**Environmental and Social Review Summary (ESRS)**

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| **Project Name:** | Fuego del Sol Haiti S.A, Ultra-Efficient Biomass Combustion |
| **Project Number:** | HA-T1309 and HA-G1054 |
| **Project Location:**  | Haiti |
| **Executing Agency:** | Fuego del Sol Haiti S.A. |
| **Type of Operation:**  | Non-Reimbursable Technical Cooperation (“NRTC”) and Contingency Recovery Investment Grant (“CRIG”) |
| **ESRS Issuance Date:** | October, 2022 |

1. **General Information of the Project and Overview of Scope of IDB Lab´s Review**

The transaction consists of a technical cooperation and a contingency recovery investment grant in favor of Fuego del Sol Haiti S.A. (“FdS” or the “EA”). FdS is a company in Haiti that has developed a biomass cellulose-gasification combustion unit. FdS currently burns briquettes produced from recycled paper, domestic biomass pulp, carboard or waste biomass with the purpose of replacing charcoal in order to cook food.

FdS is looking to adapt combustion units (originally designed for cooking food) into off-grind recycling to include: i) melting High Density Polyethylene (“HDPE”) and Low-Density Polyethylene (“LDPE”) to produce new recycled plastic products; 2) heating electronic waste for the recovery of components / materials (including digital silicon chips and melted solder); 3) mixing melted plastic with sand to produce paving/roofing tiles; and 4) combusting pharmaceutical waste.

Funds from the NRTC will be utilized to evaluate the social, environmental and health benefits of the proposed model compared to the current status quo activities: 1) charcoal cooking; 2) plastic melting; 3) solder and chip separation; 4) paving-brick production; and 5) medical incineration. The purpose of this process is to make sure that emissions from the combustion units (comply with the World Health Organization (“WHO”) Ambient Air Quality Guidelines, for each type of burned fuel. Any fuel that does not comply with these guidelines will be stopped and/or adapted until improvements can be made and the guidelines met 100% of the time. The NRTC will also support the development of E&S Management Programs (Air Quality, Waste Management, OHS assessment) and the restructuring of the value chain required to scale up the FdS project.

Funds from the CRIG will fund the expansion of FdS's operations to industrially recycle and develop new products such as hangers and/or utility buckets made from recycled plastic. Disbursement of the CRIG will be contingent on receiving to the satisfaction of IDB Lab a study performed by an independent party demonstrating that the Project will ensure a statistically net gain in reducing emissions from the current emissions scenario of burning charcoal. Furthermore, the independent study will test, analyze, and assess the air emissions to ensure these being adequately protective of public health and the environment in compliance with WHO Guidelines. Only the activities that demonstrate compliance with the Guidelines will be able to receive funding from the CRIG.

The Environmental and Social Due Diligence consisted in virtual meetings with FdS senior management, and the review of technical documentation provided by the EA.

1. **Environmental and Social Categorization and Rationale**

This is a Category B project according to IDB's Environmental and Social Policy Framework. The project is considered to have limited adverse E&S impacts that are few, site-specific, largely reversible, and readily addressed through existing mitigation measures and good international industry practices (GIIP). The main E&S risks to be generated by the project include: i) worker’s labor and working conditions, including occupational health and safety (“OHS”); ii) air emissions; iii) management of hazardous materials, solid and hazardous waste; iv) community health and safety including security management; and (vii) stakeholder engagement and grievance mechanism.

While all Performance Standards are applicable to this investment, the ESDD indicates that the investment will have impacts which must be managed in a manner consistent with the following Environmental and Social Performance Standards (“PS”)

PS 1 - Assessment and Management of Environmental and Social Risks and Impacts

PS 2 - Labor and Working Conditions

PS 3 - Resource Efficiency and Pollution Prevention

PS 4 - Community Health, Safety and Security

PS10 - Stakeholder Engagement and Information Disclosure

1. **Compliance with E&S National Laws and Permitting**

Haiti has specific permitting requirements for materials that are discarded in public dumps/landfills. Since FdS is not a waste-dumping company that processes recycled / recyclable materials, the document required for regular FdS operations is a non-objection letter from the Minister of the Environment. FdS has requested this non-objection letter from the current administration and is pending a response. At the time in the future when operations for FdS expand into the satellite location of Caracol or Codevi, FdS will need to obtain the expanded letter of non-objection for the expanded FdS activities.

1. **Environmental and Social Context**

FdS corporate offices and two recycling centers are in the urban area of Port-au-Prince, Haiti. Its factory currently has the capacity to produce produces 5,000 briquettes a day with a manually operated machine. With funds from the CRIG, the EA expects to expand its operations by adding an assembly factory and recycling center in the industrial zones of the Northeast of Haiti either in Caracol or Codevi (the “Assembly Factory”).

1. **Environmental and Social Risks and Impacts and Proposed Mitigation Measures**

**E&S Assessment and Management System (ESPS 1):** The EA is currently in the process of developing its Environmental and Social Management System (“ESMS”). FdS has carried out certain studies to support the technical viability of its biomass burning prototype but does not have an air quality assessment to verify compliance with WHO guidelines. Funds from the NRTC will be used to conduct such studies and to support in the development of ESMS procedures to manage E&S risks, such as air quality, air generation and OHS. Disbursement of the CRIG will be contingent upon compliance with air emission standards and the preparation of an Environmental and Impact Assessment (“EIA”) for the Assembly Factory.

IDB Invest will monitor the E&S performance of FdS on an annual basis. The EA will report on labor issues, OHS statistics, air emissions, waste management and grievances (internal and external).

**Labor and Working Conditions (ESPS 2):** FdS currently employs six workers in its recycling facilities. The EA needs to develop and OHS hazard risk matrix, engineered and administrative controls and provide workers the adequate Personal Protection Equipment (“PPE”) to prevent and mitigate accidents and work-related diseases. FdS will also provide a grievance mechanism where workers can raise their workplace concerns. FdS will inform the workers of the grievance mechanism at the time of recruitment and make it easily accessible to them in a language they understand, allowing for anonymous or confidential complaints to be raised and addressed.

**Resource Efficiency and Pollution Prevention (ESPS 3):**

GHG Emissions. The project aims to decrease Greenhouse Gases (“GHG”) as compared to the status quo of burning coal. Increasing the proportion of hard-to-recycle plastic waste in incinerators can potentially increase the carbon footprint project. Funds from the NRTC will be used to measure the net GHG impact of the project utilizing IPCC metrics and methodologies.

Air Emissions. The project aims to facilitate a switch from traditional charcoal to alternative biomass that reduces black carbon and short-lived climate pollutants emissions by using non-carbonized briquettes. Combustion of briquettes from fine sawdust from production of wood products, such as those proposed in this project, can potentially result in increased emissions of lead, cadmium, mercury, and arsenic to the atmosphere. Pollutants of concern produced during incineration include dioxins and furans, heavy metals (in particular, cadmium, mercury, and lead), acid gases, and particulate matter (PM2.5), that can be formed during waste incineration depending on the waste stream fed and humidity of briquettes. Funds from the NRTC will be used to perform an independent assessment of air emissions to verify compliance with WHO guidelines.

Waste. The project will generate waste including ashes from briquette burning. Bottom ash and fly ash are kept separated by FdS for waste management purposes since they may contain different amounts of dioxins and furans. Given the proposed incineration of medical waste, the ash remains funneled out of the incinerator should be sent past a heavy-duty magnet, to pick out any metals, such as sharps, steel, iron etc., that might be in the mix. Furthermore, FdS will need to provide a waste management procedure including final disposal of ashes. If soil amendment is proposed, the EA will need to measure the level of polycyclic aromatic hydrocarbons in the ashes as well as pH levels, which at high rates can be harmful in soils. Only clean biomass ash (bottom ash) will be considered for soil amendment purposes, and only after thorough testing. Ash from combustion activities such as the incineration of medical waste will be maintained separated throughout the entire operational value chain, and after magnetic processing will be disposed of following Haitian, WHO, and ESG guidelines.

**Stakeholder Engagement and Information Disclosure (ESPS 10):** FdS will respond to questions, concerns, and grievances of affected stakeholders related to the project’s E&S performance. For this purpose, FdS will propose and implement a grievance mechanism to receive and facilitate resolution of concerns and grievances.

1. **Environmental and Social Action Plan (ESAP)**

| **No** | **Issue** | **Activity** | **Deliverable** | **Deadline** |
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| 1 | Evaluation of Risks and Impacts | Commission an independent air quality assessment to verify compliance with WHO guidelines (for each fuel used and proposed activity) | Air Quality Independent Assessment | As a condition precedent (“CP”) for the disbursement of the CRIG |
| 2 | Evaluation of Risks and Impacts | Conduct an EIA for the Assembly Factory | EIA | As a CP for the disbursement of the CRIG |
| 3 | Evaluation of Risks and Impacts | Conduct and OHS risk analysis and PPE Matrix | OHS risk analysis and PPE Matrix | As a CP for the disbursement of the CRIG |
| 4 | Management Programs | Develop and implement procedures to manage air quality and waste management.  | i) air quality management plan; ii) waste management plan. | As a CP for the disbursement of the CRIG |
| 5 | Grievance Mechanism (“GM”) | Develop and implement and internal and external GM | Grievance Mechanism | As a CP for the disbursement of the CRIG |
| 6 | Occupational Health and Safety | Provide Workers with adequate EPP | Evidence EPP provided to workers | As a CP for the disbursement of the CRIG |
| 7 | Carbon Footprint | Measure the net GHG impact of the project utilizing IPCC metrics and methodologies. | GHG footprint | As a CP for the disbursement of the CRIG |