Atacama Solar S.A., Chile

Environmental and Social Impact Assessment Summary

November 13, 2015

Report prepared on behalf of
Atacama Solar S.A. by Prizma LLC

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Atacama Solar S.A., Chile Environmental and Social Impact Assessment Summary, November 13, 2015

Prepared for

Atacama Solar S.A.

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Cover photo

Atacama Solar's existing pilot plant, near Pica, Chile (October 2015)

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List of Acronyms

BOOT	Build, Operate, Own and Transfer
CDP	Clean Development Mechanism
CONADI	Chile's National Corporation for Indigenous Development
DIA	Environmental and social impact declaration
EMF	Electric and magnetic fields
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
EPC	Engineering, procurement and construction
EP	Equator Principles
EPFI	Equator Bank Financial Institutions
EHS	Environment, health and safety
GIIP	Good international industry practice
ha	Hectares (10,000 square meters)
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
NTP	Notice to Proceed
NTS	Non-technical summary
OHS	Occupational Health and Safety
PDD	Project Design Document Form (for CDM)
PS	Performance Standards
RCA	Resolution of Environmental Qualification (environmental approval)
ROW	Right of way
SING	*Sistema Interconectado del Norte Grande* (Grand North Interconnected System)
UNFCCC	United Nations Framework for Climate Change Convention
VEC	Valued environmental and social component

1.0 Project Description

1.1 Background

Prizma LLC, an independent environmental and social advisory practice, was engaged by Sonnedix Group's Atacama Solar PV Project (the Project) to complete an independent environmental and social review of the Project to satisfy the Equator Principles, and develop certain documents and plans. These include this Environmental and Social Impact Assessment (ESIA) Summary. The biographies of the key authors of this ESIA Summary are presented in Appendix 1 and additional information about Prizma is available on its website: www.prizmasolutions.com.

1.2 The Project

The Atacama Solar Project, Chile (the Project) consists of the construction of

(i) a large scale (up to 250 MW_{AC}), greenfield, and phased solar photovoltaic power plant to generate electricity as detailed in Table 1 further below; and

(ii) a new 43 km transmission line that connects the solar plant to the existing Lagunas Substation which is which is a major node to the Grand North Interconnected System (*Sistema Interconectado del Norte Grande* – SING) of Chile.

The developer has also secured certain additional land rights at the Project site which can be used to add a further 250 MW_{AC} for a grand total of 500 $MW_{AC.}$ However, such an expansion has not been subject to engineering, impact assessment, permitting or financing at this time.

Table 1: Phased development of the Atacama Solar Project

Project Phase	Capacity	Status
Phase I (Pilot phase)	0.6 MW	Completed in 2014, awaiting connection to the grid
Phase II	142.5 MW	In documentation & financing stage, construction anticipated to commence in Q1/2016
Phase III (expansion)	107 MW	In development stage

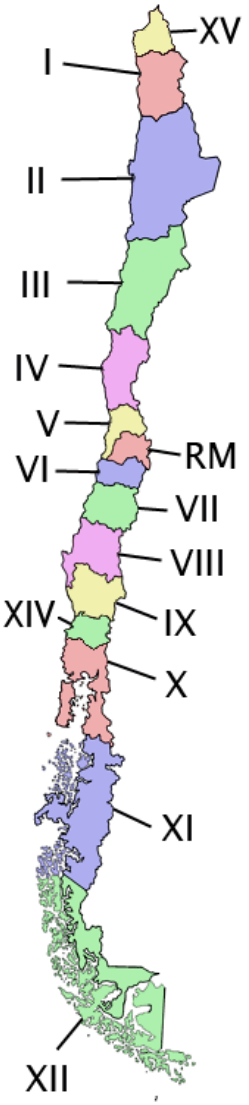
Note: The project phasing contained in the approved DIA consisted of 50 MW stages to be built in annual intervals. The Project also involves the construction of a 45.5 km long 220kV transmission line using, which is part of the approved environmental and social impact declaration (DIA in its Spanish acronym), and also discussed in this ESIA summary.

1.3 Project Siting

The Project is located in the Province of Tamarugal in Chile's Tarapacá Region (Region I). The site is located approximately 1,400 km north of the Chile's capital city of Santiago in the Atacama Desert. The site is located at an elevation of 1,030 m in a sparsely populated region of the Atacama in Northern Chile, known to be one of the driest regions in the world. This area also exhibits some of the highest solar radiation levels in South America.

The solar plant and associated facilities will be constructed on flat desert land with few biological resources. The pilot site is currently connected via an approximately 2.5 km dirt road to existing, paved road system (A-665) and further on to the Pan-American Highway. The site of the solar plant is located at a distance of ca 5 km from the nearest citrus plantation, and 9-12 km to the communities of Matilla and Pica (population approximately 4,000). The latter is known as an “oasis town in the desert”, famed for its communal spring and citrus fruits making this area a regional tourist destination. The town features approximately 300 formal (registered) beds and an estimated additional 500+ beds to accommodate tourists.

Figure 1: General project location (Chile, Region I)



Note: Distance from Iquique (regional airport, port connections) to Project is approximately 120 km via paved roads. Planned transmission line shown in dark green connecting to existing Lagunas Substation (V20). Communities around solar park (red square) based at distance of 7-12 km (below).

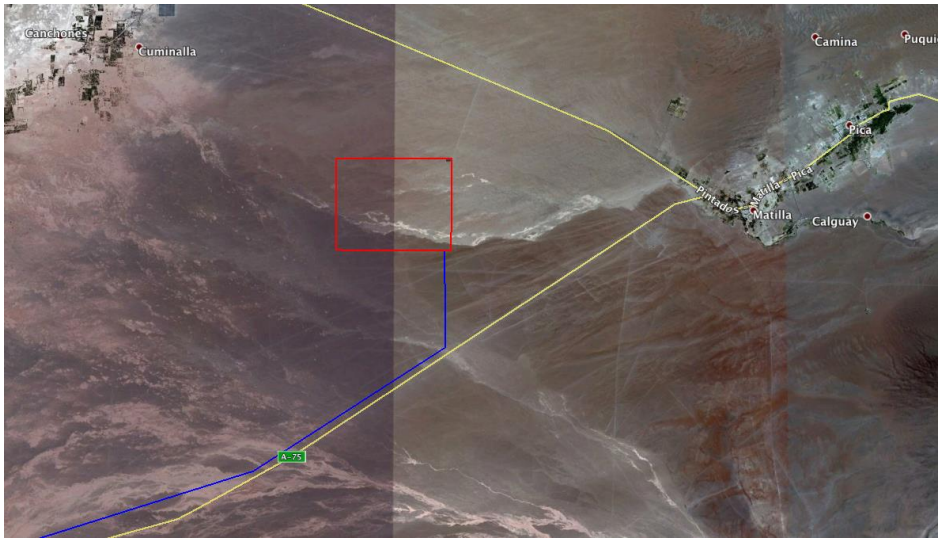


Figure 2: Location of Project's planned transmission line crossing the Pampa del Tamarugal National Reserve largely along existing overhead power lines and/or roads

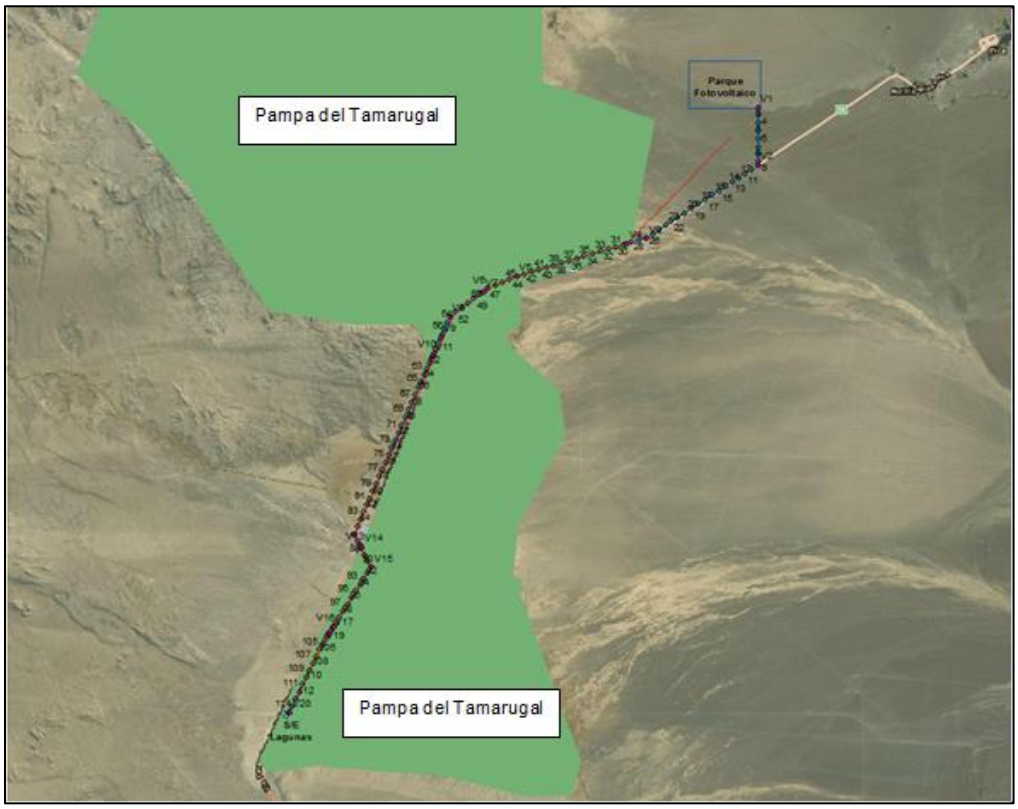


Figure 3: Location of Project's transmission line (double black lines), the Pintados Geoglyphs (including within yellow polygon), existing transmission line (green) and roads (yellow lines)

The Project will occupy an area of approximately 1,128.6 ha. This includes approximately 1,000 ha for the solar park and 128.6 ha for the 45.5 km long transmission line. The latter will be largely constructed alongside of existing overhead transmission and distribution lines, and/or roads. This includes sections crossing the *Pampa del Tamarugal* National Reserve, which comprises a protected area extending over 102,264 ha. The reserve features remaining and replanted forests of the genus Prosopis (primarily Prosopis tamarugo), Pintados Geoglyphs and other historic ruins.

Land required for the Project has been leased from a single land owner, the government of Chile, for a period of 30 years. The Project site does not feature residents or productive land use, such as agriculture or animal husbandry. Due to its favorable siting within an unproductive desert lacking other land users, the Project development is not expected to generate physical or economic resettlement impacts.

1.4 Selected Technology

The objective of the Project is to utilize the abundant solar radiation in the Atacama Desert as an energy source to generate electricity without greenhouse gas emissions. The Project will include solar panels, 380-volt backup diesel generator, control room and offices, 23/220 kV substation with transformers, DC to AC power inverters, and a new 45.5 km long 220 kV transmission line connecting the solar park with the existing Lagunas Substation. The Project DIA calls for the installation of approximately 4,000,000 solar modules for a total installed capacity of up to 250_{ac} MW. Using higher capacity panels (315Wp), the project is expected to install substantially lower number of panels (ca 1,000,000 for Phase II).

Installation of the pilot project (600 kW) began on August 14, 2014. The technology employed by the Project will reduce greenhouse gas emissions by an estimated 410,807 tons of CO_2 e per year attributable to the generation of 522,358 MWh/year for the total installed capacity of 250_{ac} MW.

While the 0.6 MW Phase I pilot project utilized fixed structures, it is expected that the remaining phases of the Project will use single equatorial axis sun tracking technology which are simple to install and maintain. This technology is appropriate for large flat terrains without excessive winds.

Equipment providers will be selected from among the major suppliers worldwide. Given the size of the Project, a mix of different PV modules may be used. The Project will feature polycrystalline modules of 310 Wp or above from leading brands. The Project will feature central type inverters of 1 MW or above. The Project will use a monitoring system from Skytron, a system already being utilized by Sonnedix.

1.5 Project Sponsors

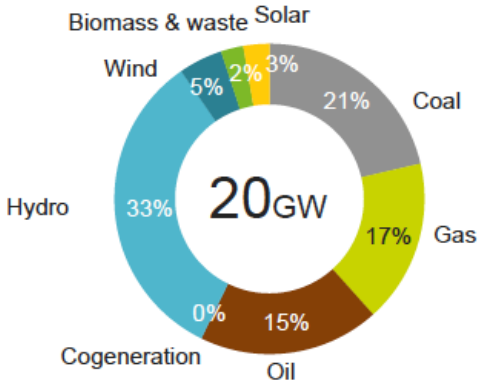
The Project is being developed by Atacama Solar S.A. (Atacama Solar), a subsidiary of Sonnedix, which is a solar photovoltaic independent power developer and producer, incorporated in Chile. As of August 2015, Sonnedix operated and/or has mechanically completed 22 power plants with 126 MW of installed capacity. Sonnedix owns and is developing controlling interests in 39 solar parks, comprising 805 MW of generating capacity either operating, under construction, in documentation and under development located in nine countries, including: Chile, France, Italy, Japan, Puerto Rico (USA), South Africa, Spain, Thailand and the UK. Sonnedix is also seeking further pipeline opportunities of approximately 1.5 GW to reach a target of 2 GW+ of installed capacity by 2020.

1.6 Energy Needs

Following reforms in the early eighties, the Chilean power sector now is almost entirely privatized. The sector includes three types of participants: generators, transmitters and distributors with different regulations regarding rights and obligations, operation and pricing. Generation and supply are subject to market competition, while transmission and distribution, given their character of a natural monopoly, are subject to price regulation. The use of transmission and distribution facilities by a supplier requires the payment of the corresponding transmission or distribution charges, which are subject to regulations.

Chile's current electricity generation mix consists mainly of coal, gas and hydro, which together account for over 70% of the electricity generation mix. The complete generation mix in Chile as of 2014 is presented in Figure 2.

Figure 2: Chilean Electric Generation Mix (2014)



Following the Argentinean gas supply curtailment starting in 2004, gas has been partially substituted by oil, coal and renewables. In 2013, the country approved the energy mandate to rise renewable electricity generation to 20% by 2025. As of July 31st, 2015, Non-Conventional Renewable Energy (NCRE) amounted to 2,170MW, representing only 10.8% of the country's total generating capacity. Solar PV generation is expected to increase to 6.2 GWh in the SIC and to 6.9 GWh in the SING by 2035.

1.7 ESIA Review Status

As part of the environmental permitting process (SEIA in Chile), the developer submitted an environmental (and social) impact declaration (DIA) that included the required baseline studies. The DIA for the Project meets the applicable host country environmental regulations for similar contemporaneous projects, as evidenced by the issuance of the environmental license, the Resolution of Environmental Qualification (RCA) No. 60, dated June 30, 2011, by the Evaluation Committee of the Region of Tarapacá. The RCA covered both the solar park (250 MW) and the associated transmission line (ca 45.5 km). No appeals were lodged against the RCA approval.

Key review comments, questions/requests by the environmental agencies, and other significant Project changes are summarized below.

a. Realignment to the first segment of the transmission line (approximately 10 km in length) was requested by the agency and agreed to by the Project to further reduce impacts. – Status: Project accepted request and is preparing documentation for submission.
b. An additional transmission line modification is being planned to accommodate a Project-unrelated transmission line. – Status: Project is preparing documentation for submission.
c. The planned construction activities changed from, initially, 50WM installation per annum to phasing detailed in Table 1, further above. The change will increase the maximum number of workers required from the original estimate of approximately 100, to an estimated 250+ workers. – Status: Project is reviewing options and will consider accommodation and transportation needs in discussion with EPC and consistent with IFC Guidance[1].
d. Project to develop a training program for workers to raise awareness about the protection of wildlife, including a ban on feeding wildlife, and consider avoiding pets on the premises to reduce risk on wildlife, including Red Fox. – Project has developed an outline training program annexed to DIA.
e. Project agreed to a vegetation monitoring program over 2-years. The study and annual reports will review species richness, frequency and coverage, and conservation status.
f. Environmental agency refers to Indigenous Laws and their application, suggesting consideration of a broader interpretation. – Developer refers to the DIA and Addendum 1, which highlights that the Project is not located within the indigenous development area of Jiwasa Oraje. The development does not involve any physical or economic resettlement impact for the local community (indigenous or otherwise). Archeological review did not identify impacts on any cultural resources. Project has developed a Stakeholder Engagement Plan which will cover local communities, including those who self-identify as being indigenous.

Other changes include the selection of alternative solar panels and use of single equatorial axis sun tracking technology, both designed to increase power generation. The Project is also making some voluntary commitments discussed elsewhere in this report. The projects changes are still subject to documentation and submission of a "Carta de Pertinencia" to the environmental agency to decide if significance of changes (and associated impacts) warrant additional studies/DIA/EIAs. The Project is also required to obtain a series of sectorial/local permits.

1.8 CDM Profile

A Clean Development Mechanism (CDP) Project Design Document Form (CDM PDD) has been generated for the Project and filed (disclosed) with the United Nations Framework for Climate Change Convention (UNFCCC).[2] Associated stakeholder engagement activities are summarized elsewhere in this ESIA Summary.

[1] Workers' accommodation: processes and standards. A guidance note by IFC and the EBRD (2009)
[2] See: http://cdm.unfccc.int/Projects/DB/CarbonCheck_Cert1356631676.24/view.

Subsequently, Carbon Check (Pty) was commissioned by the developer to issue a Validation Opinion report by conducting an independent review of the Project Design Document, the project's baseline study and monitoring plan and other relevant documents using the UNFCCC criteria for the CDM.

Carbon Check's Validation Opinion, dated 27 December 2012, noted that the project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. The report highlights that the host party, Chile, fulfills the participation criteria, Chile's Designated National Authority has approved the project and confirms that the project assists in achieving sustainable development.

The total emission reductions from the project are estimated to be 2,054,039 tCO_2e over a seven-year (renewable) crediting period, averaging 293,434 tCO2e annually. This assumes project implementation in 50MW annual phases and total generation of 522,358 MWh/year once fully completed (250 MW).

1.9 Equator Principles Categorization

As detailed further in Section 2.7, the Atacama Solar Photovoltaic Power Solar Park Project is a Category B type project (individual phases and combined, including transmission line) due to the generally limited environmental and social impacts that may result from constructing and operating the solar power generation and transmission facilities. Category B projects are defined as those likely to have limited adverse environmental or social risks and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures. This Category B classification of the Atacama Solar Project is also consistent with other solar PV projects in the Atacama Desert, which have been financed by multilateral and bilateral lenders and agencies, including the IFC, OPIC and DEG (see also Table 2, page 15).

2.0 Regulatory Framework

2.1 Generation License

The Project received environmental approval by the Evaluation Committee of the Region of Tarapacá, by Resolution of Environmental Qualification (RCA) No. 60, dated June 30, 2011. The RCA covered both the solar park (up to 250 MW) and the transmission line. No appeals were lodged against the RCA within the legal time limit. A number of Project modifications are currently being documented for a submission of a "Carta de Pertinencia" to the environmental agency which, in turn, will need to decide if significance of changes (and associated impacts) warrants additional studies/DIA/EIAs. The Project is also required to secure a series of sectorial/local permits.

2.2 Key Environmental Regulatory Framework

Chilean environmental policies are based on the 1994 Environmental Act, Law 19.300 (*Bases Generals del Medio Ambiente of LBGMA)*, and amendments made by Law 20.417, which created the Ministry of the Environmental Assessment Service (*Ministerio, el Servicio de Evaluación Ambiental*) and the Superintendence of the Environment (*Superintendencia del Medio Ambiente*).

This legislation requires that projects or activities, dependent upon their characteristics, location and magnitude, may only be implemented or modified following an assessment of their environmental impacts. Such projects or activities are identified in Article 10 of the LBMA and Article 3 of the supplemental regulations on the Environmental Impact Evaluation System (SEIA). The owner of any project or activity subject to the SEIA is required to file an Environmental Impact Statement (*Declaración de Impacto Ambiental or DIA)*, unless the project generates or includes any of the effects, characteristics or circumstances contemplated by Article 11 of the LBMA, in which case a more elaborate Environmental Impact Study (EIA) must be filed.

The DIA is a simplified document, which, if approved, results in the issuance of final environmental regulatory approval, i.e. the *Resolución de Calificación Ambiental (RCA)* for a project. If the activity or project is approved, the RCA will not only contain the environmental permit for the activity itself, but also the environmental permit for all directly associated facilities and activities of the project. However, one or more sectorial permits may be required, allowing the corresponding sector specific authority to verify that the analyzed project will comply with the requirements approved by the RCA. This overall environmental regulatory process is referred to as a "single window system", as the project owner obtains all required environmental approvals for a project through a single approval document (that is, the RCA).

Under the new statute for the SEIA, there are two kinds of sectorial permits:

1. Permits with only environmental content. The favorable RCA authorizes all sectorial authorities to grant these permits if the requirements and conditions of that RCA are met.
2. Permits with both environmental and non-environmental content. The favorable RCA will verify compliance with the environmental requirements. The sectorial authorities will grant the permit

if the non-environmental requirements are met, without imposing any additional requirements or conditions not considered within the RCA.

The RCA's approval of a project lasts for five years. If the permit holder does not begin construction of the project during this time period, the permit will expire.

Specific statutory requirements applicable to the Project are summarized below.

- Air
    - Supreme Decree (S.D.) No. 55/94 - Emission standards for heavy motor vehicles
    - Legal Decree (D.F.L.) No. 725 of 1967 – Code of Ministry of Health
    - S.D. No. 75 – Code of Ministry of Transport and Telecommunications
    - S.D. No. 144/61 – Ministry of Health emissions standards
    - S.D. No. 59 – Ministry of General Secretariat of the President, establishes standards for Reparable Particulate Matter (PM10)
    - S.D. No. 47 – Ministry of Housing and Urban Development, revisions to general ordnance for urbanization and construction
- Noise
    - S.D. No. 146 - Ministry General Secretariat of the Presidency, establishes maximum noise level for stationary sources
- Workplace Health and Safety
    - S.D. No. 594 – Ministry of Health, establishes regulations on health and safety and environmental conditions in the workplace.
- Cultural Heritage
    - Law No. 17.288 of 1970 – Ministry of Education, regulations on national monuments.
    - S.D. No. 484 – Establishes regulations addressing archaeological, anthropological and paleontological resources associated with excavations.
    - Law No. 17,288 of 2015 on National Monuments Related Standards
- Indigenous People
    - Indigenous Law No. 19.253 as amended by Law No. 20.117
    - ILO Convention 169 on Indigenous and Tribal People
    - S.D. No. 124 of 2009 – Regulation on the application of Article 34 of Law No. 19.253
- Fauna and Flora
    - Law No. 19.473 of 1996 – Ministry of Agriculture
    - Resolution No. 223 of January 23, 1995 – Requiring the control of rodent pests
    - Law 19.283 which establishes regulations on agriculture and livestock and repeals Law No. 16.640 and other provisions
- Roads and Transportation
    - Decree of Law No. 850/98 – Establishes Ministry of Public Works
    - S.D. No. 75 – Establishes conditions for the transport of cargo
    - S.D. No. 298 – Establishes regulations on the transport of hazardous materials
- Security and Control of Combustible Liquids

    - S.D. No.1 of 2008 – Ministry of Economic Development and Reconstruction, safety regulations on the production, storage, use and transportation of liquid fuels.
- Waste
    - D.F.L. No.725 – Ministry of Health, establishment of health code
    - D.S. No 148/2003 – Ministry of Health, approves regulations on the management of hazardous waste from sanitary facilities.
- Hazardous Waste
    - D.S. No. 78/90 – Ministry of Health, regulation on the storage of hazardous materials
- Drinking Water
    - S.D. No. 594 of 1990 – Ministry of Health, establishes regulations on basic sanitary and environmental conditions at the workplace
    - D.F.L. No. 1.122 – Ministry of Justice, establishes water quality standards
    - Chilean Norm No. 409 – Ministry of Health, establishes physical, chemical, bacteriological and radiological standards for potable water
    - S.D. No. 735 – Regulation of water services for human consumption repealing Decree No. 1132 of May 3, 1052

Chile has also ratified the core International Labor Organization (ILO) labor conventions, including:

- ILO Convention 87 on freedom of association
- ILO Conventions 29 and 105 on elimination of forced and compulsory labor
- ILO Conventions 100 and 111 on elimination of discrimination in respect of employment and occupation
- ILO Conventions 138 and 182 on child labor

2.3 ESIA Process and Permitting

Because of the limited impacts associated with the Project and the characteristics of the project site, a DIA was submitted for the Project on January 26, 2011, and the RCA (approval) granted by the Evaluation Committee of the Region of Tarapacá on June 30, 2011. The RCA stated that the Project was in compliance with all applicable environmental regulations including those specified in the sectorial environmental permits in accordance with Articles 91, 94, 96, and 99 of the SEIA.

A number of Project modifications are currently being documented for a submission of a "Carta de Pertinencia" to the environmental agency which, in turn, will need to decide if significance of changes (and associated impacts) warrants additional studies/DIA/EIAs. The *Carta de Pertinencia* for the Project is expected to be finalized and submitted in November 2015. The review *Carta de Pertinencia by the* environmental agency is expected to last between 2-3 months.

2.4 Decommissioning

The productive life expectancy of the solar park is estimated to exceed 25 years. In general, the environmental and social impacts of decommissioning of solar projects are not believed to exceed the impacts associated with the construction phase. The Project is expecting to develop a decommissioning plan within five years of completion of Phase II, and update this plan in five-yearly intervals thereafter.

Typical aspects covered in such plans include conversion, removal, recycling or safe disposal of electrical equipment, solar modules, mounting systems, buildings and other above and below ground facilities, and site restoration.

2.5 Sustainability Policy

Atacama Solar is in the process of adopting the following Environmental and Social Policy and related objectives to help guide the Project to achieve sound environmental and social performance.

Atacama Solar's approach to "sustainability", is consequent with Sonnedix Group international guidelines and takes into consideration not only growth, return on capital and risk management, but also recognizes the need to live in harmony with the economic, social and ecological environments where we operate. This requires that we integrate sustainability into key aspects of our business form planning, construction, operation and through to decommissioning.

The following are our four sustainability objectives for the future:

1. *to mitigate significant negative environmental and social impacts of our activities;*
2. *to engage and collaborate with community stakeholders;*
3. *to respect the rights of our employees; and*
4. *to play a role in advocating clean energy and contribute to Chile's clean energy future.*

In meeting these objectives they would not only continue to act in compliance with applicable Chilean environmental laws and regulations, but also to be guided by Good International Industry Practice, as exemplified by the IFC Performance Standards, the Equator Principles and the OECD Guidelines for Multinational Enterprises.

Realizing of the sustainability policy will be through the development and implementation of Environmental and Social Management Systems (ESMS), which will be tailored to the risk profile of the projects and operations.

2.6 Equator Principles & Categorization

Projects proposed for financing by leading Equator Bank Financial Institutions (EPFI), Multilateral and Development Financial Intuitions, and Private Equity Funds are typically categorized as A, B or C (see further below) based on the magnitude of the projects' potential environmental and social risks and impacts.

This process is based on the environmental and social categorization process of the International Finance Corporation (IFC, part of the World Bank Group). This approach assists lenders and investors by ensuring that the environmental and social due diligence process applied is commensurate with the Project's nature, scale and development stage, and with the level of environmental and social risks and impacts. The categorization also assist in determine related disclosure, monitoring and reporting requirements which apply to both the Project and the investors.

The categories are defined as follows:

- Category A – Projects with potential significant adverse social or environmental impacts that are diverse, irreversible or unprecedented
- Category B – Projects with potential limited adverse social or environmental impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures
- Category C – Projects with minimal or no social or environmental impacts

In September and October 2015, Prizma conducted a site visit, reviewed relevant project documents, and met with the Chilean-based developer and DIA consultants. In Prizma's opinion, the Atacama Solar Photovoltaic Power Solar Park Project is a Category B type project (each and all combined phases, including transmission line). In Prizma's opinion, the Project – despite its significant scale – features generally limited and/or manageable environmental and social impacts that may result from constructing and operating the solar power generation and transmission facilities. This Category B classification of the Atacama Solar Project is also consistent with other solar PV projects in the Atacama Desert which have been financed by multilateral and bilateral lenders and agencies.

Table 2: Selected solar PV projects financed by DFIs in the Atacama Desert

Project Name	Scale (location)	Category	Co-investors include
Pozo Almonte and Calama Solar PV Project (Solarpack)	26.5 MW, US$82.7 million (<50 km to Atacama Solar)	B	IDB, Canadian Climate Fund
La Huayca II (Selray and Saferay)	30 MW, US$67 million (ca 15km from Atacama Solar)	B	IFC, DEG
Llano de Llampos/ SunEdison	50 MW, US$142 (Copiapo)	B	IFC
PV Salvador (SunPower/Total, Etrion/Solventus)	70MW, US$221 million (Diego de Almagro)	B	OPIC
SunEdison CAP (Amanecer Solar)	100 MW, US$267 million (Copiapo)	B	IFC, OPIC
Luz del Norte (First Solar)	141 MW, US$366 million (60 km NE of Copiapo)	B	IFC, OPIC

In addition to categorization, responsible investors also apply and benchmark certain projects against the 10 Equator Principles listed below:

Principle 1: Review and Categorization
Principle 2: Environmental and Social Assessment
Principle 3: Applicable Environmental and Social Standards
Principle 4: Environmental and Social Management System and Equator Principles Action Plan

Principle 5: Stakeholder Engagement
Principle 6: Grievance Mechanism
Principle 7: Independent Review
Principle 8: Covenants
Principle 9: Independent Monitoring and Reporting
Principle 10: Reporting and Transparency

Chile is the only South American country, which is a member of the OECD (since 2010) and is, therefore a so-called "Designated Country"[3] as defined by the Equator Principles. This means that Chile is deemed to have robust environmental and social governance, legislation systems and institutional capacity designed to protect its people and the natural environment.

For projects located in "Designated Countries", the Equator Principles assessment process requires the evaluation of compliance with relevant host country (Chilean) laws, regulations and permits that pertain to environmental and social issues. By definition of the Equator Principles, host country laws are deemed to meet the Equator Principles requirements of environmental and/or social assessments (Principle 2), management systems and plans (Principle 4), Stakeholder Engagement (Principle 5) and, Grievance Mechanisms (Principle 6).

In terms of the remaining Equator Principles, this report contains the Categorization (Principle 1), identifies key Applicable Environmental and Social Standards (Principle 3), and provides an Independent Review (Principle 7). The Stakeholder Engagement Plan (Principle 5) and a Grievance Mechanism (Principle 6) are provided in a separate document.

The Equator Banks will incorporate relevant environmental and social Covenants (Principle 8) in loan and/or subscription agreements, and decide about Independent Monitoring and Reporting requirements (Principle 9), typically deemed necessary for projects of this scale.

Equator Principle 10 related requirements on Reporting and Transparency which are relevant to the developer are being met through the development and implementation if a Stakeholder Engagement Plan, which will complement previous web-based disclosure of the DIA, along with local stakeholder engagement and web-disclosures, conducted under the UNFCCC's Clean Development Mechanism for the Project. Additional disclosure requirements relating to financing institutions are not covered in this report.

[3] The Equator Principles' Designated Country comprises the following: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan Korea, Rep., Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States (see www.equator-principles.com, querry 24 Sept 2015)

3.0 Environmental Baseline

3.1 Climate

The Project is located in the Atacama Desert in northern Chile, one of the driest areas in the world. The project site is located in a region referred to as "Pampa" which is characterized by an arid desert climate, with clear skies, low humidity and minimal precipitation. Rainfall typically occurs during Chile's summer months of December to March and averages less than 30 mm on an annual basis. Temperatures at the project site range from 0° to 25° C.

3.2 Solar Resources

The Project is located in the Atacama Desert in northern Chile in an area with the highest level of solar radiation in South America (estimated irradiation of 3,358 kWh/m^2).

3.3 Air Quality

Air quality in the general area of the project site is considered good, due in part to the absence of emission sources. No significant major sources of stationary or mobile emissions were identified in the study area. Elevated concentrations of particulate matter and PM10 can result from the action of wind on the dry soils and sands.

3.4 Natural Disasters and Seismicity

Major earthquakes in Chile occur in a small number of source areas. Those affecting coastal regions are generally aligned offshore from Concepción southward. The site is approximately over 70km from the cost and is not subject to risk from tsunami.

Relevant design standards used in Chile are:

- IEEE Std 693-2005, Recommended Practice for Seismic Design of Substations (for inverters)
- NCh 2369.Of2003, Chilean Norm for seismic design of structures in industrial facilities (for racking systems)

The robust nature of the transmission line structure is evidenced by the limited impact and response times following major earthquakes in Chile. It is understood that Transelec, one of the main supplier of high voltage transmission systems in Chile, experienced only two collapsed towers as a result of the major earthquake on 27 February 2010 which registered 8.5 on the Richter scale. These towers were replaced/repaired after one day.

While the possibility of seismic activity at or near the project site exists, it is not considered to be a major risk factor given the relatively simple and structures required to build a solar PV plant and the associated transmission line.

The Project area is characterized as flat (uniform slope, around 2% in direction east to west), with very little precipitation and, therefore, low risk of floods.

3.5 Surface Waters

The Project area is located in the Atacama Desert, a highly arid region with very low rainfall. There are no permanent surface water bodies associated with the project site. Although evidence of a small number of (dry) ephemeral seasonal surface flows are visible on aerial images from the Project site, flooding is not considered to be a material risk for the project.

3.6 Land Use

The project is located in an undeveloped area of flat desert land, the development rights of which have been obtained by the project developer from the Government of Chile, Ministry of National Assets. The site is devoid of any population and productive land use, and does not involve physical resettlement or economic displacement.

As tabulated further below, the nearest communities include the town of Pica and the village of Matilla. These are located at a slightly higher elevation of 1,106 m and, therefore, would be overlooking the planned solar park, which has an elevation of approximately 1,030 m. In 2014, open desert flats - possibly overlapping with the Project site – were used for the first time for a motorized desert rally event organized by the Tourism Department of Pica.

To the west of the site (10-12 km), there is a small settlement of about 20 houses, called "Colonia Pintados" belonging to the municipality of Pozo Almonte, itself located a distance of approximately 15 km from the project site.

Table 3: Communities around the Atacama Solar PV Project

Name	Estimated Population	Approximate Distance to Solar Park (km)	Community (Municipality)
Matilla	1,000?	9	Pica
Pica	4,000	12	Pica
Colonia Pintados	20 houses	15	Pozo Almonte
La Huayca	300	11	Pozo Almonte
Pozo Almonte	10,000	51	Pozo Almonte

Although the Project site is not located within designated indigenous territories, as confirmed also during government agencies' review comments on the DIA, Pica and other communities in the region feature a significant proportion of individuals who would self-identify as indigenous. The nearest productive land use (at an approximate distance of >5km) consists of irrigated plantations (citrus fruits, etc.), and tourism-driven activities and services.

The Project is located within the broader Pica – Salar del Huasco Zone of Touristic Interest (ZOIT). The transmission line generally follows existing roadways, including part of the Pan-American Highway, and

crosses areas of the Pampa del Tamarugal National Reserve. Pampa del Tamarugal National Reserve extends over 102,264 hectares. The major highlights of the Reserve are the artificially planted forests of the genus Prosopis (primarily Prosopis tamarugo), found in the middle of a largely rainless desert, and the Pintados geoglyphs.

3.7 Flora and Fauna

The project site is characterized as flat desert with very little rain-fall and, thus, very little vegetation. Biological resources at the solar park and transmission line alignment were reviewed through the literature as well as on-site inspection and did not highlight the presence of critical habitats.

Figure 4: Image of Caesalpinia aphylla in the Project area (photo credit: KAR Ingineria)

Vegetation in the general area is dominated by *Caesalpinia aphylla* and *Prosopis tamarugo*, both are endemic to Chile and one of them (*Prosopis tamarugo*) is confined to the region of Tarapaca. *Prosopis tamarugo* has an IUCN Red List Category and Criteria of Lower Risk/conservation dependent. This species is only found in northern Chile, particularly in the Pampa del Tamarugal. The current presence of this species in the general area is due in large part to an aggressive planting program to help reestablish the species. The second species found within the area of influence, *Caesalpinia aphylla*, has not been assessed by IUCN.

Field studies of wildlife were conducted at seven stations on the Project site. A total of five species were found, including reptiles (20%), birds (60%) and mammals (20%). Two protected species, Vulnerable: Reptiles *Microlophus atacamensis* and Inadequately known: Mammal *Lycalopex culpaeus* were recorded. Both of these species were found along the transmission line route.

Figure 5: Images of *Prosopis tamarugo (photo credit of KAR Ingineria)*

3.8 Noise

The immediate project area is devoid of any population and associated sensitive receptors. PV solar projects, with the exception of construction, do not emit noise to any significant extent. Construction of the Project will result in temporary noise generation from vehicles and equipment. During operation, noise generation would be limited to periodic maintenance activities.

There are no major existing sources of noise generation near the Project site or the transmission line alignment with the exception of the Pan-American Highway and other road systems, and ambient wind conditions.

3.9 Socio-Economy

Chile is categorized as a High Income OECD Member country[4]. The *comuna* of Pica covers an area of approximately 9,000 km^2 and a population of approximately 6,000. Although the Project site is not located within designated indigenous territories, the local communities feature a significant proportion of the population, which would self-identify as being indigenous. The importance of the Indigenous Population and associated issues was also emphasized during the DIA review process.

In August 2014, the town of Pica established a Bureau or Department of Indigenous Affairs. This Bureau commissioned a survey (report requested but not yet received by Prizma) and has established the following objectives for 2015:

1. Assist in the process of formalization of the Quechua communities
2. Promote and encourage indigenous organizations and their development
3. Increase their participation in local programs and benefits
4. Maintain relations with the national Corporation of Indigenous Development (CONADI).

Due to its geological conditions, Pica features natural springs, historically dug water galleries, and thermal springs. These conditions have made Pica into an oasis in the middle of the desert. This has enabled thriving tourism and agricultural developments.

[4] http://data.worldbank.org/country/chile

Pica's tourism sector is served by approximately 300 registered beds, which are complemented with an estimated additional 500+ beds in the informal sector. The local agriculture features Pica's famed lemons, and other citrus and fruit plantations.

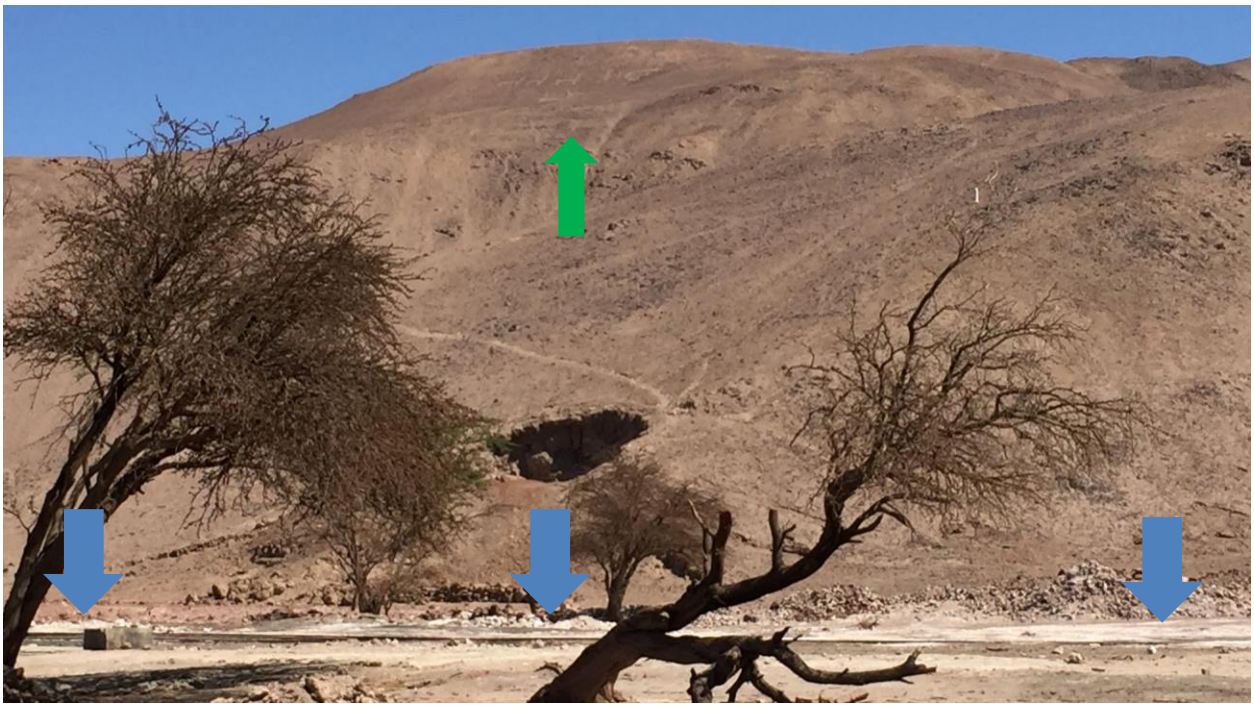
Other local villages that form the commune include Matilla (neighbors Pica), Quebrada Blanca (near Collahuasi mine), Valle Quisma, Cancosa, Lirima , puquio Núñez, Santa Rosa, Collacagua and Ujina.

3.10 Cultural Heritage

No cultural heritage sites or resources were identified that will be directly impacted by the Project. A supplemental archaeological survey conducted to review the transmission line route alignments requested by the environmental agency did not encounter significant cultural resources along the revised transmission line route. Two areas containing pottery shards were located and recommendations were made for the protection of these sites. Also, the transmission line towers numbered 80 through 87 were identified as being located within a potentially sensitive archeological areas requiring monitoring by a trained archeologist during construction.

Figure 6: Access road (looking east) to the Pintados Geoglyphs (example marked with arrow and shown in following figure) area along with Project-unrelated transmission and distribution lines

Figure 7: Example of the geoglyphs (green arrow points to what appears to be lamas and other features) near historic and current nitrate mine and rail tracks (blue arrow)



3.11 Other Developments

The Atacama Solar Project will be developed in sequential phases, and each phase can conceptually be viewed as another development. A number of other solar operations have already been constructed within a radius of approximately 15 – 50 km to the Atacama Solar project. As detailed further in Table 2, these include the IFC/DEG financed La Huayca solar operation (total generating capacity of 30MW) and the IDB/CCF financed Pozo Almonte operation (total generation 25MW). These operations, which have also been featured in the local and national media, provide tangible familiarity about the characteristics of utility-scale solar projects in the region.

During Prizma's site visit in September 2015, survey teams were observed along the 2-lane, paved road between La Huayca and Pozo Almonte, indicating that this existing road may be subject to future resurfacing and/or similar type of improvement. The major, multi-lane highway connecting the region to the regional capital of Iquique appears to have been recently updated, including through the installation and now operating toll stations.

The 2014 Annual Report of the Municipality of Pica identifies relatively small-scale upgrade, beautification, repair and construction projects. The largest of these is a semi-open municipal market in Pica depicted in the following figure.

Figure 8: 3D model drawing of planned market in Pica

4.0 Key Impacts and Mitigation

4.1 Soils, Hydrology & Seismicity

The Project will involve the installation of PV structures and associated facilities that will only require limited surface disturbance and contouring of the project site, which is already located in flat and unpopulated desert area. These activities will result in minor disturbance and impacts to soils.

Construction of the transmission line will result in limited soil disturbances around each of the transmission towers and associated access roads (which do not feature an alternative land use). The transmission line corridor has been adjusted, as requested by the environmental agency, to further reduce its environmental footprint (avoidance of vegetation).

Given flat-laying desert conditions and lack of surface water bodies at the site, the Project does not generate significant impacts to local or regional hydrology. PV structures will be installed on posts. Physical footprint generated by limited number of built structures (such as offices) or other installations will not impede rainwater runoff in any significant way.

The ground around the transmission line structures will be returned to its natural grade and will not impact any surface water flows, if any.

Seismicity risks to the Project, which require simple structures anchored in the ground, are considered to be small. Transmission line structures will be engineered to accommodate local safety specifications. The expected response time to repair any collapsed transmission line structures is typically 24-36 hours.

4.2 Air Quality

The main and temporary source of emissions (SO_2, NO_x, CO and particulate matter) during the construction phase relates to the operation of motorized construction equipment and vehicles at the project site and vehicles on unpaved dirt roads. Prevention measures to be adopted include maintaining the equipment and vehicles in good operation condition and the use of wetting open soil areas at the project site and along dirt roads used by project vehicles.

The impact on air quality during the operation phase will be limited. The main source of particulate matter emissions will be due to limited vehicular traffic on the access and on-site unpaved roads. The Project will have an on-site diesel generator for backup power, which will primarily be used when power from the local distribution system is not available. The backup diesel generator will emit SO_2, NO_x, CO and particulate matter, when in use. Emissions from the backup generator were identified in the DIA and approved under the RCA.

4.3 Water and Wastewater

The DIA estimated maximum water usage during construction to be approximately 192m^3/day (approximately 4-5 large water trucks/day). Approximately 85 percent of the water used during construction will be for wetting of roads for compacting and dust suppression, the remaining fifteen percent will be used for other purposes. The water for the operational phase, which the DIA estimated

to be 150 l/day will be stored in authorized water tanks. The Project will also purchase bottled water for consumption from local authorized contractors.

The DIA was based on 50MW annual construction phases. This is being changed to 142.5MW during Phase II, followed by 107 MW for Phase III. This means that the water needs for Phase II (subject of current financing applications) will also need to be increased.

The Project is currently reviewing the need for and options available to clean the solar panels from time to time in order to reduce yield losses from soiling during operation. Subject to technology to be adopted by Atacama Solar, the required water volume for one round of cleaning of solar panels for Phase II (165MW equating to approximately 1,000,000 m^2 surface area) range from virtually zero, if water-free brushing technology is adopted, to approximately 500m^3 (or approximately 12 water trucks per cleaning) using more conventional cleaning processes. The required water-based cleaning frequency is currently estimated to be up to three times per year, which will require evidence-based adjustments.

A brief literature review[5] indicates that Pica's water sources consist of a combination of springs, galleries and water wells as detailed in the following table. Although the water data – particularly in the agricultural sector – may have changed, it is evident that the water requirements for Atacama Solar would be insignificant and would not be expected to adversely impact the local or regional water balance in a significant way.

Table 4: Pica's water resources and use

Water Source	Volume (m^3/year)	Comments
Project's peak water needs	Max: 70,000 m^3/year	Based on DIA (max 192m^3/day)
Natural thermal spring flows*	1,700,000 m^3/year	Spring flows tend to be stable
Historical man-made galleries*	1,600,000 m^3/year	Gallery flows tend to be stable
Water well abstractions*	1,200,000 m^3/year	1965 data - may have changed

* Date based on 1965 measurements reported in Dingman & Galli, 1965. Geology and groundwater resources of the Pica area, Tarapaca Province, Chile (http://pubs.er.usgs.gov/publication/b1189).

The sanitary facilities for the construction phase will include toilets, sinks, showers and chemical toilets. The chemical toilets will be maintained by authorized contractors. The domestic effluents will be collected, directed to the modular wastewater treatment plant (WWTP) to be installed for both the construction and operation phases, and treated to Chilean standards.

Unless water-free (dry brush) solar module cleaning technology is adopted, the industrial liquid waste to be generated during the operation phase will come from module cleaning. As this effluent will only carry desert dust it will not require treatment and will be allowed to seep into the ground.

The water needed for the construction and operation phases will be provided by authorized water tankers from local sources.

[5] Mehrdad will include reference later

4.4 Noise

The main noise sources during construction will relate to the earthworks, operation of machinery and vehicular traffic. Since there are no communities in the immediate vicinity of the Project, noise impacts are not expected to be a significant concern. Appropriate personal protective equipment (PPE), including noise protection, will need to be adopted by workers, contractors and any visitors during the construction phase.

4.5 Visual Impact

The Project is located within the Pica – Salar del Huasco Zone of Touristic Interest. The visual impact on the landscape by the Project was formally reviewed as part of the approved DIA (Annex L: *Informe Evaluacion Del Impacto Sobre el Paisaje*). The analysis established a relatively low visual quality ranking of the landscape and concluded that Project-induced alterations to the landscape will not be significant.

The Atacama Solar park, located within a flat-laying desert landscape at an elevation of approximately 1,030 m, will be visible from certain elevated viewpoints in Matilla and Pica, which are generally located at a higher elevation of approximately 1,106 m (and a distance of approximately 9-12 km). Visual impacts (including from glint or glare) were not raised as a significant concern during the statutory consultation and subsequent UNFCCC/CDM related stakeholder engagement. Instead, comments received during the engagement process highlighted that the Project was being perceived as an interesting touristic attraction and the developer was requested to provide appropriate sign-posting.

The transmission lines have been largely routed parallel to existing linear facilities (roads and other transmission lines, note also Figure 6 and Figure 7 to see baseline conditions at the *Pintados Geoglyps*) which, will reduce additional visual impacts by avoiding sprawling development.

4.6 Waste Management

The DIA contains a waste management plant. The project modification (Phase II increased from 50MW to 142.5MW) will result in a pro-rata increase in volume of certain wastes during the construction period, off-set by an overall reduction in packaging waste due to reduced number of solar panels to be installed (ca 1 million higher efficiency panels instead of 4 million panels noted in DIA).

In general, the majority of solid waste will be generated during the construction phase. Wastes to be generated during construction include:

- Domestic solid waste (packing materials from various sources, organic materials from the cafeteria/offices, paper and cardboards),
- Medical care waste (from onsite first-aid vehicles) including sharpies, bandages, unused medications that have expired, etc.,
- General construction waste: metal scraps, wood, concrete, plastic and cardboard, used personal protective equipment (PPEs), etc.,
- Potential small volumes of contaminated soil from small spills, used oils, oily rags, used chemicals such as thinners, etc., and
- Light bulbs, batteries, cartridges from printers/faxes.

During construction, an area will be designated for temporary storage of wastes generated at the site. Solid and liquid wastes will be segregated and stored in accordance with their classification and physical properties. All solid and liquid effluents will be transported and disposed of at authorized waste management facilities.

During the operations, the volume of wastes is considered minimal and will result from occasional maintenance of the PV facilities and at the substation. No medical care wastes are expected to be generated during the operational phase.

The potential adverse environmental impacts from the wastes generated during construction, operation and decommissioning activities can be readily and efficiently prevented through the implementation of a waste management plan.

4.7 Hazardous Materials Management

The Project will have minimal use of hazardous materials, which is primarily a consideration during construction activities and associated with fluids and fuels used by construction equipment. During the construction phase, no explosive or toxic materials will be used by the Project for the preparation of the site. Limited amounts of hazardous material will be used during the construction and operation phase of the proposed Project. Any chemical storage containers required for construction activities will be placed so as to minimize the risk of soil and groundwater contamination. Spill kits, absorbent pads or materials, and absorbent sands will be provided near the chemical storage areas at all times in the event of small chemical spills. Any hazardous waste materials generated from construction activities on the site will be safely collected, transported and disposed of at an appropriately licensed waste disposal facility, in accordance with procedures and good practices outlined in the waste management plan.

4.8 Flora and Fauna

Field studies of wildlife were conducted at seven stations on the Project site and two protected species were recorded:

- Vulnerable: Reptiles Microlophus atacamensis (Atacamen Pacific Iguana)
- Inadequately known: Mammal Lycalopex culpaeus (a South American species of wild dog – IUCN status: Least Concern).

Both of these species were also found along the transmission line route. The proposed project will adopt appropriate mitigation measures (including awareness raising and training of workers). Through these measures, the two protected species identified above are not likely to be significantly affected.

The transmission line crosses the Pampa del Tamarugal National Reserve where the major highlights are the existing and artificially planted forests of the genus Prosopis (primarily Prosopis tamarugo). To minimize potential adverse impacts, the transmission line has been routed largely adjacent to existing roads, including part of the Pan-American Highway, which also crosses the National Reserve (and enables tourism).

Analysis of the transmission line structures indicate that no Prosopis tamarugo will be directly impacted by the proposed project, including following the realignments requested by the environmental agency. Alternative routes that would not cross the National Reserve would require a significantly longer distance and likely additional impacts, additional costs and line losses.

The closest National Park to the Project site is the Salar del Huasco National Park, which is located approximately 60 km to the east of the project. Salar del Huasco is a salt flat dotted with ponds and salt marshes, and seasonally partially covered with water. Because of the distance between the Project and the National Park, no adverse impacts are anticipated to occur at the park.

Approximately 15 km of the proposed transmission line route addressed as part of the DIA was requested to be modified by the reviewing agencies. The Project has adopted the requested changes. The changes are relatively small and intended to have the transmission line closer aligned with existing roadways. A subsequent survey of fauna and flora along the revised segments of the line were undertaken in April 2015 and reported in the document *Análisis de Pertinencia de Evaluación de Impacto Ambiental Parque Fotovoltaico Atacama Solar, Flora y Vegetación – Fauna Silvestre*. The results of this analysis showed no fauna was observed within the revised transmission line route. A recommendation was made to relocate one of the transmission line towers to avoid impacts to existing vegetation.

4.9 Traffic

The projections suggest an estimated average 20 daily trips for light vehicles and 8 daily truck trips. Although these numbers are likely to increase due to Project changes (Phase II now 142.5MW instead of 50MW, peak number of workers approximately 250 instead of 100), the Project's adoption of de/acceleration site access ramps requested by the environmental agencies, project location outside of residential areas, along with the existing and generally good quality road system do not indicate that there will be significant adverse traffic impacts associated with the Project.

4.10 Socio-Economy

Overall, the development of the Project, which is located in an unpopulated desert flat, is not located within designated indigenous territories, and will not involve physical resettlement or economic dislocation, will bring positive benefits to the local, regional and national economies due to the following:

- The Project is licensed to generate up to 250 MW of clean, renewable electrical energy with minor environmental and social impacts;
- During construction, the Project will hire mostly local workers and purchase goods and services from local/regional suppliers, to the extent possible, thus providing benefits to the local economy.

The Project does not expect to be using worker camps. Instead, a significant proportion of the approximately 250 peak workers required for the Project are expected to be recruited locally. This will be facilitated by the experience gained in building utility scale solar PV projects in neighboring communities of La Huayca and Pozo Almonte.

Overall, the number of non-local workers (a portion of 250 peak workers) is not considered to add a significant pressure on the local towns of Pica and Matilla. These towns have an estimated population of approximately 5,000. In addition, these towns boast a regionally important tourism industry (natural springs, thermals and other touristic attractions) as evidenced by the presence of 800+ guest beds expected to serve a much larger number of tourists per year.

As noted in Section 3.9, the importance and promotion of indigenous communities has been growing in Chile and also the local communities around the Project. Due to its location and other characteristics, the Project is not expected to have any significant adverse impact on local communities, indigenous or otherwise. Through its Stakeholder Engagement Plan, Grievance Mechanism, and recruitment and procurement processes, the developer is seeking to implement an inclusive construction project and operation.

The Project has entered into a voluntary commitment to provide the following activities associated with the project:

- At the project site, an area with information related to non-conventional renewable energy (NCRE) with an emphasis on photovoltaic solar energy, will be constructed with the objective to educate and raise awareness of tourists and local residents of the advantages of such facilities.
- Collaboration agreements with universities in the region will be carries out, to investigate and develop further NCRE projects.
- Training and employment of workers from surrounding towns will be implemented.
- Agreements with schools to promote studies and expertise on non-renewable energy will be enacted.
- Atacama Solar will also remain open to evaluate proposals that would incentivize the use of renewable energies and help their development in the region.

The Project has also developing a formal Stakeholder Engagement Plan and Grievance Mechanism.

4.11 Cultural Heritage

Based on the results of surveys of both the project site and the transmission line route (including the revised alignment), no cultural heritage sites or resources will be directly impacted by the Project. Existing roads, transmission lines and other infrastructure, including in the areas of the Pintados Geoglyphs, means that the Project is not introducing significant new or additional impacts.

Archeologically sensitive areas along the transmission line route have been identified and construction activities in this area will be subject to monitoring by an archeologist to ensure the application of the Law No. 17,288 of 2015 on National Monuments Related Standards which form the *de facto* chance find procedure for the Project.

Also, no significant concerns were raised in terms of the visual impacts of the Project which will be readily visible as a new landscape feature from certain elevated viewpoints in Pica.

4.12 Occupational Health and Safety

Following the selected of the EPC contractor, an updated health and safety management system (for both construction and operation) aiming to have a zero accident policy and tailored to the Project will need to be developed.

The Project's health & safety program will focus on the prevention of risks related to working under desert/high solar radiation conditions, work at heights, work with live power lines and equipment, fire, exposure to chemicals, exposure to electromagnetic fields, etc.; and will provide and make compulsory the use of personal protective equipment (PPE) including ear protection when workers noise exposure is above 85 dB (A), industrial and dielectric safety helmets, safety goggles, mechanical protection gloves, safety shoes, welding masks, full-body harness, etc.

4.13 Community Health, Safety and Security

The Project is not expected to have a significant adverse impact on the nearest communities which are based at a distance of over 5km (nearest plantation) or greater (Pica and Matilla area: 9-12 km). During the construction phase, the Project will employ an estimated peak number of approximately 250 workers. Of these, a significant number is projected to come from the local communities (which have learned from the construction of a series of other utility-scale solar PV projects in recent years). No significant immigration to the local communities is anticipated.

The EPC contractor(s) to be selected by the Project will develop and adopt an emergency response plan for the construction and operation phases. As part of its emergency response planning, the Project will have trained emergency response personnel at all times and will involve the local authorities, as appropriate.

The lack of presence of communities in the immediate vicinity of the project, lack of physical resettlement impacts, and no expectation of Project-related in-migration suggests limited potential for conflicts. Recalling that Chile is an OECD member and "Designated Country" in terms of the Equator Principles, it is expected that any security to be used by the Project will be guided by applicable law, principles of proportionality, and good international practice. The Project will implement security policies and procedures commensurate to the Project risks, and will conduct training for private security personnel to ensure appropriate conduct (also in terms of Human Rights).

The Project has developed a Stakeholder Engagement Plan along with a Grievance Mechanism to capture and address grievances and complaints.

4.14 Decommissioning

The productive life expectancy of the solar park is estimated to exceed 25 years. In general, the environmental and social impacts of decommissioning of solar projects are not believed to exceed the impacts associated with the construction phase. The Project is expected to develop a decommissioning plan within 5 years of construction of Phase II, which will be subject to updates on a 5-yearly cycle. Typical aspects covered in such plans include conversion, removal, recycling or safe disposal of electrical

equipment, solar modules, mounting systems, buildings and other above and below ground facilities, and site restoration.

4.15 Cumulative Impacts

According to IFC's Good Practice Handbook on Cumulative Impact Assessment and Management, cumulative impacts can encompass a broad spectrum of impacts at different spatial and temporal scales. The valued environmental and social component (VEC) of potential concern and a qualitative assessment is provided in the following table.

Table 5: Qualitative assessment of cumulative impacts associated with Project

Potential VECs	Trigger & Issue	Assessment
Visual impacts	Phased Atacama Solar	Moderate impact level expected
Cultural resources	Phased Atacama Solar	No significant magnification of risks or new impacts, archeological monitoring during construction in higher risk area
Sensitive flora & fauna	Phased Atacama Solar	No critical habitats identified. Flora monitoring for 2 years to enable adaptive management, if required.
Water competition	Phased Atacama Solar vs plantation	Estimated Project water use <1% compared to use by agriculture, residents, tourism
Carbon emission	Phased Atacama Solar and other renewable developments	Moderate positive cumulative impacts supporting Chile's national policy to generate green energy with no CO_2 emissions

The Atacama Solar PV Project development in multiple phases generates cumulative visual impacts by creating an increasingly larger scale solar park readily visible from elevated viewpoints, such as Pica. However, no significant concerns have been raised by the local community or other stakeholder.

The absence of critical habitats and other major developments, relative simple construction characteristics associated with solar park and transmission line aligned with existing infrastructure in flat desert environment, moderate number of temporary workers required (mostly locally based) in an area geared up for much larger numbers of tourists, limited use and presence of significant water resources due to Pica's unique geology, existing electrification, road and other infrastructure and capabilities of an OECD member country, suggest limited adverse cumulative environmental and social impacts.

Positive cumulative impacts are expected from the development of renewable energy resources required to meet Chile's national energy policy.

5.0 Summary of Impacts and Management

5.1 Summary of Environmental and Social Impacts

As detailed in Section 2.6, Chile is an OECD Member and a "Designated Country" as defined by the Equator Principles. This means that, by definition, Chile's host country laws - and projects permitted under such a system - are deemed to meet the Equator Principles requirements of environmental and/or social assessments (Principle 2), management systems and plans (Principle 4), Stakeholder Engagement (Principle 5) and, Grievance Mechanisms (Principle 6). The key environmental and social aspects of the Project and associated mitigation measures and/or action plans, including strengthening of the stakeholder engagement plan and fine tuning the management plans once the EPC contractor/s has/have been selected, are summarized in the following table.

Based on Prizma's review, it is evident that the Atacama Solar Project does not fall into a high-risk category, and risks and impacts identified can be mitigated with standard measures aligned with Good International Industry Practice (GIIP).

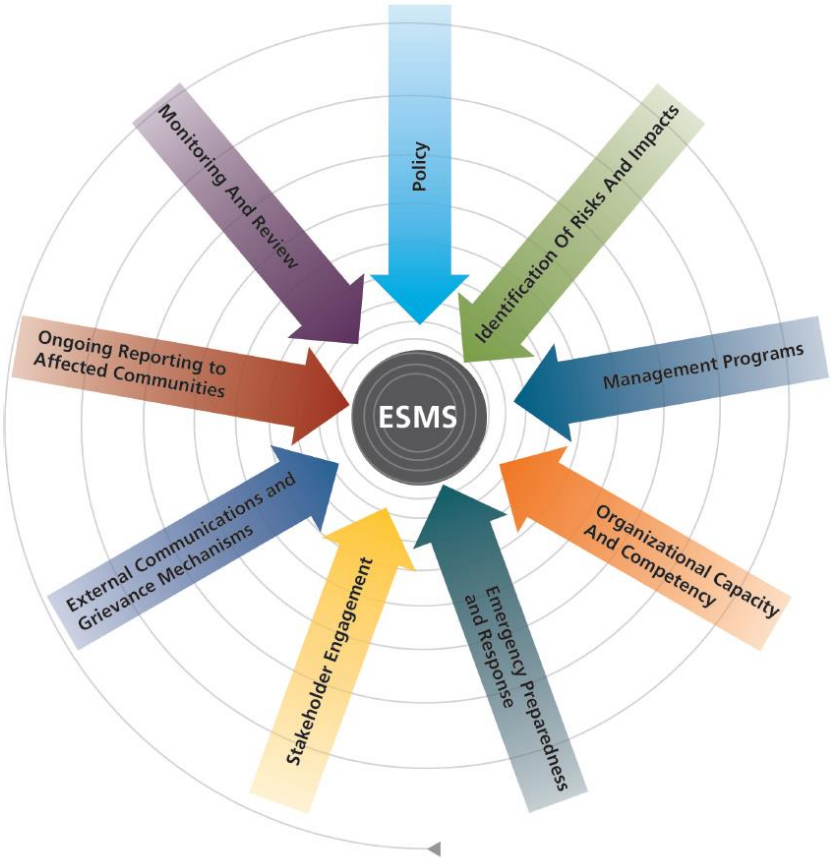
Table 6: Summary of Environmental and Social Impacts

Criteria	Impact Rating	Summary
Soils, Hydrology & Seismicity	Low	The Project will require minor contouring and result in limited soil disturbance. Because of the arid nature of the area, surface water hydrology will not adversely impact or be impacted by the project. Seismicity is not considered to be a high risk for the project, and the site is located far away from coastal areas, which could be affected by tsunamis.
Air Quality	Low	Air emission will be limited to temporary construction activates and consist of emissions from construction equipment and vehicular traffic, and a back-up generator during operation. Equipment will be maintained in good working order to minimize emissions. The Project will have a significant positive impact on air quality through the generation of up to 250 MW of clean energy without CO_2 emissions.
Water & Waste Water	Low	Due to its unique geological conditions, Pica benefits from availability of water (natural springs, thermals) despite being surrounded by a desert. Pica's water use will be largely limited to construction activities and periodic washing of the PV cells during operation (if not converted to water-free brush cleaning). The Project's water use is not considered to

Criteria	Impact Rating	Summary
		be significant in the local and regional context. Sanitary waste will be collected in chemical toilets and removed from the project site for proper treatment during construction and an on- site treat facility will be utilized during operation.
Noise	Low	The main noise will be generated during construction and relate to the earthworks, operation of machinery and vehicular traffic. Limited noise generation during operation will be from airflow through solar modules and low volume vehicular traffic and facility maintenance. There are no sensitive communities/noise receptors within an approximately 5km radius.
Visual	Moderate	The solar park will be visible from some areas of the communities in Pica and Matilla, and transform part of the natural desert landscape. The transmission lines have been routed largely parallel to existing linear facilities, such as roads and other power lines, to the same general corridor. This approach helps reduce overall visual impacts by avoiding sprawling development.
Waste Management	Low	Construction related wastes will consist mainly of packing materials which will be removed from the project site by a contracted provider for recycling or disposal at a licensed landfill. During the operations, the volume of wastes will be minimal and will result from domestic and occasional maintenance of the PV facilities and substation. The Project is expected to develop a decommission plan to be updated in 5-yearly intervals.
Hazardous Materials Management	Low	The Project will have very limited use of hazardous materials, the primary use will be during construction, associated with fluids and fuels used by construction equipment. Any hazardous material used at the site will be properly stored and safely disposed through licensed contractors, as required.
Flora & Fauna	Low	Due to the arid desert conditions, the site supports very limited vegetation and wildlife. Similar conditions exist along the transmission line route. The Project will adopt appropriate mitigation measures (including awareness raising and training of workers, appropriate waste management) to reduce adverse impacts to on site biota.
Traffic	Low	The site location benefits from an existing and high quality highway and road system. Traffic impacts will be associated with the transport of materials and workers to the project site. Road access to the project site via Highway 5 (Pan-American Highway) and road A-75 (approximately 24 miles) is expected to have adequate capacity to support the Projects' needs. Coordination with local transit authority may be conducted to further minimize potential impacts.

Criteria	Impact Rating	Summary
Socio Economic	Positive	The Project will provide employment opportunities and the purchase of goods and services during both construction and operation. Hiring of local and regional workers and contractors – including women and indigenous people - will be a priority. Local housing and facilities for workers from outside of the immediate area are expected to be available from the existing tourism industry (already offering in excess of 800+ beds).
Cultural Heritage	Low	Based on the results of surveys of both the project site and the transmission line route (including 15km revised alignment), no significant cultural heritage sites or resources will be impacted. Law No. 17,288 of 2015 on National Monuments Related Standards already provides the *de facto* chance find procedure for the Project which will be applied by a trained archeologist for certain construction locations identified by the RCA.
Occupational Health and Safety	Low	Construction of solar facilities provide limited hazardous construction conditions. These include work at height during the construction of the transmission line. To minimize OHS impacts, the Project will establish an H&S management system (for both construction and operation) with the goal of having a zero accident policy. The Project will focus on the prevention of risks related to working under desert/high solar radiation conditions, work at heights, work with live power lines and equipment, fire, exposure to chemicals, exposure to electromagnetic fields, etc.; and will provide and make compulsory the use of personal protective equipment (PPE).
Community Health, Safety & Security	Low	The Project is located at distance of approximately 9-12km from the nearest community, thus minimizing potential adverse impacts on the health, safety and security of the community. During construction, workers will come from the local communities as well as a number from outside of the immediate Project area. Given scale of Pica and associated tourism industry, no significant adverse social impacts or significant immigration is anticipated. The Project will develop an emergency response plan for the construction and operation phases. As part of its emergency response planning, the Project will have trained emergency response personnel at all times and will involve the local authorities in the development of the emergency response planning as appropriate. The Project will implement security policies and procedures commensurate to the Project risks, and will conduct training for the private security personnel to ensure appropriate conduct (also in terms of Human Rights).
Decommissioning	Low	Decommissioning would result in the removal of all structures, materials will be recycled and those that cannot be reused will be disposed of in an approved landfill.

Figure 9: Conceptual ESMS model adopted by the Project



5.2 Environmental and Social Management System

The Project has developed a high-level Environmental and Social Management System (ESMS) which is aligned with the concept diagram[6] shown above and is scaled to the limited and readily manageable risks associated with the Atacama Solar Project.

The key components of the ESMS are outlines below:

(i) Sustainability Policy;
(ii) Identification of risks and impacts (ESIA process, stakeholder engagement);
(iii) Management and emergency response plans;
(iv) Organizational structure and competency;
(v) Stakeholder engagement and grievance management; and
(vi) Monitoring and review.

As typical for such capital project developments, the Project with and through its EPC Contractor(s) and other consultants, will develop a series of management plans, including an Environmental Management Plan, an Occupational Health and Safety Plan for communities and workforces, to manage and monitor

[6] From: IFC Environmental and Social Management System Implementation Handbook, 2014

related risks during the construction phase of the Project. The Company will also prepare similar environmental and health and safety plans for the operation and maintenance phase of the Project.

Table 7: Status of Key Environmental and Social Management Plans

Key Plans	Status of Plans	Comments
Occupational Health & Safety (OHS) Plan	To be provided or adopted by EPC, or developed by Atacama Solar.	International and experienced EPC contractor is expected to have standard OHS Plans on hand which will be reviewed to ensure consistence with Sonnedix Group requirements and consistency with IFC Performance Standards.
Emergency Preparedness and Response Plan	Draft plan has been prepared and is expected to be augmented by the selected contractors	The plan describes the makeup and responsibilities of various staff positions and describes the proposed structure of the emergency response brigade. Specific emergencies addressed are: fires, seismic events, serious worker accidents and fuel spills. The plan addresses construction and operation as well as the various project components.
Hazardous Material Management Plan	To be provided or adopted by EPC, or developed by Atacama Solar.	The Project will only use minimal quantities of hazardous materials. International and experienced EPC contractor is expected to have standard HMMP on hand which will be reviewed to ensure consistence with Sonnedix Group requirements and consistency with IFC Performance Standards.
Traffic Access and Management Plan	Proposed access/exit solution for road intersection with A-665 is currently under progress with Vialidad	Local traffic management is to be included as stand-alone document or in the OHS Plan for Construction
Waste and Hazardous Waste Management Plan	Draft plan has been completed. To be expanded or provided by EPC, or developed by Atacama Solar.	International and experienced EPC contractor is expected to have standard WHWMP Plans on hand which will be reviewed to ensure consistence with Sonnedix Group requirements and consistency with IFC Performance Standards.
Environmental Monitoring Plan	To be provided or adopted by EPC, or developed by Atacama Solar.	International and experienced EPC contractor is expected to have standard EMP Plans on hand which will be reviewed to ensure consistence with Sonnedix Group requirements and consistency with IFC Performance Standards.
Stakeholder Engagement Plan, including Grievance Mechanism	A draft SEP has been developed	The Project is committed to implementing an effective two-way process of engagement that will be timely, accessible, inclusive and free of manipulation, interference, coercion, or intimidation.

5.3 Organizational Structure

In addition to external inspections by the relevant Chilean regulatory agencies, the implementation of the environmental and social plans will be supervised by experienced Project staff, contractors and external consultants as appropriate. The Project will be selecting EPC and other contractors, and assigning key personnel for supervision and monitoring of all environmental and social activities associated with the Project, as depicted in the organizational chart below.

Figure 10: Stakeholder relations, OHS & environmental supervision structure

The primary contact for the Project's ESMS is:

- Daniel Tapia, Environmental and Social Manager for Atacama Solar, daniel.tapia@sonnedix.com; phone +56 9 4250 1351.

The E&S Manager is based in Pica and Santiago in Chile, and reports to Felipe Ribbeck, Director of Atacama Solar, Country Manager of Sonnedix Chile Holding Spa; phone +56 9 9884 0255 (see also Section 5). Additional staff or consultants required will be recruited to operationalize the above structure.

6.0 Key References

CDM-PDD, 2012. Atacama Solar Photovoltaic Power Plant Project, Version 1.3, Date: 18/12/2012

KAS Ingeniería, 2011. Declaracion de Impacto Ambiental, Proyecto Parque Fotovoltaico Atacama Solar 250 MW

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Appendix 1: Authors and Contributors of this ESIA Addendum

Prizma LLC (Prizma) is an independent environmental, social and sustainability advisory practice. Our seasoned team members gained their experience working in and with financial intuitions, their clients and projects, and branded consultants. Key team members who contributed to this report are highlighted below. Additional information about Prizma is web-posted here: www.prizmasolutions.com.

Mr. Mehrdad Nazari (MBA, MSc) is a Senior ESIA and Sustainability Advisor, and Director of Prizma. Mr. Nazari has over 20 years of professional experience. He has served as a member of Independent Engineering teams advising 'Equator Banks', served as expert witness on international arbitration case before the World Bank's International Centre for Settlement of Investment Disputes (ICSID), and contributed to ESIAs for major capital development projects in emerging markets. Previously, Mr. Nazari served 10 years as a Principal Environmental Specialist at the EBRD, responsible for environmental and social risk assessment and monitoring of an investment portfolio exceeding $3 billion, headed CSR Research at CoreRatings, London (formerly part of Fitch, now DNV), advising SRI and mainstream asset managers, and was a Project Manager with Dames & Moore (now URS), an engineering and environmental consulting firm. Mr. Nazari is based in the USA.

Randy Schulze (MS) is a Senior Environmental Advisor and has over 30 years of experience with permitting and impacts assessment of electric power plants, coal gasification and sequestration projects, transmission lines, natural gas pipelines, LNG receiving terminals in the USA, Central/Latin America and the Caribbean, and Africa. Mr. Schulze has worked with private development companies, multilateral financial institutions, such as the International Finance Corporation and the Inter-American Development Bank, and aid agencies, such as the Millennium Challenge Corporation (MCC). Previously, Mr. Schulze served as Vice President, CH2MHILL, Principal at EDAW/AECOM, and Project Manager, ARCADIS. Schulze holds an MS in Environmental Engineering Sciences and resides in the USA.