

Los Loros Solar PV Power Project – Chile

ENVIRONMENTAL AND SOCIAL STRATEGY – DRAFT

I. SUMMARY

Project Name:	Los Loros Solar PV Power Project
Project Number:	CH-L1092
Country:	Chile
Project Team:	Rafael Matas, Project Team Leader (SCF/INF); [] (SCF/INF), Jan Weiss (SCF/SYN); Vanesa Ruperez (SCF/PMU); José Luis de la Bastida (VPS/ESG); and Jean-Marc Aboussouan (Chief, SCF/INF)
Borrower:	Solairedirect Generación V SpA
Sponsors:	Solairedirect
Funding:	IDB: up to US\$33.5 million China Fund: up to US\$16.75 million Other Debt: Approximately US\$43.55 million Total Project Cost: Approximately US\$134 million
Safeguards Policies Identified:	OP-102, OP-704, OP-703 (B.2, B.3, B.5, B.6, B.7, B.9, B.10, B.11)
Environmental Category:	B

II. PROJECT DESCRIPTION

- 2.1** The Project consists of the construction, operation and maintenance of a 53 megawatt (MW) photovoltaic (PV) power plant and its associated facilities which include the construction of a 6.78 kilometer (km), 110 kV, transmission line that will connect to Los Loros Substation. The Project will supply electricity to meet growing demand and reduce the reliance on fossil fuels in the *Sistema Interconectado Central* (SIC). The PV plant is located approximately 6km southwest of Los Loros village; and the transmission line (Los Loros Substation) is located approximately 3km north of Los Loros. Los Loros is located in the *Comuna* (Commune) Tierra Amarilla, Province of Copiapó, Región de Atacama, Chile. (See Figure 1). The Project will occupy permanently a total area of approximately 99.99 hectares (ha), which includes 99.97ha for the solar facilities and 0.02ha for the towers and posts of the transmission line. (See Figure 2). This information will require verification during the Due Diligence process.
- 2.2** The Project encompasses the installation and construction of the following components:
- i) erection of approximately 178,200 solar photovoltaic panels (exact number to be verified) with a combined capacity of 53MW; ii) construction of a new substation in the

PV plant site iii) several smaller underground electrical cables within the Project area; iv) improvement and maintenance of 2.28km access road (length and alignment to be verified during due diligence) exiting the road Ruta C-431 and within the solar facilities; v) construction of a two meter high perimeter fence; vi) construction of support buildings, including offices and a temporary worker camp; and vii) construction of a 6.78km (20 meters right of way), 110 kV, transmission line with approximately 38 electrical towers, to connect the solar facilities to the transmission line of the local operator company.

- 2.3 The PV plant is estimated to have a 29 month construction period, including the 4 month period for the transmission line; and an operational life of both the PV plant and transmission line of 25 years. The Project will employ a maximum of 128 workers during construction and no workers during operations since the operation of the PV facilities will be managed remotely from Chile with support from France.

Figure1. General Location Map

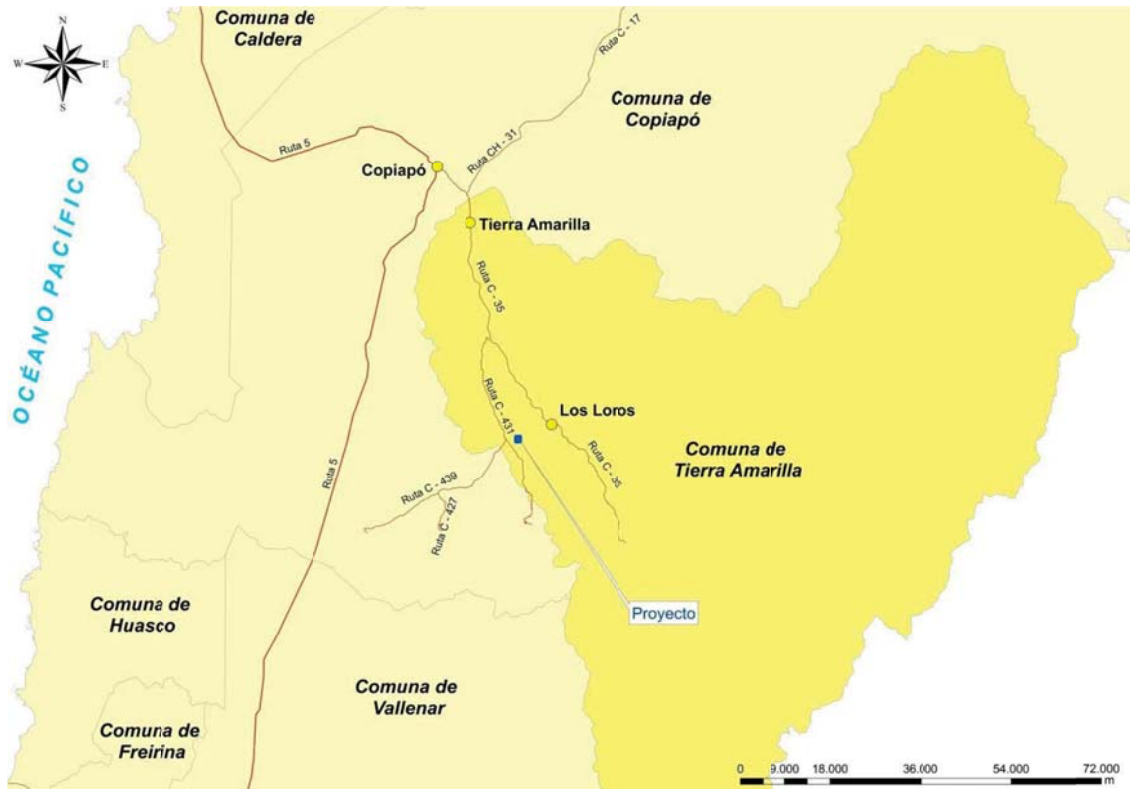


Figure2. Project Location Map



III. INSTITUTIONAL AND REGULATORY CONTEXT

- 3.1** The legal and regulatory framework of Chile for the energy sector was established by the 1982 Electric Services Law. Under that framework, electricity generation, transmission and distribution activities are carried out by the private sector. The participation of the Government is limited to regulatory, enforcement, supervisory and subsidiary roles. Tariffs must reflect real costs of generation, transmission and distribution to provide accurate market signals for optimal development of the electric system. Generating companies can commercialize energy in three markets: a) large customers at freely negotiated prices; b) distribution companies through regulated PPAs, following a bidding process and, c) in the spot market at a marginal cost per kilowatt-hour calculated by the Centro de Despacho Económico de Carga (CDEC). Priority of dispatch in the spot market is given to the lowest marginal cost energy, thereby favoring renewable energy resources which have no fuel costs.
- 3.2** In 2008, Chile passed a law to promote Non-Conventional Renewable Energy (NCRE). Law 20.257 provides that companies with power generation capacity of 200MW or more should use NCRE for at least 10% of their electricity use by 2024.
- 3.3** Law No. 19.300 Ministerio Secretaria General de la Presidencia sobre Bases Generales del Medio Ambiente (9 March 1994), Articles 5-11 (except 7) allow projects determined

to have minimal environmental and social impacts to be exempt from preparing an Environmental Impact Assessment (EIA) for the project. These projects must prepare and present a *Declaración de Impacto Ambiental* (DIA).

- 3.4** The DIA for the Planta Solar Fotovoltaica Los Lores that includes the construction of a 6.78km transmission line was presented to the República de Chile - Comisión de Evaluación (CoE) – III Región Atacama on 26 July 2013; the project is still on the process of approval to obtain the *Resolución de Calificación Ambiental* (RCA).
- 3.5** The Project triggers the following directives of IDB's OP-703 Environmental and Safeguards Policy: B.2, Country Laws and Regulations; B.3, Screening and Classification; B.5, Environmental Assessment Requirements; B.6, Consultations; B.7, Supervision and Compliance; B.9, Natural Habitats and Cultural Sites; B.10, Hazardous Materials; and B.11, Pollution Prevention and Abatement. The OP-102, Disclosure of Information Policy applies for this Project. The OP-704, Disaster Risk Management Policy, also applies since the Project's presence in an active earthquake zone, and the potential risk to the Project will be assessed during due diligence. According to available documentation, it does not appear that the Bank's OP-710 on Involuntary Resettlement would be triggered neither the OP-765 on Indigenous Communities. Based on available information, the Project had been classified by the Bank as a Category B operation.

IV. ENVIRONMENTAL AND SOCIAL SETTING

- 4.1** Based on available documentation, together the solar facilities and the transmission line will potentially occupy a total area of approximately 99,99ha (99.97ha for the solar facilities and 0.02ha for the towers and posts of the transmission line), which will be permanently affected by the erection of the solar panels, substation, transmission line, electrical towers, control room, maintenance road and other construction works. Based on the information included in the DIAs, much of the Project area and vicinity appears to be a natural flat desert habitat –absolute desert- with no vegetation, and no water sources. Nonetheless, the information provided makes reference to the presence of a *Bosque de Preservación* (Preservation Forest) in the Copiapó river watershed, on which is planned to cross the transmission line to connect the Los Loros substation. The Preservation Forests area that could be affected by the transmission line represents 1% of the total area of the Project. Some human impacts can be observed including off-road vehicle traffic, desert roads and abandoned crops of traditional products in the Project area itself.
- 4.2** The PV plant and the transmission line are located near Los Loros (1,176 people in 2007), which is a rural village part of the Commune Tierra Amarilla (13,507 people approximately in 2012). The main economic activities in this area are those related to the agriculture, tourism and mining activities. Both the PV plant and the transmission line are

located approximately 6 km and 3 km (closest point-substation) northwest respectively of this village. The presence of other towns near the Project area will be investigated during the Due Diligence. The Project area itself appears to be vacant, private-owned land, and these properties have been registered in the Secretaría Regional Ministerial (SEREMI) de Atacama - *Ministerio de Bienes Nacionales* and the *Conservador de Bienes Copiapó*. This information will be confirmed during the Due Diligence.

- 4.3** According to the available documentation, it is unclear if affected people have been consulted on the Project. Residents in the local community will be interviewed during the Due Diligence process to gain an understanding of the local resident's perceptions of the Project. Additionally, formal public consultation will be required with the local communities before the Project could be presented to the IDB Board for approval. The procedures implemented during this process, and the subsequent results, including land purchase or lease agreements, will be investigated during the Due Diligence. Social programs implemented by the Project to benefit the local community will also be investigated.
- 4.4** According to the existing environmental documentation, the PV plant is not located within any protected habitats. However, approximately 150 meters of protected area in the Copiapó river watershed (Bosque de Preservación) will be crossed by the transmission line. This protected area encompasses some sensitive flora species. The Due Diligence will confirm that the transmission line will not impact this protected area, and Solairedirect will implement the adequate in order to prevent any impact on the Bosque de Preservación.
- 4.5** The available ecological baseline information indicates the evidence and/or presence of six sensitive animal species within the Project (PV plant and transmission line) area including *Lama guanicoe* –*Guanaco*- (IUCN Least Concern and Endanger to Chile), *Puma concolor* –*Puma*- (IUCN Least Concern and Near Threatened to Chile), *Abrocoma bennettii* –*Ratón chinchilla*- (IUCN Least Concern and Insufficiently Known to Chile), *Liolaemus atacamensis* –*Lagartija de Atacama*- (IUCN Least Concern and Rare to Chile); *Pseudalopex culpaeus* –*Zorro culpeo*- (IUCN Least Concern and Minor Concern to Chile); and *Pseudalopex griseus* –*Zorro chilla*- (IUCN Least Concern and Minor Concern to Chile). All the species mentioned above have an IUCN Red List Status, and this is Least Concern; nonetheless, special attention will be paid on the *Abrocoma bennettii* –*Ratón chinchilla*- and *Liolaemus atacamensis* –*Lagartija de Atacama*- since the populations of these species are distributed in a narrower area in the region where the Project is located. In general, the Project site is unlikely to be considered a critical natural habitat, even if this remains to be confirmed during the Due Diligence. Additional biological surveys may be required.

4.6 Archaeological base line studies have been conducted on the Project site (PV facilities and transmission line sites). According to these studies and the *Consejo de Monumentos Nacionales* (CMN), twelve archeological finds have been identified on the Project area. Six finds on the PV plant site, including five historical and one Pre-Hispanic finds; and six finds on the transmission line site, including three historical, two indeterminate, and one Pre-Hispanic finds. In general, among these finds are an irrigation ditch, stone mining camps, small groups of stone alignments, a few lithic fragments and pieces, and one very small petroglyph. The archeological studies mention that Project's design criteria will prevent negative impact of the sites on which the finds are located. In addition, these studies recommend, in the case of the transmission line, to modify the location of the towers to prevent any negative impact on these patrimony sites. The CMN has requested to carry out a permanent archeological monitoring of the Project site during the leveling and construction activities; trainings for the workers during the construction phase to prevent any damage on archeological finds during the construction phase; and perform a final archeological report including information about finds and procedures to protect them. Nevertheless, there is no information regarding the implementation of specific archeological plans such as an Integral Archeological Management Plan, an Archeological Evidence Management Plan, and/or a Management and Contingency Plan of Archeological Monuments which should be managed by an archeologist. Clarification about management of these archeological sites and existence of specific archeological certificates and plans will be investigated during the Due Diligence process.

V. KEY POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS AND RISKS

- 5.1** Potential environmental impacts and risks associated with solar facilities during the construction phase are mainly linked to the installation of the solar panels, foundations, and transmission line as well as the substation and access roads. Main construction impacts are: (i) archeological and habitat disturbance; (ii) soil erosion; (iii) dust generation; (iv) increased heavy traffic; (v) loss of vegetation; and (vi) occupational health and safety hazards for the workforce.
- 5.2** Once in operation, main impacts and risk associated with solar facilities are: (i) loss of vegetation; (ii) accidental discharges of hazardous materials; (iii) community health and safety hazards; and (iv) water consumption. Of specific importance for Los Loros Project might be the risk of environmental impact on the protected area –Bosque de Preservación- because of the transmission line trajectory, which will pass through over this protected area.

- 5.3** The Due Diligence will determine with more certainty the extent of anticipated impacts of the Project. It is expected that the Borrower will apply mitigation measures that correspond to best industry practices for the solar power sector.

VI. ENVIRONMENTAL AND SOCIAL DUE DILIGENCE STRATEGY

- 6.1** Based on the requirements outlined in IDB's OP-703 Environmental and Safeguards Compliance Policy, the Team proposes that Los Loros Solar PV Power Project be classified as a Category B.
- 6.2** The Bank will perform an Environmental and Social Due Diligence ("ESDD") in order to confirm that all of the Project's relevant impacts and risks have been, or will be, properly and adequately evaluated, and mitigated.
- 6.3** The ESDD will specifically address the following aspects:
- a.** Determine if additional fauna surveys should be necessary to confirm whether the Project site is a natural habitat for the species that have an IUCN Red List Status; specifically, for the review the Reptile Rescue and Relocation programs for the *Abrocoma bennettii* –*Ratón chinchilla*- and *Liolaemus atacamensis* –*Lagartija de Atacama*- since the populations of these species are distributed in a narrower area in the region where the Project is located
 - b.** Verify that the protected area (Bosque de Preservación), over which the transmission line will cross approximately 150m, will not be impacted by implementation of the Project. Verify the implementation of adequate plans to prevent impacts on the protected area. Additionally, verify that the entire Project site (PV plant and transmission line) is not within any sensitive or protected habitats.
 - c.** Investigate any potential landscape/visual impacts because of implementation of the Project;
 - d.** Assess potential adverse socio-economic impacts of construction activities such as temporary, or permanent, loss of access to agricultural or grazing lands for farmers and herders or any involuntary resettlement;
 - e.** Determine if the land purchase and/or lease agreements have been completed in line with IDB policies;
 - f.** Assess the adequacy and timely consultation and information dissemination process with affected parties;
 - g.** Ensure appropriate archeological surveys have been conducted and specific archeological programs and plans such as an Integral Archeological Management Plan, an Archeological Contingency Plan, and/or an Archeological Evidence

Management Plan will be implemented during the construction, operation and decommissioning phases;

- h.** Based on the archeological studies, verify the final location of the electrical towers and posts to prevent any archeological disturbance or damage;
 - i.** Assess the adequacy of the a Traffic Plan to ensure road safety is maintained despite the temporary increase in traffic, particularly heavy trucks and equipment through small communities;
 - j.** Assess the adequacy of the health and safety procedures of the company;
 - k.** Review the Environmental and Social Management Plan (ESMP) to ensure the avoidance, minimization, and mitigation of any potential impacts;
 - l.** Determine if the Project has been developed and implemented in compliance with the environmental laws and regulations of Chile;
 - m.** Assess the Project's compliance with IDB's Environmental and Safeguards Compliance Policy (OP-703) and if needed develop an Action Plan in order to resolve any observed non-compliance.
- 6.4** An Environmental and Social Management Report (ESMR) will be prepared by the Project Team as part of the ESDD to analyze the management of the environmental and social aspects of the Project.