

## 1. Overview of Scope of IIC E&S Review

The Pirapora I project consists of the design, construction, commissioning and operation of five solar photovoltaic (PV) plants with a combined capacity of 191.5 MW, as well as a 10.3-kilometer high voltage transmission line (138kv) and other interconnection facilities (the Project). The Project, located in the municipality of Pirapora, State of Minas Gerais, Brazil, is being developed by EDF EN do Brazil, a subsidiary of EDF France, and Canadian Solar Inc. (CSI), a solar panel manufacturer. CSI established a joint venture with Flextronics Internacional Tecnologia Ltda. (Flex) to manufacture the solar panels in Brazil (considered an associated facility).

IIC's participation in the Project will be through a Bridge Loan facility denominated in Brazilian reales to provide funding for certain construction costs. The full Notice to Proceed of the Project has been issued in October 2016.

IIC's environmental and social (E&S) review consisted of a revision of corporate policies; visits to the EDF EN do Brazil Pirapora 1 site and planned power transmission line; and to the panel assembly plant, Flex, which is located in the municipality of Sorocaba, State of São Paulo. The Environmental and Social Due Diligence (ESDD) was carried out between December 2016 and January 2017. The physical site visit took place January 9 to 13, 2017.

The combined document review and site visits evaluated the Project and the associated facility's compliance with applicable E&S national laws, regulations and permits, and its compliance with the IIC Sustainability Policy, which includes the International Finance Corporation (IFC) Performance Standards (PS) on Environmental and Social Sustainability and the Inter-American Development Bank environmental and social policies. The visit included interviews with local stakeholders, project employees, and contractors.

## 2. Environmental and Social Categorization and Rationale

The activities to be financed are likely to cause short-term negative environmental and associated social risks, and impacts that are minor to moderate in nature, and which can be managed through standard good-practice mitigation measures. The Project site is located on modified landscape previously used for agriculture and will result in no conversion of critical habitats. There will be physical resettlement of three farm workers and their families to an adjacent farm under mutually agreed terms. In accordance with IIC's Sustainability Policy, this project has been classified as Category B.

## 3. Environmental and Social Context

EDF EN do Brazil is a subsidiary of EDF Energies Nouvelles, a French multinational energy service provider and subsidiary of EDF Group. EDF Energies Nouvelles, active in 21 countries, is engaged in the development and management renewable energies, primarily solar photovoltaic and wind. Canadian Solar Inc. (CSI) operates solar projects in 24 countries across six continents, with a generation capacity of 13.5 GW. The Pirapora 1 project was acquired from the project developer Solatio and is currently owned jointly by EDF EN do Brazil and CSI (80% and 20% respectively).

The Project site is located within a wider 8,000-hectare property owned by an individual farmer, who has leased a roughly 800-hectare parcel to the project developer for 30 years. The Project will occupy roughly 400 hectares of this land, which was previously used as a eucalyptus plantation and pastureland. Other than a few remaining isolated individual trees, the property is not considered a wildlife refuge due to past clearance and contains no remaining land classified as natural habitat.

There are no indigenous communities located in the Pirapora 1 influence area. A study conducted in the area by the original sponsor's environmental consultant did not reveal the presence of cultural heritage features. The study was submitted to *Instituto do Patrimônio Histórico e Artístico Nacional* – IPHAN (authority responsible for protecting archaeological and cultural heritage) and no additional studies were required.

#### **4. Environmental Risks and Impacts and Proposed Mitigation and Compensation Measures**

The section below summarizes the environmental and social policies and practices of EDF EN do Brazil and the associated facility Flex, noting gaps relevant to the IIC Sustainability Policy. An Environmental and Social Action Plan (ESAP) agreed with the Client defines actions to enhance corporate policies and represents significant environmental and social additionality (see Section 6 of this document).

##### **4.1 Assessment and Management of Environmental and Social Risks and Impacts**

a. E&S Assessment and Management System: EDF EN do Brazil adopted a management system which is detailed in the document *Owner's Health, Safety and Environmental Requirements*. EDF EN do Brazil and CSI hired the Greek company Biosar for the management of the Project implementation. Biosar has also developed a management system. Field observations suggest that Biosar has implemented a set of robust performance and risk management actions and protocols. Flex associated facility has EHS management systems certified under ISO 14001, OHSAS 18001 and ISO 9001 standards. In addition, Flex is a founding member of EICC – Electronic Industry Citizenship Coalition, a voluntary industry association, which seeks to create standards on social, environmental and ethical issues in the electronics industry supply chain.

b. Policy: EDF EN do Brazil has established a Health, Safety and Environmental Policy for the Project, which is suitable to the type and magnitude of the Project's impacts and consistent with IIC's requirements. Flex has EHS and Human Rights Policies, which are supported by the company top management and was observed to be well communicated to the employees.

c. Identification of Risks and Impacts: Considering the type of project and site-specific characteristics, local environmental agencies determined Pirapora 1 to be low risk according to local legislation and for which a simplified Environmental Study (RCA – Environmental Control Plan) was required. An additional forest survey was undertaken as a legal requirement to complement the vegetation clearance plan. Although most of the environmental impacts and risks identified in the studies are deemed compatible with the type and specificities of the Project, some gaps in the Social-Economic and Cultural Impacts presented in the RCA were identified, namely a stakeholder mapping and engagement plan. Public consultation was conducted and meets IIC's requirements, though the RCA did not require ongoing stakeholder and community consultation. This is further discussed below in Stakeholder Engagement, and on-going consultation is requested within the Environmental and Social Action Plan (ESAP).

d. Management Programs: EDF EN do Brazil, Biosar and Flex have all developed a Health, Safety and Environment (HSE) System that includes: emergency plans, environmental management plans, procedures for operational waste management, hazardous materials, monitoring of occupational health, high-risk activities, industrial safety simulacrams, induction and training programs, occupational health surveillance and an environmental education program. These plans comply with IIC's Policy.

e. Organizational Capacity and Competency: Biosar, as the main Engineering, Procurement and Construction (EPC) contractor, is ultimately responsible to manage the construction of the Project

and the execution of all EHS programs. For the latter Biosar has hired specialized companies to execute and supervise the programs. Flex has an EHS team composed of 21 members and a professional dedicated to environmental and social responsibility topics. Both EHS management teams adequate and competent in the execution of legal and other policy requirements, for both employees and contractors.

f. Emergency Preparedness and Response: The Project has a “Crisis Management and Emergency Response Plan” (Doc 079-001-SSM-PR-032), to which all Project staff must adhere to. The plan includes emergency scenarios that are deemed adequate to the Project type and magnitude. However, the emergency plan does not cover the implementation of the Transmission Line, which may pose additional risk scenarios not covered by the existing emergency plan, and is required within the ESAP.

g. Monitoring and Review: EDF EN do Brazil monitors the Project implementation and is required to prepare and submit to the environmental authorities half-yearly activities report, which contain information on the environmental programs and monitoring results. A gap related to fauna monitoring (refer to section 4.6) was identified and therefore included in the ESAP.

h. Stakeholder Engagement: Consultation was undertaken and documented during the project structuring under the original project developer, Solatio. In the early stages of project development, Solatio’s work included an outreach and education campaign within Pirapora City to work with local schools in communicating the project’s benefits. The current Pirapora Project developers have agreed with BNDES as a co-financier to direct 0.5% of their financing towards environmental and social programs. As an ESAP requirement under IIC’s financing, the project will develop a formal stakeholder identification engagement plan, which can incorporate the proposed activities under BNDES’s financing.

The associated facility Flex has a social responsibility aspects matrix, that is updated when required, and which contains: i) a description of the categories of each stakeholder; ii) the aspects to be considered for each stakeholder; and iii) the existing controls and legal requirements. Flex also promotes activities with local communities located near the plant.

There are three families living within the site, several of which worked on the farm, and who will be relocated to a neighboring ranch owned by the same group. These people will be compensated with three new houses, which will be built as an agreement with the farms owners and Pirapora Project. The families all agreed voluntarily to be relocated, and the Stakeholder Engagement Plan will specifically define objectives of the relocation and items to monitor.

i. External Communication and Grievance Mechanisms: The Project does not currently maintain a grievance mechanism for internal or external stakeholders, nor any other formal external communication registry. This is a required component within the ESAP. Flex maintains a mechanisms to identify and process internal grievances from employees and subcontractors, and all employees and third parties have access to Flex’s grievance system called Hotline, created to record any type of occurrence against the Code of Ethics adopted by Flex.

## **4.2 Labor and Working Conditions**

At the time of the visit, approximately 150 employees were directly engaged in the current construction phase. This number is expected to increase up to 550 employees during construction peak. The majority of the actual employees live in Pirapora. The non-local employees have been housed in local hotels.

Flex currently maintains 467 employees directly involved in the solar panels production, from which 281 are men and 186 women. Sixteen employees have physical disabilities. The company complies with the Brazilian laws regarding disabled people and maintains inclusion programs for these employees.

a. Working Conditions: The Project has adopted a set of policies, plans and procedures regarding working conditions concerning health, safety, security and environmental (HSSE), which confirm with Brazilian legislation and IIC's Sustainability Policy. These requirements are also mandatory for the suppliers. Employees interviewed indicated clear lines of communication to line coordinators or managers when information or concerns need to be raised. They expressed both enthusiasm and satisfaction in working on the Project and they consider the salaries and benefits to be fair and competitive.

b. Occupational Health and Safety (OHS): Through the Safety, Health & Environmental Management Systems, EDF EN do Brazil, Biosar, and Flex manage activities related to hazard identification and risk assessment to ensure that OHS controls exist on site prior to starting the activity and that necessary competency requirements for key roles are specified. For Pirapora 1 these procedures focus on the implementation of the PV Power plant. Procedures for the transmission line need to be developed (see ESAP).

With regard to Flex, the due diligence visit identified that a portion of employees had not undergone their annual medical examinations as required by local law. In identifying this issue, Flex acknowledges the non-conformity and has since adjusted their procedures to improve performance.

c. Supply Chain: The construction workforce is largely comprised of contractors. EDF EN do Brazil and Canadian Solar have contracted Biosar to manage the installation process and to support two years of operation. Biosar has contracted so far ten companies, most of them Brazilian, for various activities within the construction phase. All suppliers must follow the same internal policies and procedures developed for the Project.

Flex has adopted a special training program on Social and Environmental Responsibility in the Supply Chain for third parties. The objective of this program is to engage supplies to conduct their activities in accordance to Flex's policies regarding ethics, employees, human rights, health and safety, environmental and social issues.

### **4.3 Resource Efficiency and Pollution Prevention**

a. Resource Efficiency: Being a solar facility, Pirapora 1 does not result in significant resource use. Water is currently used mostly for sanitary purposes and is being trucked in and contracted directly with the public utility. During the operation phase, water will be mostly used in maintenance activities such as the cleaning of solar panels (expected to occur twice a year) and will continue to be trucked in.

Greenhouse gas (GHG) emissions during the construction phase are solely associated with the use of fossil fuel (diesel oil and gasoline) in heavy machinery (front loaders, trucks, etc.), light vehicles and power generators. During operation no GHG emissions will occur, except for the occasional use of fuel in light vehicles and maintenance equipment.

b. Pollution Prevention: The risks and impacts regarding air emissions, noise, waste, hazardous materials, and spills are managed through preventive and mitigation measures established in the Environmental Control Plan (PCA - Plano de Controle Ambiental) developed for the Project. Documents reviewed and field observations evidence that waste, effluents and air emissions are well

managed at the Pirapora 1 site. Regarding Flex, monitoring reports and operational records evidenced that treated effluent was periodically outside the legally permissible limits. Since the visit, Flex has revised its operational procedures and brought performance back within legal limits.

#### **4.4 Community Health, Safety and Security**

a. Community Health and Safety: The community health and safety risks for those who live near the Project's facilities (access road, neighbors of Marambaia Farm and the transmission line landowners) have not been properly assessed and has been identified as an item in the ESAP. Regarding Flex, due to the limited E&S impact, location of their operations within an industrial park at significant distance from any community, and a dedicated vehicular access road off of a major highway, health and safety issues are not a concern.

b. Security Personnel: The Pirapora Project contracted security team works 24 hours on the site and does not carry weapons. The Project has adopted the Property Security Management Procedures, 079-001-SSM-PR-021, which also have to be followed by third parties. However, the procedure does not contain guidelines for the use of force and appropriate conduct toward workers and affected community. This absence is an ESAP requirement. Regarding Flex, part of the security unit team does carry weapons. They have been hired by a third party company and follow the latter's as well as Flex's operational procedures. They receive training, including an anti-harassment procedures.

#### **4.5 Land Acquisition and Involuntary Resettlement**

This Performance Standard is not applicable.

#### **4.6 Biodiversity Conservation and Natural Habitats**

The Project is located away from any protected areas. Although the site where the project is located is classified (according to the State of Minas Gerais ecological zoning) as high priority for fauna conservation, most of area has been previously subjected to vegetation clearance to allow silviculture and agricultural activities (pasturelands and eucalyptus plantations). The Project however did require a vegetation clearance license (already granted authorized by the environmental authorities) for the removal of some individual Ipê and Pequi isolated trees, protected by law in the State of Minas Gerais, for which an environmental compensation plan has been developed.

No species considered rare or endemic of the region were identified in the area of the PV Power Plant and associated transmission line. Also, there are no unique or endangered ecosystems within the Project area.

Regarding fauna, a monitoring program, required by the Environmental Installation Permit, has been developed and submitted to the environmental authorities, but has not yet been implemented (final authorization from the authorities is still pending). The ESAP requires that the fauna monitoring program is informed to all the workers involved in the project implementation and that procedures are in place on how the employee must proceed in case of any fauna species sighting.

#### **4.7 Indigenous Peoples**

Issues and risks related to Indigenous Peoples are not present regarding Pirapora 1 Project.

#### **4.8 Cultural Heritage**

Based on the information and studies submitted by the Project, the IPHAN has issued the

permissions need for the installation of the project and recently, of the transmission line. However, IPHAN has not requested any procedure to deal with chance findings nor required any training program for workers on how to deal with these issues. These requirements have been included in the ESAP.

## 5. Local Access of Project Documentation

Relevant project documentation as applicable can be found on IIC's site project disclosure website - <http://www.iic.org/en/projects/project-disclosures>. Inquires can be made to: [requestinformation@idbinvest.org](mailto:requestinformation@idbinvest.org).

## 6. E&S Action Plan

No.	Aspect	Action
1.1	Management System	<ol style="list-style-type: none"> <li>1. Update the social and environmental impact assessment and sponsor commitments reflecting the requirements contained within IIC's ESAP stated here within.</li> <li>2. Develop management and control measures for these impacts. Special attention must be given to the impacts that may affect the <i>colonos</i> (detailed in 1.2 and 1.5), the landowners located in the transmission line area and the ones near the municipal road (Detailed in 1.2, 1.4).</li> </ol>
1.2	Stakeholder Engagement	<ol style="list-style-type: none"> <li>1. Develop a stakeholder map.</li> <li>2. Develop and implement a stakeholder engagement plan that includes all relevant stakeholders (government, Pirapora community, transmission line landowners, neighbors of Uniagro road, <i>colonos</i> etc.), and that contains: i) findings from the Project impact and risk assessment (item 4.1); ii) each stakeholder's social and environmental context; iii) actions to be taken with each identified stakeholder (incorporating BNDES proposed activities); iv) periodic public consultation to present the Project status updates; v) mechanism to register all comments, questions and complaints from the stakeholders and form of addressing them; and vi) actions regarding communities' safety and emergence preparedness plan.</li> </ol>
1.3	External Communications and Grievance Mechanisms	<ol style="list-style-type: none"> <li>1. Implement an internal and external grievance mechanism to capture, process and address any request, claim, grievance or suggestion, including contact points to be used by the public (e-mail, free phone number, etc.).</li> <li>2. Inform stakeholders about this grievance mechanism.</li> </ol>
1.4	Ongoing Reporting to Affected Communities	<ol style="list-style-type: none"> <li>1. Undertake specific actions regarding social impacts related to the transmission line, specifically: (i) conduct a follow-up social baseline evaluation of 13 transmission line property owners to understand the socio-economic situation; (ii) identify any economic impacts and risks that may be caused by the transmission line and develop actions to mitigate, avoid or control them; (iii) maintain the transmission line landowners permanently informed about the activities to be conducted for the transmission line (installation and maintenance) and ensure they will have a grievance mechanism to register their questions and complaints.</li> </ol>
1.5		<ol style="list-style-type: none"> <li>2. Undertake periodic monitoring of the <i>colonos</i>' relocation for a two year period and adopt corrective actions as and if needed. Ensure questions and complaints are registered.</li> </ol>
2.1	Grievance Mechanism	<ol style="list-style-type: none"> <li>1. Develop and adopt an internal grievance mechanism for direct and indirect employees engaged in the implementation of the Pirapora Project.</li> </ol>

2.2		1. Describe the procedure in place to monitor and evaluate Contractors or Subcontractors compliance with labor and working conditions plan, including HR and OHS requirements and standardized templates for Contractors and Subcontractors to report on their compliance with requirements in Pirapora Project
2.3	Monitoring of third parties	1. Inform contractors on the appropriate behaviors and practices regarding human rights, discrimination, prohibition of use of child or forced labor and other standard legal requirements. Assess as necessary these issues in the context of periodic monitoring related to 2.2.
2.4		1. Develop a checklist to periodically verify the conditions of employee lodging to assess standards. 2. In case of non-compliance, prepare together with the supplier in charge for the employees an action plan and monitor if the corrective actions will be adopted.
2.5	Occupational Health and Safety	1. Adjust operation of Flex machinery to be in line with Brazilian Health and Safety legislation and provide evidence of the implementation schedule at disbursement.
2.6		1. Develop and implement specific H&S procedures related the construction of the Transmission Line. 2. Develop and adopt a training program for employees involved in the construction of the Transmission Line to ensure that such procedures will be followed.
4.1	Stakeholder Engagement	1. Undertake a study to evaluate impacts and any possible risks to stakeholders with a focus on H&S (this includes neighbors that live near the access road to be used by the Project; landowners that have negotiated with the company the passage of the transmission line; and the direct neighbors of Marambaia Farm). 2. Adopt the appropriate mitigation and control actions.
4.2	Emergency Preparedness and Response	1. Include property owners in the direct area of influence in the Emergency Procedures for Pirapora Project and the Transmission Line, and any related actions - such as trainings or periodical meetings - to prepare them in case of any emergency.
4.3	Security Personnel	1. Develop and adopt operational procedures guidelines and trainings to the people in charge for the property security regarding dealing with external people (i.e. training in adequate use of force and appropriate conduct toward workers and site visitors).
6.1	Fauna monitoring	1. Follow up with the Environmental Agency so as to expedite the process to obtain the Fauna Management Authorization (AMF - Autorização de Manejo de Fauna). 2. Continue the fauna monitoring activities. Once approved, begin the capturing and relocation program.
6.2		1. Develop and adopt a procedure for all project employees on how to proceed in case of fauna sighting. 2. Adopt a training program for all the employees in this procedure (by including this topic in the safety induction session, for instance).
8.1	Cultural Heritage	1. Develop and adopt a procedure to deal with chance findings. 2. Develop and adopt a training program for workers on how to act in case of any finding.

**ADDEDUM:**

**Financing requested:** up to R\$ 315,300,000

**Scope and Objective of the Project and IDB Invest's Participation:**

The Pirapora I project consists of the design, construction, commissioning and operation of five solar photovoltaic (PV) plants with a combined capacity of 191.5 MW, as well as a 10.3-kilometer high voltage transmission line (138kv) and other interconnection facilities (the Project) to be located in the municipality of Pirapora, State of Minas Gerais, Brazil.

IDB Invest's participation in the Project will be through a short-term Bridge Loan facility denominated in Brazilian Reais to provide funding for certain construction costs. The Bridge Loan will be repaid with the issuance of infrastructure debentures by the Borrower, to be guaranteed by the IDBG. Alternatively, the IDBG may offer long-term financing directly to the Project.