

INTER-AMERICAN DEVELOPMENT BANK

CHILE

**POZO ALMONTE and CALAMA SOLAR PHOTOVOLTAIC POWER PROJECT
(CH-L1069)**

Category B Project

**Environmental and Social Management Report
(ESMR)**

FEBRUARY 2013

TABLE OF CONTENTS

I. INTRODUCTION

II. PROJECT DESCRIPTION

III. COMPLIANCE STATUS AND PROJECT STANDARDS

IV. KEY ENVIRONMENTAL AND SOCIAL IMPACTS AND RISKS

V. MANAGEMENT AND MONITORING OF ENVIRONMENTAL, SOCIAL, HEALTH AND SAFETY AND LABOR IMPACTS AND RISKS

VI. REQUIREMENTS TO BE INCLUDED IN THE LEGAL AGREEMENTS

APPENDIX

List of Figures

Photos

Environmental and Social Action Plan (ESAP)

I. INTRODUCTION

A. Summary Table

1.1

Country	Regional / Chile
Sector	Infrastructure and Energy
Project Name	Pozo Almonte and Calama Solar Photovoltaic Power Project
Borrower and / or Sponsor	Pozo Almonte Solar 2, S.A., Pozo Almonte Solar 3, S.A. and Calama Solar 3 S.A. (the “Borrowers” or the “SPVs”), / Solarpack Corporación Tecnológica, S.L. (“Solarpack” or the “Sponsor”)
Executing Agency and / or Company	SolarPack Chile, S.A.
Transaction Type	Project Finance
Total Project Cost (in US Dollars)	US\$82.7million
IDB A-Loan (if applicable)	Up to US\$20.7million
B-Loan/Co-lenders	IDB B-Loan (US\$24.8 million) Canadian Climate Fund (US\$20.7 million)
Environmental Category	B
Project Team	Elizabeth Robberechts, Project Team Leader (INF/CCH), Gian Franco Carassale (SCF/INF), Jeff Easum (INF/CME) Jan Weiss (SCF/SYN) and Steven Collins (VPS/ESG), Jean-Marc Aboussouan (Chief, SCF/INF)

B. Background

- 1.2 The Project consists of the design, construction, operation and maintenance of a 25.4 Megawatt peak (MWp) photovoltaic solar power plant for the provision of energy to Compañía Minera Doña Inés de Collahuasi (“Collahuasi”) and of the operation and maintenance of a 1.1 MWp photovoltaic solar power plant for the provision of energy to Corporación Nacional del Cobre de Chile (“Codelco”, and together with Collahuasi, “the Offtakers”).
- 1.3 Solarpack Corporación Tecnológica, S.L. (“Solarpack” or the “Sponsor”) was awarded in July 2012 a 20 year power purchase agreement (PPA) by Collahuasi as the result of a tender process for the provision of 60 GWh/year of non-conventional renewable energy (NCRE). In addition, Solarpack has finished construction of and is operating a 1.1 MWp solar PV plant to sell energy under a 21-year PPA to Codelco for its Chuquicamata mine operations.
- 1.4 SolarPack will develop the Project through its Chilean subsidiary Solarpack Chile, S.A., and will also provide all engineering, procurement and construction services, as well as the operation, maintenance and asset management services for the Project.
- 1.5 The estimated total cost of the Project is US\$82.7 million, which will be funded through a combination of equity and debt. Along with loans from IDB and Proparco, the Project is seeking financing from the Canadian Climate Fund for the Private Sector in the Americas (C2F), a fund established by the Government of Canada and managed by IDB to catalyze increased private sector investment in climate change mitigation and adaptation.
- 1.6 A due diligence mission was conducted by an ESG representative, Steven Collins (senior environmental specialist), from October 1 - 4, 2012. Findings and observations gained during the mission along with information provided in the project’s environmental documentation are detailed within this report.

II. PROJECT DESCRIPTION

A. Project Components

- 2.1 The “Project” consists of the construction, operation and maintenance of a 25.4 megawatt peak (MWp) solar photovoltaic (PV) power project and its associated facilities located in the Tarapacá region of Chile and of the operation and maintenance of a 1.1 MWp photovoltaic solar power plant in the Antofagasta region of Chile (See Figure 1). The Project has been divided into three plants: Pozo Almonte 2, Pozo Almonte 3 and Calama Solar 3, located on three rectangular project areas of approximately 56 hectares, 126

hectares and 6.3 hectares, respectively (see Figures 2, 3, and 4). The Pozo Almonte Project will be connected to the national grid and will be Chile's largest solar PV project when it comes on line in late 2013. The Project has a minimum anticipated life span of 30 years and moreover has signed land lease agreements with the Government of Chile for a 30 year span.

Figure 1. General Project Location



Figure 2. Pozo Almonte 2 Location Map



Figure 3. Pozo Almonte 3 Location Map

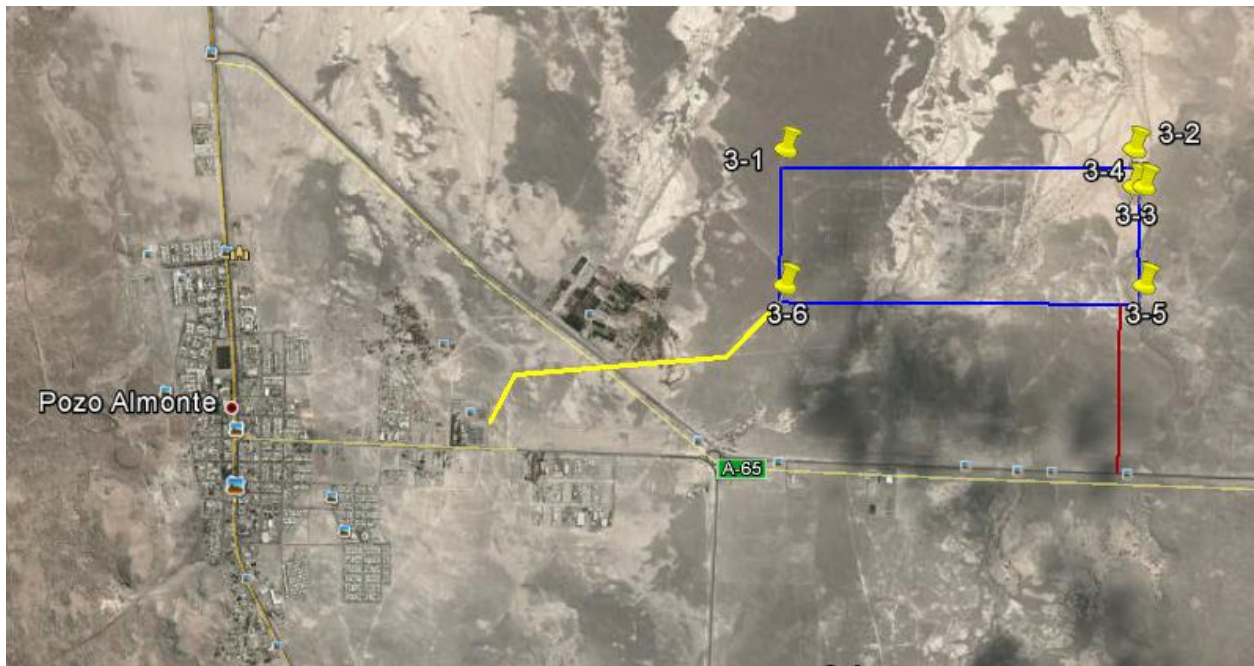


Figure 4. Calama Solar 3 Location Map and Site Layout



- 2.2 The 7.5 MW Pozo Almonte 2 site will be situated on approximately 56 ha of desert land, of which, approximately 45 ha will be disturbed. The 16 MW Pozo Almonte 3 site will be situated on approximately 126 ha of desert land, of which, approximately 80 ha will be disturbed. Both projects will leave large areas of the overall project site undeveloped. In terms of project components and site layouts, Pozo Almonte 2 and 3 will be very similar, with some differences due to differing generation capacity. The Pozo Almonte 2 facility will consist of approximately 27,000 photovoltaic solar panels and the Pozo Almonte 3 facility will install approximately 57,000 panels. The panels will be elevated off the ground through the use of a network of metal support structures connected to cylindrical concrete foundations, which will be buried to a depth of roughly two meters. Approximately 6,600 concrete foundations will be required for Pozo Almonte 2 and roughly 14,000 will be installed for Pozo Almonte 3. See Figures 5 and 6 for site layout maps.

Figure 5. Pozo Almonte 2 Site Layout

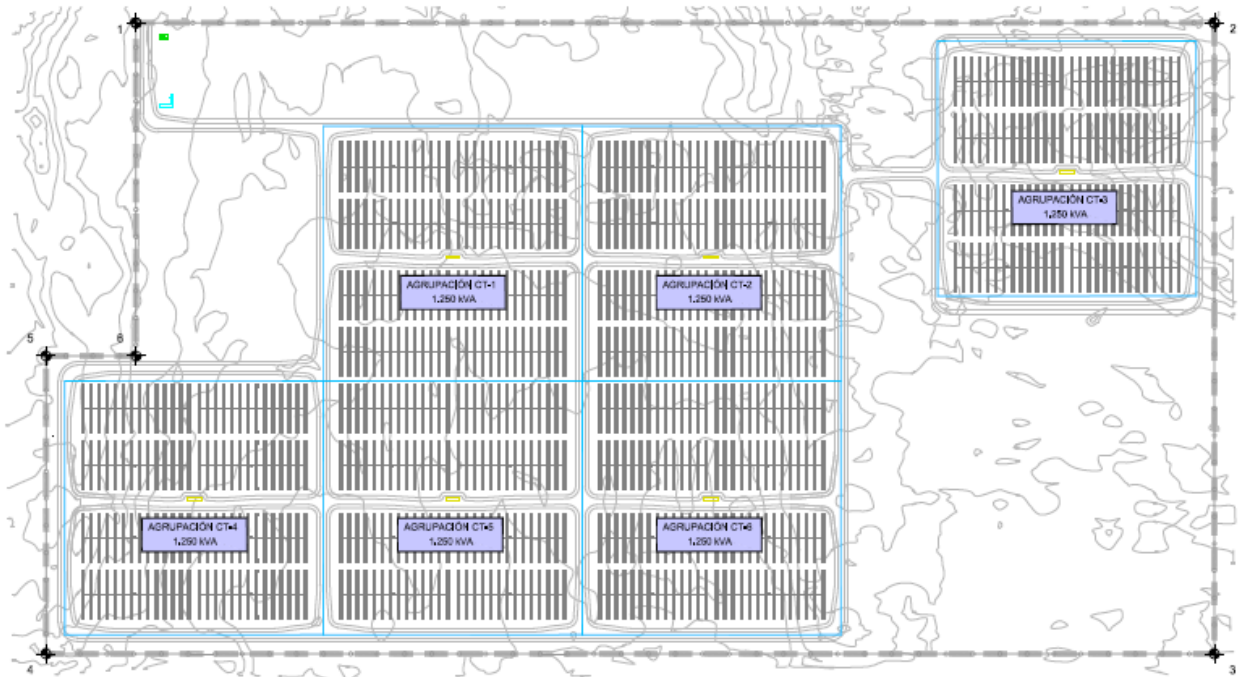
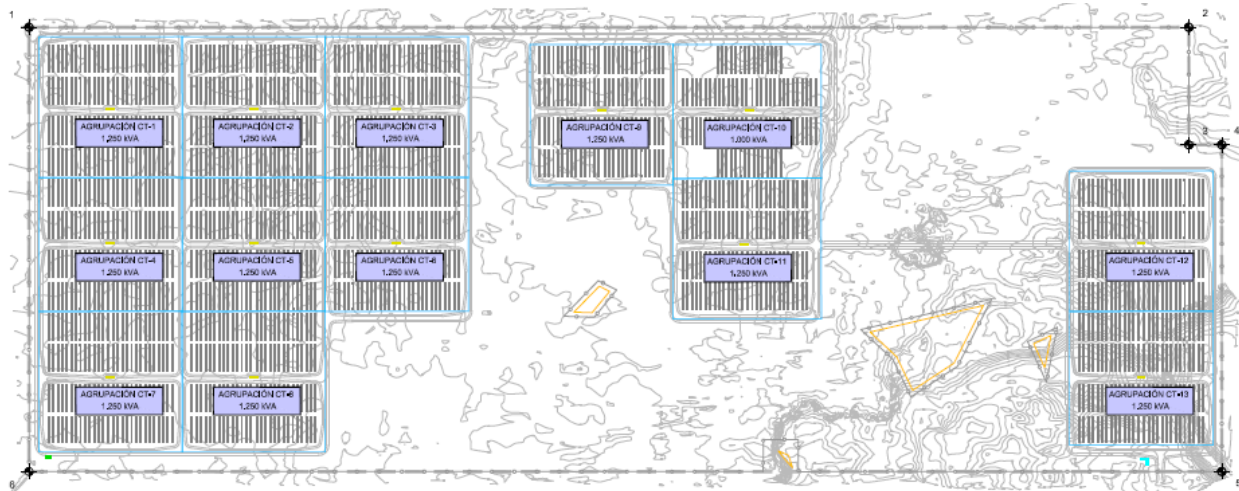


Figure 6. Pozo Almonte 3 Site Layout



- 2.3 Each facility will construct a small substation and a 13.8 kV transmission line to connect the facility to the national grid, as well as an internal network of subterranean distribution cables to connect the solar array to the substation. Underground electrical cables will be buried to a minimum depth of 0.5 m, except at road vehicular crossings where the depth will increase to 0.8 m.

- 2.4 An unpaved access road will be constructed within each facility. The Pozo Almonte 2 access road will be approximately 1,500 m long and the Pozo Almonte 3 access road will be about 900 m long. The Calama 3 access road is 63 m long. All access roads will be approximately six meters wide. The surface of the access roads may be treated with magnesium chloride hexahydrate, a technique commonly applied to dirt roads to control dust and particulate matter emissions, should dust become an issue. Vehicles accessing the site will use the existing bypass roads to avoid passing through the city of Pozo Almonte.
- 2.5 Several small buildings and other infrastructure will also be constructed in order to support activities during the construction process and throughout operations. These facilities include prefabricated or modular units to house the invertors, parking areas, showers and lockers for workers, a kitchen and dining area, on-site offices, equipment storage area, waste storage area, and hazardous waste storage areas. A large area at each facility will be dedicated to materials storage, such as solar panels, electrical cabling, and excavated soils. A two-meter high perimeter fence will be constructed around each facility to increase security. Precise sizes and dimensions of the above mentioned project components for each facility are detailed in Table 1 below, along with other project specific information.
- 2.6. Additionally, the project will consist of the operation and maintenance of a 1.1 MWp photovoltaic solar power plant for the provision of energy to CODELCO, which is located in the Antofagasta region of Chile (See Figure 4, above). The 1.1 MWp plant was built approximately 5 km east from Calama and stands on a rectangular project area of approximately 6.3 hectares. The Project is connected to CODELCO’s Chuquicamata mine grid and has been on line since April 2012. Just as Pozo Almonte Solar 2 and 3, the 1.1 MWp project has an anticipated life span of a minimum of 30 years.

Table 1: Project Component Information

Project Aspect	Pozo Almonte 2	Pozo Almonte 3	Calama 3
Capacity	7.5 MW (27,000 panels)	16 MW (57,000 panels)	1 MW (4,420 panels)
Total Area (Disturbed Area)	56 ha (45 ha)	126 ha (80 ha)	6.3 ha (5.5 ha)
13.8 kV Transmission Line	2,406 m x 2 m (0.46 ha)	1,675 m x 2 m (0.33 ha)	140 m (underground)
Access Road	1,556 m x 6 m (0.93 ha)	867 m x 6 m (0.52 ha)	63 m x 6 m (0.038 ha)
Prefabricated units	7 units (7m x 2.4m x 2.5m)	8 units (7m x 2.4m x 2.5m)	1 unit (12.2 m x 2.4 x 2.5)

Project Aspect	Pozo Almonte 2	Pozo Almonte 3	Calama 3
Number of Foundations	6,600	14,000	869 (including the four kratums)
Canteen / Living quarters	20-ft modular containers	20-ft modular containers	N/A
Offices / Storage	20-ft modular containers	20-ft modular containers	2 20-ft modular containers
Hazardous waste storage	20-ft air conditioned container	20-ft air conditioned container	N/A
Perimeter fence	3,080 m long x 2 m high	5,066 m long x 2 m high	1006 m long x 2 m high
Water Consumption (construction)	14,000 l/day - 100 l/person/day	25,000 l/day - 100 l/person/day	2,000 l/day - 100 l/person/day
Water Consumption (operations)	300 l/day - 100 l/person/day	300 l/day - 100 l/person/day	100 l/day - 100 l/person/day
	Panel cleaning - 0.9 l/panel/yr	Panel cleaning - 0.9 l/panel/yr	Panel cleaning - 0.9 l/panel/yr
Wastes (non-hazardous)	Construction - 2.3 T/month	Construction - 2.3 T/month	Construction 2.9 m3/month
	Operation - 0.09 T/month	Operation - 0.09 T/month	Operation - 0.03 T/month
Wastes (hazardous)	Construction - 0.5 T/yr	Construction - 0.5 T/yr	Construction - 0.5 m3/month
	Operation - 0.1 T/yr	Operation - 0.1 T/yr	Operation - 0.03 T/yr
Air Emissions (CO² reduction) - Estimated	18,787 ton CO ₂ /year	40,078 ton CO ₂ /year	2,400 ton CO ₂ /year
Number of Workers	Construction - 140	Construction - 250	Construction 20
	Operations - 3 on-call service contractors	Operations - 3 on-call service contractors	Operations - 1 on-call service contractors

B. Environmental and Social Setting

2.7 The Pozo Almonte Project sites lie in an area typically referred to as the pampas region downslope of the altiplano (high plain or plateau) in the Atacama Desert region in northern Chile. The Atacama Desert is known to be the driest location on the planet. The Pozo Almonte Project areas lie approximately 3.5 km to the east of the city of Pozo Almonte, the closest community. The Pozo Almonte 2 project lies approximately one km south of the A-65 highway and the Pozo Almonte 3 site lies approximately one km north of the A-65 and due north of the Pozo Almonte 2 site. The two projects lie at an

elevation of approximately 1,030 meters above sea level. The Calama Solar 3 project area lies approximately 260 km southeast of the Pozo Almonte sites and 5 km to the east of the city of Calama, on route 50 at a distance of 900 m from the cross roads of route 50 with route 21 (Chiu Chiu road). The Calama Solar 3 project area lies at an elevation of approximately 2,400 meters above sea level.

- 2.8 The project sites can be described as natural desert habitat, except for the Calama 3 site which is already in operations; however, all the sites have been impacted by previous human activities. No protected areas or priority zones for conservation were identified in either project area. Due to very little annual precipitation, the project areas do not support much plant life. No sensitive or protected plant species were identified in the project area. The eastern portion of the Pozo Almonte 3 site, which will not be developed, consists of a network of braided and interconnected washes which may be prone to flash floods and inundation during and after severe storm events.
- 2.9 Also due to the lack of rainfall and vegetation, there are very few animal species surviving in the project areas. The DIAs for the two projects do not identify any sensitive or protected animals potentially occurring within the project areas. The site visit conducted in early October 2012 confirmed the lack of vegetation and wildlife on both Project sites and the surrounding area, with the exception of the arroyo network on the eastern portion of the Pozo Almonte 3 site where riparian vegetation was observed.

Social Setting

- 2.10 The Pozo Almonte Project lies approximately 2.6 km to the east of Pozo Almonte, the closest city. According to the 2002 census, the greater Pozo Almonte area has a population of 10,830 inhabitants, of which 4,309 are women and 6,521 are men. Within the area, the city of Pozo Almonte is the largest with approximately 6,384 inhabitants. Four other small villages exist in the area including Mamina (pop. 548), Macaya (pop. 51), Parca (pop. 29), and Quipisca (pop. 3).
- 2.11 The Calama Solar 3 facility lies approximately 5 km east of the city of Calama. Calama is a larger city which has approximately 143,000 inhabitants based on the 2005 census. A large number of smaller villages exist in the lands surrounding the city. The city experienced significant growth in 2003 when residents of a nearby community (Chuquicamata) moved to Calama to avoid potential environmental issues relating to the closing of the large-scale copper mine.
- 2.12 Approximately 17% of the region's population claim to be of indigenous origin. The ethnic distribution is as follows: Alacalufe (Kawashkar) 0.02%; Atacameno 0.57%; Aymara 13.93%; Colla 0.08%; Mapuche 1.46%; Quechua 1.29%; Rapa Nui 0.01%; Yamana (Yagan) 0.02%; and the majority of the population (82.61%) do not affiliate themselves with any indigenous origin.

- 2.13 The primary economic activity in the region is copper mining; however, other activities in the area include ranching and grazing of various types of animals including cattle, sheep, pigs, and goats among others as well as some agriculture. The primary crops cultivated in the area include various fruits and vegetables and animal fodder.
- 2.14 Access to services in the areas is generally good with the majority of homes containing sewer, water and electricity. The area has several schools for basic and mid-level education; approximately 65% of the school-aged children attend classes which is higher than the national average of approximately 56%. Residents also have access to health care facilities, public libraries, radio and television. A system of buses and taxis are also available to transit from Pozo Almonte to the smaller villages, as well as in and out of Calama.
- 2.15 The rate of unemployment in the area is extremely low primarily due to the number of employment opportunities offered by nearby mining operations and enterprises which support the mining industry. The lack of available local labor in the Pozo Almonte area may result in laborers arriving from other areas for the Project to meet its labor demands.

C. Project Schedule and Workforce

- 2.16 Based on information provided in the DIAs and during the due diligence mission, construction on each project is scheduled to begin in January/February of 2013 with an anticipated eight to nine month construction period. Operations are scheduled to commence by the end of 2013. Pozo Almonte 2 site is expected to have approximately 140 workers during the peak of the construction phase while the Pozo Almonte 3 site will employ 250 workers during peak construction. Due to remote monitoring capabilities of modern solar arrays, it is currently anticipated that only three on-call staff will be required during operations. These individuals will be present primarily to fulfill any maintenance operations required on equipment. Security guards will be in place 24 hours a day.

D. Alternatives Analysis

- 2.17 The project did not include a formal report detailing the analysis of alternatives as part of the DIAs, nor does the Government of Chile require one. Solarpack did conduct its own internal procedure to identify several alternative site locations and a selection process ensued to identify the optimal location. The criteria employed by Solarpack for the definition of the sites was to first locate the geographical area of the country which presented optimal conditions for the generation of solar energy (high solar radiation). The company identified several possible sites within the Atacama Desert region, which they evaluated against factors such as environmental quality of the land, ownership of the land, proximity to existing infrastructure (substations and transmission lines), accessibility, distance from human settlements, and alternative uses.

- 2.18 The sites selected appear to be ideal as they are: i) Government-owned land with no people living on the land or otherwise utilizing the land; ii) there is an existing substation and transmission line nearby; iii) existing roads and bypasses allow easy access without disrupting the lives of community; iv) the closest settlement is 2.5 km away allowing access to services but minimizing social impact and; v) the land is not well suited to sustain other uses.
- 2.19 Following site selection, Solarpack conducted a technological review of the equipment to be used on the site. Original project design called for the installation of over 345,000 solar panels requiring the installation of over 80,000 concrete foundations to support the solar arrays. Newer, more efficient solar panels were identified and will be used on the project, thus reducing the number of solar panels to be installed to approximately 84,000 and the number of concrete foundations needed to approximately 20,600.

III. COMPLIANCE STATUS AND PROJECT STANDARDS

A. Appraisal Process and Local Requirements

- 3.1 The Pozo Almonte 2 and 3 projects received separate Directorial Resolutions from the Republica de Chile Comisión de Evaluación I Región de Tarapacá on 06 May 2011 and 04 July 2011 (Pozo Almonte 3), following a review process of the individual DIAs. These resolutions provided a classification of the projects, described as Categoría B and granted project approval for each project.
- 3.2 In conjunction with the DIAs, the projects were also subject to conducting archaeological surveys within the three project areas. The archaeological surveys revealed the existence of two isolated findings on the Pozo Almonte 2 site and several sites were identified within the Pozo Almonte 3 site. The Comisión de Evaluación has established conditions within each Resolution in order to catalogue and preserve the important artifacts from each location. The project will be required to implement a Chance Find Procedure and contract an archaeologist to be present during initial earthworks to ensure no other potential sites will be disturbed during construction.
- 3.3 The Project has entered into negotiations with the Government in order to obtain the land lease agreement and contracts for land use change from Bienes Nacionales and Servicio de Impuestos, respectively. Final contracts on these items were signed on 17 December 2012.

B. IDB Safeguard Policies

- 3.4 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; B.6, Consultation; B.7, Supervision and

Compliance; B.9, Natural Habitats and Cultural Sites; B.12, Projects Under Construction; and B.15, Co-Financing Operations. The OP-102, Disclosure of Information Policy also applies for this Project. Based on available documentation and observations during the due diligence mission, the OP-710 on involuntary resettlement will not be triggered for this Project as no resettlement or economic displacement will occur as a result of the Project.

- 3.5 Table 1, below, illustrates the Project’s capacity to comply with IDB’s various policies and directives.

Table 1: Compliance with IDB Policies and Directives

Policy / Directive	Applicable Aspect	Compliance Rationale
OP-703 Environmental and Safeguards Compliance		
B.1 Bank Policies	Compliance with applicable IDB policies	The project is currently in full compliance with all IDB policies and directives. The implementation of the ESMP will ensure the Project remains in compliance once construction commences.
B.2 Country laws	Compliance with country laws and regulations	The project is in full compliance with all Chilean laws and regulations. Land lease agreements and other permits are in the final process of completion.
B.3 Screening and Classification	Application of appropriate classification	The Project has been classified as a Category B operation.
B.4 Other Risk Factors	Vulnerability to disasters Earthquakes	The project is located in an active earthquake zone; however, the site is located on a desert plain well away from rock fall from the mountains. Minimal, small-scale infrastructure will not be susceptible to significant damage or destruction. The project ESMP will also contain Emergency and Evacuation Plans

Policy / Directive	Applicable Aspect	Compliance Rationale
B.5 EA Requirements	Application of adequate assessment process	In accordance with both Chilean regulations and Bank policies for Category B projects, Environmental Evaluations (Assessments) were prepared for each project. For these projects, individual Declaraciones de Impacto Ambiental (DIAs) were submitted to the government of Chile and approved.
B.6 Consultations	Project has undergone appropriate public consultation	The project has contracted a university in Iquique (Universidad de Arturo Prat) to conduct one public consultation meeting with the local authorities and communities and is currently working with these groups to identify social programs to benefit the local area, particularly women, children, and indigenous communities. The Project plans to conduct at least two more public consultation meetings, one before construction and one during construction. The community supports the operation.
B.7 Supervision and Compliance	Internal supervision and reporting	The Project's ESMP will contain provisions for self-monitoring and supervision, as well as supervision of contractors, in order to maintain a high level of compliance. Additionally, Government entities, as well as the IDB Environmental Safeguards Unit, may conduct their own supervision of the project. The Project will submit semi-annual compliance reports during construction and annual compliance reports during operations.
B.8 Transboundary Impacts	N/A	The Project does not impact neighboring countries.
B.9 Natural Habitats and Cultural Sites	Conversion of natural habitat	The project site, in the desert of northern Chile, is considered natural habitat. This habitat type is abundant in the area and the site does not contain any protected areas and

Policy / Directive	Applicable Aspect	Compliance Rationale
		no sensitive species of flora or fauna were documented in the DIAs or observed on the site. The project does not present a significant conversion of natural habitat.
B.10 Hazardous Materials	Waste management	The project's ESMP will provide a strict waste management program. Due to the nature of the operation, few hazardous materials are stored on-site during construction (minimal amounts of fuel) and no hazardous materials will be stored at the facility during operations. A licensed contractor will be contracted to handle the waste management.
B.11 Pollution Prevention	Pollution control and CO ₂ emissions	The project's ESMP will provide a strict waste management program including a robust recycling program involving the local community. A certified contractor will be hired to remove wastes from the project site on a regular basis. The project will reduce the country's CO ₂ emissions by approximately 56,000 tons CO ₂ /year (estimated) by providing a source of green energy.
B.12 Projects Under Construction	N/A	The Calama 3 project has finished construction and is in operation.
B.13 Non-Investment and Flexible Lending Instruments	N/A	N/A
B.14 Multiple Phase Loans	N/A	N/A
B.15 Co-Financing Operations	Potential presence of other lenders	Other potential lenders, including the Canadian Climate Fund, are also conducting separate due diligence exercises. The Project's ESMP will comply with other

Policy / Directive	Applicable Aspect	Compliance Rationale
		lender's policies and assist the Project to maintain a high level of compliance.
B.16 In-Country Systems	N/A	N/A
B.17 Procurement	N/A	N/A
OP-710 Involuntary Resettlement	N/A	No involuntary resettlement or economic displacement will occur as a result of the project
OP-765 Indigenous Peoples	N/A	No indigenous communities or peoples will be negatively affected by the Project; however, the Project is consulting with various indigenous groups to identify potential social programs to benefit the groups as several indigenous groups have been identified in surrounding areas.
OP-704 Disaster Risk Management Policy	Earthquake zone	See B.4 above.
OP-270 Gender Equality	Avoiding gender discrimination within the Project or as a result of the Project. Providing opportunities for women.	Women will be incorporated into the labor force when feasible; no gender discrimination will occur due the project. The Project is currently attempting to identify social programs to benefit women.
OP-102 Access to Information Policy	Project information disclosure	The Project has adequately disseminated information in the local community in radio advertisements and letters to stakeholders. Several public consultation meetings will also occur. IDB will also make relevant Project information available on its website.

C. Project Requirements and Standards

- 3.6 Solarpack does not have an accredited corporate Environmental Management System such as ISO 14001:2004 standards for Environmental Management, or OHSAS 18001:2007 Occupational Health and Safety Management standards; however, Solarpack is a European company which has significant experience in the construction and operation of solar facilities.
- 3.7 The Project is in the process of preparing a project-specific Environmental and Social Management Plan (ESMP). The ESMP will outline Solarpack’s environmental and social responsibilities including waste management, traffic management, health, safety and labor, monitoring and auditing. The ESMP will also address specific project location related issues such as potential flooding and inundation areas and detail measures required (if any) to mitigate any potential issues.
- 3.8 Solarpack has developed a Corporate Social Responsibility which contains their Social Support Program and a Community Relations Plan. The company is currently communicating with officials and community members in Pozo Almonte to identify projects which would benefit from the Social Support Program. The Project aims to support projects and programs directed at supporting and improving the lives of women and children and various indigenous communities in the area. The Community Relations Plan contains the initial plans for the development of a Grievance Mechanism which will be implemented and tracked upon finalization of the plan.
- 3.9 Additionally, Solarpack Chile has won “The best pipeline of projects” award at the Chilean International Renewable Energy Congress. The Renewable Energy Awards recognize the best projects and work of the companies that are most impacting the renewable energy industry in Chile.

IV. KEY ENVIRONMENTAL AND SOCIAL IMPACTS AND RISKS

A. Summary of Key Impacts and Risks

- 4.1 The due diligence mission conducted in October 2012 identified the main impacts and risks as: conversion of natural habitat, air emissions related to dust and particulate matter, waste management, influx of foreign workers due to the lack of available local workforce, and traffic issues due to a large increase in vehicular traffic during construction.

B. Environmental Impacts and Risks

- 4.2 The primary impact of concern identified in the environmental documentation was the conversion of natural habitat and dust emission during construction activities. The site visit and ESG’s Decision Support System (DSS) revealed that approximately 182 ha of

natural desert habitat would be impacted. As over five million ha of this habitat exist in the area, this does not constitute a significant degradation to the overall habitat. The Project area does not contain any sensitive or protected areas or flora or fauna.

- 4.3 In order to reduce the impact to water resources Solarpack will limit the number of cleaning events for the solar array and will use modern technologies to clean the panels. Water efficient high pressure washers and scrubbers will be utilized during the cleaning process to reduce the amount of water consumed. It is anticipated that less than one liter of water will be used per solar panel per cleaning. Water for cleaning of the panels will be trucked into the site.

C. Social Impacts and Risks

- 4.4 The due diligence mission to the solar plants near Pozo Almonte did not identify any significant social impacts to the nearby population. This is mainly the result of factors such as (i) the low-impact nature of technology associated to solar plants (ii) the fact that the sites are distant from human settlements, the closest ones located approximately 2.5 km from the solar plants, and (iii) the entire Pozo Almonte Project site is owned by the Government of Chile and no economic activity occurs on the land.

- 4.5 The area has a history of civil unrest due to disputes concerning water resources and allocation, primarily due to the lack of available water in the desert environment. Initially, water consumption was considered to be a potential issue as the Project would compete for water resources with the agricultural community; however, after examining the water usage requirements of the power plants it became evident that this would not be a significant problem. The solar panels are only expected to be cleaned with water once or twice a year, and they do not need to be completely clean to produce the required level of energy. Additionally, the local soils are not of high agricultural value, and very little agricultural activity occurs in the area.

- 4.6 Land acquisition was another topic that ended up being an issue of no concern. The Pozo Almonte Project will be constructed on government lands that are unclaimed and unused by the local population or any other third parties. Accordingly, the long-term (30 year) land use agreements in place establishes clear rights and benefits for the involved parties and no economic displacement or resettlement of any kind will occur as a result of the Project. The Calama Project is constructed on land owned by the Offtaker, Codelco, and specifically designated for the Calama Project.

D. Cumulative Impacts

- 4.7 A formal cumulative impacts analysis was not conducted for these projects, nor is any such analysis required by the Government of Chile. Each of the DIAs prepared for the

Pozo Almonte 2 and 3 projects do, however, reference the other project and each DIA describes the potential impacts of each individual project.

- 4.8 The Projects will be constructed in a rural environment, isolated from any settlements or other infrastructure. No other projects are currently known to be coming to the area in the immediate future; however, the surrounding environment could support more solar facilities. The surrounding areas are well known for mining activities and additional mining operations could be permitted in the future.
- 4.9 The success of the Project could attract more growth in the area particularly in the solar energy sector. This potential growth would possibly result in net positive social impacts on the surrounding communities by providing employment to local workers and contracting local services as well as providing beneficial social programs to local schools and community based programs and other social programs such as donation of recyclable goods to the community.

E. Positive Impacts

- 4.10 The Projects will likely result in net positive benefits for the nearby communities as well as the country, in general. The Project, during construction phase, will provide direct employment to approximately 390 workers. A preference for workers from local communities will be provided; however, due to the extremely low unemployment rate of the area due to numerous employment opportunities in the mining sector, the Project may have to look to larger cities outside of the Project area to fulfill its labor requirements. Various other enterprises located in Pozo Almonte will benefit from contracts issued to complete the construction activities.
- 4.11 The Pozo Almonte Project will be tied into the Chilean national grid, even though Collahuasi is committed to purchase up to 100% of the energy generated, thus providing cleaner energy to the nation and its fiscally important mining sector in particular. Together, the energy generated at the Pozo Almonte and Calama solar facilities will reduce the country's carbon emissions by over 56,000 tons CO₂/year.
- 4.12 The Project is currently working with the community and local officials to identify potential social programs which the Project can support. Preference will be given to social programs which benefit women, children and indigenous groups. School field trips, as well as site visitations for other visitors, are envisioned for the future when the plants are in full operation to teach school children and the community about solar energy.

V. MANAGEMENT AND MONITORING OF ENVIRONMENTAL, SOCIAL, HEALTH AND SAFETY AND LABOR IMPACTS AND RISKS

A. Description of Management Systems and Plans

- 5.1 All of the solar plants will operate under the same ESMP, which will be developed according to the requirements established by the Chilean legislation and in line with the Bank's policies regarding Environmental Management Systems. The ESMP will include regular monitoring of the facilities and semi-annual reports will be prepared during construction concerning noise, air emissions, traffic issues, waste management, health, safety and labor performance, as well as other issues. Detailed logs will be maintained to document worker trainings, worker health certificates, work site incidents and accidents, waste registers, and vehicle maintenance. A semi-annual report will be provided to the Bank during construction and annual reports will be provided during operations.
- 5.2 The most relevant social activities implemented by Solarpack to develop a good relationship with the local communities include:
- i. **Public Consultations.** The Project has already conducted one public consultation with community members, including indigenous groups, and local authorities. The consultation session was conducted by the Universidad de Arturo Prat and provided an opportunity for interested people to learn about the project and have their doubts and concerns addressed by company representatives. The Project plans to conduct at least two more public consultation meetings, one before construction activities commence and one during construction. The Project will also attempt to include at least one female from the Universidad de Arturo Prat to attend future consultations to make female participants feel more comfortable and therefore more likely to voice any opinions or concerns.
 - ii. **Grievance Mechanism.** The Project will implement a Grievance Mechanism to allow stakeholders an opportunity to voice their opinions, concerns, complaint, or comments outside of the public consultation meetings. These comments will be recorded, as well as the Project's responses to these comments. Issues will be tracked to determine how the Projects respond to complaints and works with the complainant to resolve outstanding issues.
 - iii. **Community Relations Plan.** The goal of this Plan is to establish community participation mechanisms and build positive relationships with interested groups to avoid or minimize potential social conflict situations during project execution. This plan provides both a general framework and specific procedural guidance for a continuous dialogue between the local population and representatives of the company.
 - iv. **Potential Social Programs.** Solarpack is in active consultation with local authorities and community groups to identify potential social programs to support in the area.

Solarpack will give precedence to social programs or projects which benefit women, children, and indigenous communities.

B. Monitoring and Supervision

- 5.3 This project includes different levels of supervision. The most relevant ones include (i) Internal project supervision, within the corporate structure of Solarpack and defined within the ESMP; (ii) Bank supervision, carried out regularly by the project team with the support of specialized consultants as needed; and (iii) inspections from the Superintendent for the Environment, an entity of the Chilean Government responsible for enforcement of compliance with environmental laws and regulations. The Bank will conduct a supervision mission following construction activity or near the end of the construction phase unless monitoring reports indicate a need to conduct an earlier supervision mission.

C. Indicators

- 5.4 In the case of environmental indicators, the projects will be assessed in terms of compliance with the IDB Safeguard Policies and compliance with local regulations. The annual report provided by the Borrower will detail vital information including calculated reduction of CO₂ emissions. Based on current energy production in Chile, the Pozo Almonte and Calama Projects, combined are expected to create a reduction of over 56,000 tons CO₂/year; the development goal is a combined reduction of 43,500 tons CO₂/year (for the Pozo Almonte 2 and 3 projects only). Carbon reductions will be directly related to the amount of energy generated, of which, a goal of 60 GWh has been established.
- 5.5 In the case of the social support programs, potential projects or programs must be identified through consultation with local authorities and community groups. Following project identification, a chronogram of activities will be developed which will include a list of components, specific activities for each component, and expected results. Results of the social programs will be reported in the semi-annual environmental and social monitoring reports

VI. REQUIREMENTS TO BE INCLUDED IN THE LEGAL AGREEMENTS

- 6.1 Based on the ESDD conclusions, the conditions described below are required to be fulfilled for the Project prior to loan approval/financial close and throughout the life of the loan, in form and substance satisfactory to IDB:

Throughout the Life of the Loan

- 6.2 The IDB will require within its Loan Agreement that the Project and each Project party (Sponsor/Borrower/Company) and other Project/Environmental parties, including construction companies and operators, and any contractors and sub-contractors will, at all times during the life of the Loan Agreement, comply with the following requirements:
1. All applicable environmental, social, health and safety, and labor regulatory requirements of Chile.
 2. All requirements associated with any environmental, social, health and safety, and labor related permits, authorizations, or licenses that apply to the Project, the Borrower or any party responsible for executing the Project or its mitigation measures.
 3. All environmental, social, health and safety, and labor requirements of the Project contracts and any subsequent modifications.
 4. All aspects and components of all of the Project's environmental, health and safety, social and labor documents.
 5. All relevant IDB policies such as the Environment and Safeguards Compliance Policy (OP-703), the Disaster Risk Management Policy (OP-704) and the Disclosure of Information Policy (OP-102), the Involuntary Resettlement policy (OP-710), the Operational Policy on Indigenous Peoples (OP-765) and the Gender and Equity in Development Policy (OP-270) and their respective guidelines.
 6. Comply with all the requirements indicated in the Environmental, Health and Safety Action Plan.

Prior to First Disbursement

- 6.3 The Project will develop and implement a project specific ESMP to assess, mitigate the negative impacts associated with the Project. The ESMP will include a defined monitoring and supervision regime. All project contractors will also be required to comply with the actions described in the ESMP.
- 6.4 The Project will appoint an Environmental and Social Specialist (new hire or designate existing employee) for the duration of the construction period to prevent and manage potential impacts and supervise and monitor mitigation measures. Solarpack shall present to the Bank an updated organizational chart illustrating roles and responsibilities throughout the project cycle.
- 6.5 The Project will conduct community engagement activities with local authorities and community groups to identify and implement potential social programs. The Project will look specifically to support social programs directed at benefitting women, children, and indigenous groups.

- 6.6 The Project will develop and submit to the Bank an Emergency Response Plan / Contingency Plan / Evacuation Plan.
- 6.7 The Project shall demonstrate to the Bank that all pending land use permits have been obtained. Copies of relevant permits, contracts, and agreements shall be submitted to the Bank.

Prior to Each Disbursement

- 6.8 The Sponsor/Borrower/Company shall certify compliance with all environmental social, health and safety and labor requirements in the loan agreement, including any Corrective Action Plans if applicable.

Prior to Construction

- 6.9 Solarpack shall develop and implement a grievance mechanism that corresponds to best industry practices (IFC Good Practice Note, Addressing Grievances From Project-affected Communities, dated September 2009) for the public, including those affected by the transmission lines.
- 6.10 Solarpack shall incorporate into all contractors' contracts clear regulations and penalties for non-compliance with policies, plans and programs (including mitigation measures) adopted by the company. This will include clear procedures and timing for reporting environmental, health and safety related incidents/accidents and a specific monitoring program to assess causes of incidents/accidents and track performance of the corrective measures. The Company shall provide evidence of supervision and oversight of the contractors.
- 6.11 The Project shall present report detailing the remediation and protection of the various cultural sites and present final clearance from Government to IDB. The report shall also detail the establishment of a Chance Find Procedure to be implemented throughout the construction period.

Prior to Operations

- 6.12 The Project will develop and implement a project specific ESMP for Operations to assess, mitigate the negative impacts associated with the Project during the operations phase. The ESMP will include a defined monitoring and supervision regime. All project contractors will also be required to comply with the actions described in the ESMP.
- 6.13 The IDB or an E&S consultant appointed by the IDB shall certify compliance with all E&S requirements of the loan agreement including any Corrective Action Plans if applicable.

PHOTO LOG – POZO ALMONTE SOLAR PLANTS



Figure 1: Pozo Almonte 2 northern border



Figure 2: Pozo Almonte 2 southern border



Figure 3: Pozo Almonte 2 transmission line alignment



Figure 4: Pozo Almonte 3 northeast corner



Figure 5: Pozo Almonte 3 southwest corner



Figure 6: Pozo Almonte 3 wash area



Figure 7: Pozo Almonte 3 transmission line alignment



Figure 8: Existing substation both projects will connect to