

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, and design criteria. The following environmental issues were analyzed during project appraisal: third-party certification in good environmental practices, liquid effluents, air emissions and obtaining carbon credits under the Kyoto Protocol Clean Development Mechanism, solid and hazardous waste, good agricultural practices, occupational health and safety, and other labor and social issues.

Ingenio San Carlos is located in Guayas Province, in the cantons of Marcelino Maridueña, Naranjito, and El Triunfo. The company grows approximately 80% of the sugar cane it processes each year and purchases the rest from local suppliers. In 2004 Ingenio San Carlos performed an ex-post environmental impact study of its agribusiness operations that was approved by the Ministry of the Environment. To comply with the Ministry of the Environment environmental license requirement for all existing companies and new projects in Ecuador, the company initiated the process for obtaining a license, with technical advice from a local expert consultant. As part of this process, in June 2009 the company completed an environmental compliance audit (ECA) including an environmental management plan (EMP). The ECA was approved by the Ministry of the Environment in May 2010 as the first step for obtaining an environmental license for the sugar mill operations within a few months. Hereafter, the company must perform an ECA every two years. Ingenio San Carlos has in place an integrated management system (IMS) for managing quality, environment, and workplace health and safety issues. In November 2008, the IMS was recertified under international standard ISO 9001 (a certification the company has held since 2002) and obtained ISO 14001 and OHSAS 18001 certification. The company's proactive approach, operating in accordance with management systems that comply with international standards, made it the first sugar mill in Latin America to hold all three certifications. By implementing its EMP, Ingenio San Carlos will ensure the prevention, control, or mitigation of any negative impacts associated with its operations (planting, harvesting, and processing sugar cane), as required by local environmental, labor, and social regulations and IIC requirements.

Third-party certification in good environmental practices: In 2009 Ingenio San Carlos made investments related to good environmental practices, such as renewing the certifications for its integrated management system ISO 9001/ISO 14001/OHSAS 18001; environmental audit and verification and certification of emissions reductions estimated at 43,731 tons of CO₂ equivalent per year, for obtaining carbon credits under its cogeneration project; biological control of pests in order to minimize the use of pesticides; reforestation and forest conservation, to help maintain favorable climate conditions and preserve the region's biodiversity; growing organic sugar cane certified under international standards, and using organic fertilizers; and measuring environmental parameters for air emissions and air quality, wastewater, bodies of water, soil, and noise, among others.

Liquid Effluent Management: Ingenio San Carlos generates domestic wastewater (from showers, sinks, and toilets, etc.) and industrial wastewater (from washing the sugar cane and the processing equipment, water with bagasse ash from the boiler stack gas scrubbers); and runoff. There are separate drainage systems for domestic wastewater, industrial wastewater, and runoff. Part of the domestic wastewater is discharged into the municipal sewage collection system; another part is discharged into 19 septic tanks on the sugar mill grounds. The septic tanks receive regular maintenance to ensure proper operation. The company has a wastewater management system that enables it to use industrial wastewater to irrigate the sugar cane fields. Reusing industrial wastewater for irrigation means that the sugar mill does not discharge industrial wastewater into natural bodies of water. Industrial wastewater from the sugar-making process is rich in nutrients

(phosphorous, nitrogen, potassium) and organic matter. It is therefore used to enrich sugar cane field irrigation water, thus reducing considerably the use of chemical fertilizers. The irrigation system consists of collecting the industrial wastewater and channeling it to a sedimentation pond. From there it is pumped to a station where it is mixed with fresh river water and channeled to gravity-fed irrigation ditches to irrigate the sugar cane fields. As part of the actions taken to implement its environmental management plan, the company will continue to regularly test the quality of the water used to irrigate the sugar cane fields, to ensure ongoing compliance with relevant domestic regulations.

In addition, vinasse is used as an organic fertilizer, either to enrich the irrigation water or to be applied by tank trucks directly to the sugar cane fields using a method called fertigation. The vinasse is not generated at Ingenio San Carlos but rather comes from a distillery related to the company. According to information provided by the company, using vinasse as an organic fertilizer is recognized by European Union EEC Regulation 2092/91 regulating the organic certification of agricultural products. Accidental spills during the handling and application of vinasse can affect natural bodies of water. However, to mitigate this risk, Ingenio San Carlos prepared a plan for handling vinasse appropriately. The plan was approved by the Ministry of the Environment in May 2010 as part of the company's environmental management system. The plan includes providing training in fertigation, building a vinasse pipeline, and drawing up a contingency plan for accidental spills.

Air Emissions and Obtaining Carbon Credits under the Kyoto Protocol Clean Development

Mechanism: Ingenio San Carlos has small combustion facilities (three boilers with a heat capacity of less than 3 MW, and two generators with a capacity of less than 750 KW) that emit gases and ash. Boiler emissions come from burning sugar cane bagasse to generate energy and steam. Emissions are monitored by means of regular readings of particles (PM10), nitrogen oxide (NOx), sulfur dioxide (SO₂), and carbon monoxide (CO) in the combustion gases. Emissions are controlled by a gas scrubber system. The company's current environmental management plan provides for measures to ensure that air emissions are always in compliance with national environmental regulations in force. These measures include improving the boiler maintenance program and the emissions control system (gas scrubbers), as well as continuing regular readings of particles and gases emitted by the boilers and generators.

There is a 35 MW cogeneration plant operated by burning sugar cane bagasse generated by Ingenio San Carlos. Air emissions quality at the cogeneration plant is measured twice a year, as is liquid effluent quality. There is a final environmental impact study for this facility. Once all the legal requirements had been met, in October 2004 the Ministry of the Environment granted Ingenio San Carlos an environmental license for operating the cogeneration plant. In March 2006, Ingenio San Carlos' cogeneration project was registered for carbon credits under the United Nations Framework Convention on Climate Change (UNFCCC) on the basis of the Kyoto Protocol Clean Development Mechanism (CDM), of which Ecuador is a signatory. The estimated greenhouse gas reduction is 306,118 tons of CO₂ equivalent over a seven-year period, resulting in an average yearly reduction of 43,731 tons of CO₂ equivalent. The project is in the emissions monitoring stage. On July 20, 2010, the Ministry of the Environment tapped Ingenio San Carlos for the Ecuadorian environmental recognition award for 2010 (the first in the country's history) in view of the company's cleaner production program. This program refers to Ingenio San Carlos' project for cogenerating electricity from biomass (bagasse) that enables the company to sell surplus power to the national grid.

Solid and Hazardous Waste Management: Solid waste, such as paper and cardboard, is recycled through a contractor who takes it to a paper mill that uses it as a raw material. Scrap metal and used tires are stored temporarily until they are sold to third parties. Organic waste that cannot be used is taken to the final disposal site run by the town of Marcelino Maridueña. In order to improve

solid waste management, the company is implementing the improvements set out in its EMP, which include upgrading temporary storage sites, establishing a waste sorting system, and improving the method for final disposal in conjunction with the municipal authorities. Used plastic agrochemical containers, lead-acid and other batteries, fluorescent lamps, oil, and solvents are collected, transported, and disposed of by an authorized service provider. There is a small incinerator (less than 3 MW) that is operated intermittently to burn solid waste (such as rags and cardboard) soaked with hydrocarbons that, because of their nature, must be handled, treated, and disposed of as hazardous waste. While implementing its EMP, the company will take corrective action in reference to its registration with the Ministry of the Environment as a generator of hazardous waste and its operation of the incinerator, including obtaining the pertinent registration and authorization. Moreover, at the IIC's request, the company will assess the option of disposing of this waste (which is currently being burned) through a service provider already authorized for handling, treatment, and final disposal.

Good Agricultural Practices: Ingenio San Carlos has implemented good agricultural practices to ensure the prevention, control, or mitigation of any negative impacts associated with its operations, in keeping with applicable national regulations. For more than 20 years, pest control has been mainly biological; controlled burns of sugar cane are conducted only on fields far from population centers; pesticide containers are returned to the distributor; filter cake (a by-product of the sugar-making process) is used as an organic fertilizer for the fields; and the company is working on growing sugar cane organically, among other practices.

Occupational Safety and Health: There is a plan for managing safety, health, and occupational risk that includes providing workers with personal protection gear, as well as a training plan with first aid and occupational safety talks, workshops, and seminars. The company's occupational health program includes procedures for oral rehydration of cane cutters and fumigation workers, laboratory tests and epidemiology monitoring, spirometry (pulmonary function) tests for fumigation workers, vaccination campaigns, talks on good nutrition, etc. Ingenio San Carlos sponsors Hospital San Carlos, with physicians and paramedics who principally tend to workers and their families. The hospital offers ongoing prevention programs and medical services in areas such as pediatrics, cardiology, gynecology, surgery, dentistry, and preventive medicine, among others. The hospital works with the industrial safety, social work, human development, and personnel areas to evaluate the risks of each job and how to address, prevent, or eliminate them. The industrial plant facilities have fire detection systems, alarms, and firefighting equipment including a network of hydrants, a water tank, and portable extinguishers. There are also emergency brigades. Fuel storage tanks have secondary containment for leaks or spills.

Labor and Social Issues: Employees receive social security and other contractual benefits such as allowances for schooling, electricity, transportation, and seniority; uniforms; and vacation bonuses. All of the workers are free to join the existing labor institutions that represent Ingenio San Carlos's workers, principally the workers' council (to which most of the workers belong). There are other unions that workers may join if they wish, including the industrial machinery operators' union (Sindicato de Operadores de Maquinaria Agroindustrial, or SOMA), the cane cutters' union (Sindicato General de Zafreiros), the heavy equipment operators and mechanics' union (Sindicato de Operadores y Mecánicos de Equipos Pesados, or SOMEPE), the sugar workers' association (Asociación de Trabajadores Azucareros), and the factory union (Sindicato de Fábrica). The company pays special attention to corporate social responsibility. In addition to Hospital San Carlos, the company sponsors three educational centers (a kindergarten, Colegio San Carlos, and Escuela Luis Vernaza), and a sports club promoting sports and recreational activities for employees and their families. Under its workers' housing project, the company built 1,090 single-family homes in late 2007, improving workers' quality of life by providing them with a place to live. The company is also

involved in urban planning and development in the town of Marcelino Maridueña, where the Ingenio San Carlos sugar mill is located. At its apprentice training center, the company provides community youth with training in industrial and automotive mechanics and electricity, to help them enter the labor market.

Monitoring and Compliance: During execution of the project with the IIC, Ingenio San Carlos will continue implementing its environmental management plan according to a schedule satisfactory to the IIC. The schedule will cover, at a minimum, the actions to be taken under the environmental management plan, who is responsible for implementation, and the approximate completion date. The company will report regularly to the IIC on progress in implementing the provisions of the plan concerning the environmental, workplace safety and health, and labor and social issues cited herein. During the life of the project, the IIC will monitor compliance with its own environmental and labor review guidelines. The IIC will evaluate the monitoring reports that the company will submit each year and will conduct periodic visits to the facilities as part of the project supervision process.