# Environmental and Social Review Summary (ESRS)
# X-Elio - Terranova PV Solar Plant

**Language of the original document: English**

## 1. General Information and Overview of scope of IIC E&S Review

The X-Elio (the "Client") – Terranova Solar Photovoltaic (PV) Plant (the "Project") is located in the Municipality of Juarez, Chihuahua State, Mexico. The Project, with a total capacity of 80 megawatt peak (MWp), includes also a 8.5 km-length transmission line (TL) that will evacuate the energy produced in the plant to the Mexican Federal Electricity Commission (Comisión Federal de Electricidad, "CFE") national grid system and thereafter through a distribution network via a "booster" substation." This site has a 25-year life expectancy for energy production.

The Terranova Project site with a total extension of approximately 292 hectares (ha) is anticipating a 12-month timeline for preparations of the site and a 3-year timeline for site construction. The Client has not yet engaged an Engineering, Procurement, and Construction (EPC) contractor for construction works.

With the purpose of obtaining the corresponding licenses, the Client has submitted the following documents: i) on September 12th, 2017 an Environmental Impact Assessment of the project (Manifestación Impacto Ambiental, MIA) to the Secretaria de Medio Ambiente y Recursos Naturales (SEMARNAT) –Chihuahua; and ii) on September 11th, 2017 a Social Impact Assessment of the project (Evaluación de Impacto Social, EIS) to the Secretaría de Energía (SENER). The Client is still waiting the license resolution from SEMARNAT and a resolution from SENER. The MIA states that a study of forest vegetation for the whole Project area through a Technical Justification Study (Estudio Técnico Justificativo - ETJ) shall be conducted in order to request the change of land use. However, this study was not available at the time of the present appraisal.

Project's main impacts and risks are related to: i) community relationship (e.g. jobs expectations); ii) contractor E&S management; iii) worker and community health and safety (including increased vehicular traffic during construction); and iv) biodiversity. These impacts and risks are considered to be largely reversible and readily addressed through well-known mitigation measures detailed in the corresponding the environmental programs that conform the Basic Environmental Plan. Moreover, the Project's areas of influence do not intersect any protected nor cultural heritage areas; no resettlement will be necessary, and no indigenous communities will be affected. Therefore, the Project has been classified in Category B, according to the IIC's Environmental and Social Sustainability Policy.

The Performance Standards (PS) triggered by the Project are: i) PS1: Assessment and Management of Environmental and Social Risks and Impacts; ii) PS2: Labor and Working Conditions; iii) PS3: Resource Efficiency and Pollution Prevention; iv) PS4: Community Health, Safety, and Security; and iv) PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.

The Environmental and Social Due Diligence (ESDD) process included a field appraisal mission conducted on July 27, 2017. The field mission was composed by: i) Independent Environmental and Social Consultant

(IESC) team; ii) the IIC Social, Environment and Governance (SEG) officer; and iii) the Project's senior management. Project sites visited included the location of the substation, transmission line path, access roads, and accessible perimeter areas. IESC also had the opportunity to meet the Municipal Director for Economic Development and the Municipal Director for Industrial Development of Juarez.

## 2. Environmental and Social Context

The Terranova Project site is located approximately 16 Km south of the City of Juarez, in the municipality of Juarez, Chihuahua. It is a rural site, situated between 45 D Libramiento de Salamayuca - San Jerónimo road and the No. 45 Miguel Ahumada - Juárez road which provides easy access to the urban center. Topography of the area includes short elevations such as El Barreal, Los Caballos, Casas Grandes and El Fresnal and hydrological systems like the Laguna Sumidero and the Barreal, the Laguna Santa Maria and the Lagoon of Guzman. The environmental direct area of influence of the project area is composed of sandy desert vegetation (82.39%), human settlements (3.39%), microphyllous desert scrubland (8.93%), xerophilous halophytic vegetation (5.18%) and urban area 0.087%).

There are no localities in the close proximity and the nearest community is located far than 1 km to the Project site. However there are two communities in the Project's direct area of influence: i) Valle Dorado Cuarta Etapa and ii) Valle Dorado Quinta Etapa.

Presently, there are no touristic points of interest in the immediate surrounding area but an industrial cement plant, Federal Police Delegation and the Juarez city municipal landfill are located close to the site. In addition, the right-of-way (ROW) of a PEMEX LNG pipeline is located within the environmental direct area of influence of the project.

The Project will need no involuntary resettlement. In addition, there are no stakeholders nor inhabitants (informal or formal) that depend on the Project's lands for subsistence or as a source of unique economic sustain. The land needed for the Project has been leased to a single owner.

## 3. Environmental Risks and Impacts and Proposed Mitigation and Compensation Measures

### 3.1 Assessment and management of environmental and social risks and impacts

At the corporate level, the Client has an Environmental and Social Management System (ESMS) in line with ISO 14001:2004, ISO 9001:2008 and OHSAS 18001:2007 standards; and is committed to environmental conservation. Its corporate policies have specific references to the fulfillment of obligations derived from in-country's regulations, the environmental impact studies and corresponding licenses. The Client extends these commitments to its value chain, including environmental criteria in the selection of contractors and the corresponding contracts ¡.

The Client is devoted to prepare, implement and certify its operations in Mexico in ISO 14001:2004, ISO 9001:2008 and OHSAS 18001:2007 standards; however such certification has not yet been implemented at the Project level.

During the Environmental and Social Due Diligence (ESDD) the following key Project-specific documents were reviewed: a quality, environmental and health and safety in the workplace policy; emergency and response plans and a conceptual contingency plan; the MIA; the environmental management plan; a manual of good environmental practices on site; a health and safety management manual; and a set of

environmental management programs. Project's MIA was developed to comply with Host Country Environmental and Social (E&S) Legal requirements. At the time of the assessment performed by the IIC, E&S Management Plans (ESMPs) were either partially developed or developed at the conceptual level and, therefore, they are partially in line with the IIC Environmental and Social Sustainability Policy.

The Client has a basic organizational structure for its operations in Mexico. However, considering its planning stage, the Project had not yet established an organizational structure with defined roles, responsibilities, and authority to implement the ESMS. Nevertheless, according to the Project certifications and Client's corporate organizational structure, it is unquestionable that the Client has the knowledge, skills, experience and willingness to appoint the adequate resources and generate an organizational structure capable of managing any residual risks and impacts.

The Project has a conceptual Contingency Plan that has to be focused on a PV project. It also has a basic Emergency Response Plan which includes actions to manage and control spillages of hazardous products or wastes, as well as to manage fire, explosion and flood situation. However this plan needs to be updated to fully comply with this PS 1.

At the time of the site visit, the Project had identified stakeholders and prioritized their level of engagement. According to local (national) requirements, consultation activities carried out so far are deemed adequate. However, PS1 requires a more robust stakeholder mapping exercise and consultation process to be conducted along the communities most likely to be affected by the Project. The level of intensity of their potential stake or a full consideration of the Project's impacts on the communities' activities have not yet been clearly discussed and assessed.

A Cumulative Impact Assessment (CIA) to include the analyses of risks and impacts generated by other projects in the area was not available during the ESSD.

### 3.2 Labor and working conditions

The Client's Health, Safety and Environment (HSE) Department establishes guidelines, plans and programs to be developed at the corporate level. For each country where it does business, the Client has a Health and Safety Supervisor. This person is responsible for implementing the plans and programs that have been established, and for overseeing and monitoring the obligations derived from the Project's Integrated Management System, the applicable legal requirements, and for the Project's personnel and subcontractors.

The EHS program requires that all workers receive training in risk prevention in accordance with their category and functions. This requirement also applies to subcontractors who, before they begin construction operations at the facilities, must have regulatory training to guarantee quality standards and minimize the risk of accidents.

Contract to be used to engage all workers have specific chapters that describe the employee's rights, working hours, wages, overtime, compensation, and applicable health benefits. The Client has policies that reiterate nondiscriminatory and equal opportunity practices, especially as it pertains to women.

The Project uses a powerful document management software, cloud storage and accounting programs integration platform named *UBYQUO* that creates a common working area for contractors, HS

supervisors, and construction sites/generation facilities, to exchange documents in a unified environment in a simple, swift, and effective manner.

A "Manual de Gestion de Seguridad y Salud" (Health and Safety manual) has been developed for the Project. This document includes a good framework for HS management as wells as conceptual references to evaluation of risk, incident investigation and operational controls. The manual makes special mention of "especially sensitive workers" referring to underage workers and the necessity to comply with local applicable legislation related to child work.

According to the Client's corporate guidelines, the same safety requirements expected from its employees are also expected from subcontractors. Based on the information reviewed, there is no evidence at the project level of a procedure for contractors and provider's evaluation, regarding the EHS aspects.

### 3.3 Resource efficiency and pollution prevention

The Client has developed the "Manual of Good Environmental Practices on Site." This manual discusses preferred management techniques or work patterns, with the objective to raise worker and management awareness, promote a change in attitude and/or behavior to improve environmental performance, and thereby decrease impacts to the environment. As part of the MIA preparation, considerations were given to background ambient conditions, the presence of local communities, the expected Project demand for water and the availability of waste disposal facilities.

At corporate level, measurements of energy consumption, emissions, waste, and discharges for construction and operation activities to analyze their efficiency, are required in order to establish periodic improvement towards minimizing the project's environmental impact. However, at Project level, a clear Policy or programs for the efficient use of resources use was not identified.

As part of the MIA, Environmental Management Plans in line with host country requirements were prepared and commitments with the environmental authorities to implement measures to avoid, minimize, and control the release of pollutants to air, water, and soil were made. The EMP contains basic good practices and actions to manage non-hazardous and hazardous waste, and address consumption, use and storage of chemical products, disposal, noise, atmospheric emissions, dust emissions, and effects on nature and landscape. However, a specific Project-level ESMP including all impact mitigation measures has not yet been developed.

At corporate level estimations of $CO_2$ emissions of all operations are mainly related to indirect emissions generated at the electricity plants, consumption at the facilities, offices, and travel by employees to their places of work. Also, estimations of ozone-depleting substances and of dust and particles are required. Despite the latter, the Project has not yet provided an estimate of $CO_2$ emissions for its different phases. With regards to emissions of dust and particles, controls are only established for the construction phase.

### 3.4 Community health, safety and security

The EIS includes the analysis of community health and safety aspects, especially related to noise, particulate matter, radiation, microclimate and security, but they do not include all possible relevant risks on community health and safety during the Project life cycle, nor incorporate preventive and control measures to manage the latter. Risks associated with construction activities do not include those related to transport safety along roads and access corridors, impacts to water quality and quantity, inadvertent

development of new vector, and potential for transmission of communicable diseases. In addition, no assessment of potential health associated impacts in nearby localities due to the rapid influx of labor during the Project construction phase has been considered.

The Client will retain the services of a security firm in order to protect their assets. Security personnel will not be armed and will be trained on best practices and proportional use of force. In Mexico, security companies usually establish procedures and provide a record of investigation for every employee including criminal records.

### 3.5 Biodiversity conservation and sustainable management of living natural resources

The project footprint will cover approximately 292 hectares (ha) of a natural habitat, from which 266 ha will be for the photovoltaic park. The LT (with an approximate length of 8.5 km with a right-of-way of 30 m) will need about an extra area 25.5 ha from which the great majority (25 ha) will not be cleared.

Vegetation types include: i) sandy desert vegetation (98% of project area) and ii) microphyllous desert scrub (1.65%). Sandy desert vegetation consists mainly of perennial shrubs, whose roots are anchored in unconsolidated sand and form colonies by vegetative reproduction. Microphyllous desert scrub is found in drier areas of Mexico where rainfall is less than 100 mm per year with vegetation that typically covers only 3-20% of the surface, and plant height ranging from 0.5 to 1.5 m. These habitat types are widespread in the region and not threatened or rare.

The Flora inventory carried out in the Project Area (AP) and the surrounding area (SAP) documented 31 plant species in the SAP and 19 species in the PA. Fourteen (14) species were registered in the sandy desert vegetation and 12 in the microphyllous desert scrub (with some species found in both). Two cacti species (*Echinomastus warnockii (Pr)* and *Opuntia arenaria (Pr)* found in the SAP are listed in NOM-059-SEMARNAT-2010, in the Special Protection category. However only *Opuntia arenaria* was documented within the project area. Both species are widely represented in SAP and have ranges that extend into Texas and New Mexico. None of the plant species found I the area is listed on the Global IUCN Red List of Threatened Species. None of the vegetation formation in the area can be considered as Critical Habitat per PS6.

125 species of birds, 12 species of reptiles, and 5 species of mammals have been identified in the SAP and PA. The most common mammal are two species of rabbits. Most of the fauna species are generalists, which adapt to the modification of the environment and have a wide distribution within the region. However, six species (five reptiles and one bird) are listed in NOM-059-SEMARNAT-2010. The long nosed leopard lizard (*Gambelia wislizenii*), classified in the IUCN Red List as Least Concern=LC; the common side-blotched lizard (*Uta stansburiana*) (LC) and western diamond-backed rattlesnake (*Crotalus atrox*) (LC) were recorded both in the project area and in the SAP. The prairie rattlesnake (*Crotalus viridis*) (LC) and Swainson's hawk (*Buteo swainsoni*) (LC) were documented only in the SAP. None of these species are considered threatened globally, range restricted, or endemic to the region..

The MIA does identify some erosion and loss of vegetation cover as residual impacts the Project but deems them to be of minor significance. Mitigation includes actions to regenerate the soil and vegetation cover that will impacted by the Project. They also foresee actions to leave untouched flora and fauna in areas that will be not occupied by solar panels. Natural repopulation of vegetation will be allowed and

reinforced with low-height native flora species so that they will not interfere with the functioning of the solar panels.

No revegetation activities will be performed in the Project site, the TL ROW and temporary work areas, unless they are deemed necessary due to control the production of dust or the appearance of erosion processes. In such case, small native herbaceous or shrub specimens will be used. The only areas where the removal of vegetation will be permanent will be areas for the electrical substation, internal roads, and the control building. Vegetation clearing will be done on a single occasion during site preparation.

Removal of vegetation and construction will likely cause the fauna present in the Project site to move from the site to surrounding areas. Small species that live in vegetation or in shrub roots are the most prone to be affected by this stage of the Project. However, during operation, it is highly possible that some small species will return as vegetation will grow back under the solar panels. Actions for fauna management include capture and relocation of individuals. Training for employees regarding flora and fauna management is also contemplated.

Analysis of potential impacts of solar panels on migratory birds and other fauna (e.g., the lake effect) has not been included on the MIA nor was the assessment of impacts of fences and transmission lines. No Biodiversity Management Plan (BMP) has been provided.

The Project is not located in any nationally protected or internationally recognized areas of conservation importance. However, it is located within the broad World Wildlife Fund (WWF) Ecoregion of the "Chihuahuan Desert," the Conservation International (CI) High Biodiversity Wilderness Area "North American Deserts," and two Bird Migration Flyways: Central Americas and Pacific Americas. The project site is less than 20 km from "Médanos de Samalayuca Flora and Fauna Protection Area," which is an IUCN category VI protected area (multiple use).

**4. Local Access to Project Documentation**

The Project has made available all documentation pertaining to the project to official agencies associated with environmental licensing: Secretaría de Energía (Ministry of Energy -SENER), Secretaría de Medio Ambiente y Recursos Naturales (Ministry for the Environment and Natural Resources -SEMARNAT), Comisión Federal de Electricidad (Federal Commission of Electricity -CFE), Centro Nacional de Control de Energía (National Center For Energy Control -CENACE), Comisión Reguladora de Energía (Energy Regulatory Commission -CRE), Secretaría de Comunicaciones y Transportes (Ministry of Communications and Transport -SCT), Comisión Nacional del Agua (National Water Commission -CONAGUA), Instituto Nacional de Antropología e Historia (National Institute of Anthropology and History -INAH), and Secretaría del Trabajo y Previsión Social (Ministry of Labor and Social Welfare -STPS).

The Sustainability Policy and information about the Project's Environmental, Social and Corporate Governance – ESG can be accessed via the website: http://www.x-elio.com/en/sustainability. At the time of the evaluation, the Client was not making information available to the general public and the population affected by the project.

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

The Environmental and Social Action Plan (ESAP) is the following:

**Environmental and Social Action Plan (ESAP)**
**X-Elio - Terranova PV Solar Plant**

| ID | ACTION | DELIVERABLE | DEADLINE |
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| **PS 1. Assessment and Management of Environmental and Social Risks and Impacts** | | | |
| 1.1 | 1. Develop and implement a Project-specific Environmental and Social Management System (ESMS) that incorporates all the requirements contained in the Environmental Permit, the Applicable Standards and Policies, and a comprehensive identification of risk and impacts for the Influence area, that has: i) Objectives, indicators, budget, responsibilities & authorities, internal staffing & outsourcing, training and reporting; ii) Policies defining the environmental, health and safety, labor and social objectives and principles for the Project; and iii) Monitoring procedures to guarantee continuous improvement. | 1 ESMS with management plans and programs developed, updated and evidence of implementation (handbook and procedures). | 1 Prior to closing and thereafter in the Environmental and Social Compliance Report (ESCR) |
| | 2. Obtain the Environment License and the approval of the EIS. Also provide clarification and/or evidence regarding the necessity of a forest characterization through an ETJ in in order to request the change of land use. | 2 Environmental License, EIS approval ETJ study, if applicable | 2 Prior to construction |
| | 3. Develop a Stakeholder Engagement Plan aligned with the stakeholder mapping exercise. | 3 Stakeholder Engagement Plan | 3 Prior to closing |
| | 4. Develop a Community (external) grievance mechanism. | 4 Community (external) grievance mechanism. | 4 Prior to closing |
| | 5. Conduct a Cumulative Impact Assessment (CIA) as part of the risks and impacts identification process in relation with the Electric Transmission Line easement, other existing lines and land use in the area, it should include all risks related to the Project area of influence. | 5 Cumulative Impact Assessment. | 5 Within 6 months after the closing |
| 1.2 | Compile a Project-specific Environmental and Social Management Plan (ESMP) using the Project Environmental Management Plan, the Environmental Management Program of the MIA, and IFC EHS Guidelines, integrating stakeholder mapping findings as reference, considering the risk and impacts identification. | 1 ESMP | 1 Prior to closing |
| 1.3 | Establish and implement an organizational structure, with specific personnel with clear lines of responsibility and authority to implement the ESMS for the projects. Recruit and hire or assign an EHS professional who can oversee and manage EHS and social issues during construction and operations. | 1 Organizational structure in place and roles and responsibilities defined. | 1 Prior to closing |
| | | 2 Evidence that the needed people have been assigned or recruited for each key position of the ESMS. | 2 Prior to Closing |
| 1.4 | Prepare a specific Emergency and Contingency Plan that includes: i) organizational structure; ii) activation plan; iii) response procedures; iv) training and drills; v) description of potential emergencies; vi) method for reporting / communicating the emergency; vii) responsibilities; viii) incident investigation and follow-up procedures; ix) contact information for emergency and support services; xi) a map of the work place that shows evacuation routes and assembly locations; xii) locations of emergency equipment; xiii) first aid station; xiv) rescue plan evaluation; and xv) periodical revision of the plan. | 1 Updated Emergency response and Contingency Plan for the Project | 1 Prior to closing and thereafter in the ESCR |
| 1.5 | Establish a measuring and monitoring system that includes: i) key risks and impacts of the project on employees, communities and the natural environment; ii) compliance with laws and regulations; and iii) progress in implementation of the management programs. The Project should establish, track and measure key indicators. | 1 Environmental and Social Monitoring program | 1 Prior to closing and thereafter in the ESCR |
| **PS 2. Labor and Working Conditions** | | | |
| 2.1 | 1 Prepare Occupational Health and Safety (OHS) Programs for the Project, the EPC and the subcontractors that includes specific HS procedures for each of the significant risks identified. | 1 Occupational Health and Safety (OHS) Programs | 1 Prior to closing |
| | 2 Considering the fauna of the site, a comprehensive risk identification and corresponding management plan should be prepared for Construction phase; especially for worker activities and possible hazards for animal attacks and insects bites. | 2 Plan for prevent animal attacks and insects bites | 2 Prior to construction |
| | 3 Develop an adopt an internal grievance mechanism, to be implemented by Project, the EPC and subcontractors; | 3 Internal grievance mechanism | 3 Prior to closing |

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| | 4 Prepare OHS risk identification and management measures to be incorporated in the Project Management Plans as well as OHS requirements, incorporated as part of EPC contractual clauses and contractor requirements | 4 | Updated Project Management Plans | 4 Prior to closing |
| | 5 Prepare a training program in OHS for workers and subcontractors. | 5 | EHS Training programs and schedules | 5 Prior to closing |
| 2.2 | Extend a safe and healthy work environment. Include in the EPC's and subcontractors contracts provisions and obligations for the workers to meet the OHS requirements of the Project. | 1 | Copy of the contract models | 1 Prior to closing |
| 2.3 | Develop a protocol to identify and hire suppliers according to their potential adverse environmental and social risks along the supply chain. | 1 | Protocol to identify and hire consultants | 1 Prior the execution of the agreement (closing). |
| **PS 3. Resource Efficiency and Pollution Prevention** | | | | |
| 3.1 | After assessing the baseline, elaborate and adopt a Project-specific efficiency resource use strategy that contains objectives and goals for conserving raw materials, water, and energy consumption; and procedures to reduce or eliminate the non-hazardous and hazardous materials in the Project | 1 | Efficiency resource use strategy | 1 During project life cycle and thereafter in the ESCR. |
| 3.2 | Prepare a waste management program that includes domestic, industrial and hazardous refuse, including specific measures for solar panel disposition. | 1 | Waste Management Plan. | 1 Prior to closing and thereafter in the ESCR. |
| **PS 4. Community Health, Safety and Security** | | | | |
| 4.1 | Conduct a comprehensive identification and assessment of all possible risk and impacts on community health and safety during the Project life-cycle associated with all project activities and establish preventive and control measures within a community health and safety plan including: i) Hazardous Materials Management, ii) Exposure to Disease; and iii) inclusion in activities related to Emergency Preparedness and Response. | 1 | Community Health and Safety Plan. | 1 Prior to closing. |
| 4.2 | Prepare an integral Security Management Plan, including risks and impacts identification considering political, economic, legal, military, and social aspects. | 1 | Security Management Plan | 1 Prior to closing. |
| 4.3 | Make available Project-related information to the public, in a constant way. | 1 | Copy of the means used to provide Project-related information to the public | 1 Prior to first disbursement and thereafter un the ESCR. |
| **PS 6. Biodiversity Conservation and Sustainable Management of Living Natural Resources** | | | | |
| 6.1 | Perform impact assessments for: potential impacts of solar panels on migratory birds and other fauna (e.g., the lake effect) and impacts of fences and transmission lines on biodiversity. | 1 | Impact assessment matrix. | 1 Within 6 months after the closing |
| 6.2 | Prepare and adopt a Biodiversity Management Plan (BMP) to combine and detail all biodiversity mitigation actions for key species with an aim to achieve No Net Loss of Biodiversity for those values. | 1 | Biodiversity Management Plan (BMP). | 1 in 6 months after the closing. |
| | | 2 | Evidence of the implementation of the BMP. | 1 6 months after the closing and thereafter in the ESCR (BMP Implemented for life of project according to its actions timelines). |
| 6.3 | Prepare and implement a Biodiversity Monitoring and Evaluation Plan (BMEP) to assess the survival of target species in the relocation and refuge areas and to demonstrate No Net Loss of Biodiversity for key species. | 1 | Biodiversity Monitoring and Evaluation Plan (BMEP) developed. | 1 Within 6 months after the closing. |
| | | 2 | Evidence of the implementation of the BMEP. | 1 Within 6 months after the closing and thereafter in the ESCR. (BMEP implemented for the life of the project). |