air quality in the building housing the generators, as well as the sampling and analysis of groundwater, liquid effluents, and air emissions and noise in the vicinity of the plant, ii) the expansion and refurbishing of the temporary hazardous waste storage area to ensure adherence to international best practice, and iii) the installation of containment dikes in the tanks used for the storage of hazardous liquid waste.

Fuel handling and storage: The facility primarily handles and stores Bunker C and diesel fuel, as well motor oil. The Bunker C fuel oil is transported to Puerto Cabezas in a tanker owned by PCP. It is then transported by tanker trucks to the thermoelectric plant, where it is stored in tanks. The tanker has fire prevention and firefighting equipment as well as equipment to handle accidental fuel spills. The tanker's crew has been trained in the procedures issued by the International Maritime Organization on safety measures, emergency response, and protection of the marine environment.

All the Bunker C fuel oil and diesel storage tanks have containment dikes to handle spills. No

groundwater pollution from fuels has been detected in the project area, as indicated by the test results from nine wells sampled in the area surrounding the thermoelectric plant as part of the project's EIA.

Air emissions and noise: The thermoelectric generators are the main source of air emissions and noise, due to their internal combustion engines, which use Bunker C fuel oil and light diesel only during the start-up phase. Sulfur oxide emissions are mitigated by the use of fuel with a low sulfur content (1.7- 1.8 % in weight). Air emissions and noise from the plant's operations will be lower than they are now, once three of the units currently in operation are replaced with the two new units envisioned under the project. PCP will monitor air emissions from all the generators, as well as noise levels in the vicinity of the plant, and periodically report the findings to the IIC as part of ESAP implementation. PCP will also take the necessary steps to ensure compliance with national regulations and international best practice in this regard.

Liquid effluents: The facility produces water polluted with oil, chiefly from the machine room. This polluted water is sent through drainage channels to a catch basin, where the water and oil are separated using physical processes. The recovered oil is purified for reuse in the generators. The separated water is channeled to another catch basin, where it is subjected to physical-chemical treatment to precipitate suspended solids before its discharge into the municipal sewer system along with household wastewater. Rainwater is filtered before it is also discharged into the municipal sewer system.

Solid and hazardous waste management: The facility's hazardous waste consists mainly of used electric batteries and sludge from fuel impurities or the treatment of liquid effluents, as well as spent oils. This waste is delivered to authorized contractors for appropriate treatment and final disposal or recycling. Non-hazardous solid waste is also delivered to an authorized contractor for transfer to the municipality's final point of disposal.

Occupational safety and health: PCP has a chief of occupational safety and health, who is responsible for ensuring that the plant's contingency plan is followed. It also has an occupational safety and health committee made up workers' and company representatives. The facility has safety signs, alarms, and a fire suppression system consisting of a water network with hydrants and hoses, as well as foam tanks, sprinklers, and portable fire extinguishers. The facility is also protected by lightning rods. The noise in the building that houses the generators exceeds 85 decibels, requiring workers to use hearing protectors (earplugs and earmuffs). PCP also provides workers with other necessary protective equipment such as hard hats, work clothes, and safety footwear. Hearing tests are periodically administered to workers exposed to noise in order to monitor their health.

Labor practices and social issues: PCP provides workers with the benefits stipulated in the national labor laws. In the social sphere, the project will have a positive impact on area communities, comprised primarily of indigenous, Miskito, and Creole populations, along with mestizo townspeople, who will benefit from the project through more reliable electricity generation, which will help improve electricity supply to the population.

Monitoring and reporting: PCP will finish taking the corrective action stipulated in the project's environmental management plan approved by Nicaragua's environmental authorities. It will also prepare an Environmental and Social Action Plan (ESAP), which it will develop in conjunction with the IIC to address the issues pointed out in this summary. The ESAP will mainly include: a) the environmental and occupational safety and health measures that will be implemented and, once completed, guarantee compliance with IIC environmental requirements, national regulations, and international best practice established in IFC's Environmental, Health, and Safety Guidelines and its Performance Standards on Environmental and Social Sustainability, b) an implementation schedule,

and c) a form for periodic reporting to the IIC on implementation of the ESAP.