ZOFNASS PROGRAM
FOR SUSTAINABLE INFRASTRUCTURE
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CHOLUTECA I AND II
HONDURAS

Figure 01: Aerial Image of Project
Sources: Picture sent by Sun Edison

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Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective project design or implementation.

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EXECUTIVE SUMMARY

The project Choluteca I and II consists of two solar photovoltaic power plants developed, constructed, and currently operated by SunEdison in the southern region of Choluteca, Honduras, as part of a larger renewable energy program through which the government of Honduras is seeking to develop solar resources to diversify the energy matrix in the country.

Choluteca I and II are located in a 151 ha site and possess a total capacity of 58 MWp, being expected to generate 112 GWh per year and to prevent the emission of 31,810 tons of CO_2 per year. The total energy production of the plants is being sold to the state-owned utility company Empresa Nacional de Energía Eléctrica, with which a 20-year power purchase agreement was signed. The projects will be connected to the Sistema Interconectado Nacional in Choluteca through the Santa Lucía substation, an existing substation located in the outskirts of Choluteca. The construction phase of the project began in September 2014 and was finalized in July 2015. The operation phase began on August 4, 2015, after interconnection took place on July 27, 2015. The project lifespan is estimated at 30 years, and the possibility of extending its operation will be evaluated once the current operation phase ends. The Choluteca I and II plants have an estimated investment cost of around US $61.8 million. The project has sought financing from the International Finance Corporation, Central America Bank for Economic Integration, and the OPEC Fund for International Development.

Overall, the project has done excellent work to improve the quality of life of its surrounding communities and has shown a deep commitment to establishing a relationship with the population and the main stakeholders. First of all, the project will improve quality of life through the generation of renewable energy and consequent reduction of greenhouse gas emissions, generating electricity to be supplied to the power grid of Honduras. From the beginning, the project team developed a close relationship with the surrounding communities of San José de la Landa, Colonia El Edén, Colonia Victor Manuel Argeñal I, and Aldea Montecillos, identifying community needs and goals and developing community-specific projects for the provision of potable water, electricity, and safety in the area. The project team also engaged in a series of mitigation strategies to reduce the direct impact of Choluteca I and II on nearby communities, including a series of measures to reduce noise and dust generation during the construction phase and to improve site mobility and accessibility through the creation of internal roads within the project site and the placement of wayfinding and safety signage. In particular, a detailed reforestation program was developed aiming to mitigate the impacts of the project and ensuring that the visual impact of the plants is reduced through the planting of native species along the project perimeter.

The category of Leadership presents a considerable area of opportunity for Choluteca I and II. The project team has shown a commitment to sustainable development both in the policies and commitments of SunEdison as well as in its approach to project design and operation, supported by its environmental impact assessment and social investment plan. The project exhibited productive collaboration by involving the community stakeholders throughout the construction phase and truly including the affected communities in the creation of a social investment plan to improve the quality of life of their communities. The team also exhibits a long-term view of the project, having developed a detailed monitoring and maintenance plan describing efforts to prevent problems and correct the performance of all equipment both physically and through digital monitoring programs, as well as showing a desire to extend the project's useful life beyond its first 30 years.

The project exhibits a great performance in the Resource Allocation category in relation to Energy, and an important area of opportunity in the subcategories of Materials and Water. Choluteca I and II generate a net positive renewable energy amounting to 112 GWh per year. The project uses some of the generated renewable energy for the plant's operation; the rest supplies electricity to the national power grid. Long-term waste management plan has been developed to decrease the project's waste and divert it from landfills. The project has reutilized excavated materials in the construction of platforms, roads, buildings, and drainage, amounting to an 81% reutilization of excavated materials.

In the Natural World category, Choluteca I and II exhibited important efforts in preserving habitats, species, adverse geologic zones and other natural systems in the area while minimizing the impact on the project site. The site's main geological risk is that Honduras is prone to earthquakes. In order to address this, a geotechnical assessment was performed on site to determine the corresponding foundation types based on the soil's inherent capacities. Given its siting, defined as land for agriculture and livestock use, the project is neither preserving prime farmland nor greenfields.

Choluteca I and II had an excellent performance in the Climate and Risk category, particularly in the Emissions subcategory. Since the project generates renewable energy, it does not involve the use of fossil fuels and therefore prevents the emission of greenhouse gases as part of the process of energy generation. The project is estimated to prevent the generation of 31,810 tons of CO_2 emissions every year, which is equivalent to the energy generated from at least 600,000 barrels of heavy fuel. The project team has developed a plan related to short-term emergency control that identifies earthquakes, storms, and inundations as the main climate threats for the

area, as well as other types of man-made hazards such as fires and electrocutions. The plan includes information such as annual emergency drills for each type of threat, meeting points and evacuation routes, and training for the project's personnel.

The evaluation of Choluteca I and II has shown the project strengths as a model for renewable energy generation, as well as its contribution to Honduras' sustainable development. At the same time, it has also indicated which categories of the project provide the largest opportunities for improvement in order to ensure a more integrated and holistic approach to sustainable infrastructure development. The categories with the best performance, Quality of Life and Leadership, could be improved by furthering efforts that are already ongoing in the project. The team could take advantage of the community studies already performed to target initiatives for local employment and skills development for the population, as well as the creation of public spaces that would enhance community livability. In the area of Leadership, the team could further clarify its commitment to sustainability through the creation of a comprehensive sustainability management plan ensuring that sustainability goals are met in the project.

In the category of Climate and Risk, the existing emergency plan could be strengthened by including more detailed information on both short- and long-term threats such as an analysis of past climate events and impacts as well as forecasts. Finally, the two categories with the largest opportunities for growth, Resource Allocation and Natural World, show the need for a stronger management plan for materials and water resources. While the project doesn't involve significant consumption of water, proper evaluation and monitoring of water levels and quality should be put in place. This will enable the team to assess the success of mitigation strategies for impacts on erosion and stormwater management. The project could also document the origin of used materials to demonstrate their efforts to include more regional materials to minimize the cost and negative impacts of transportation, and consider incorporating recycled materials.

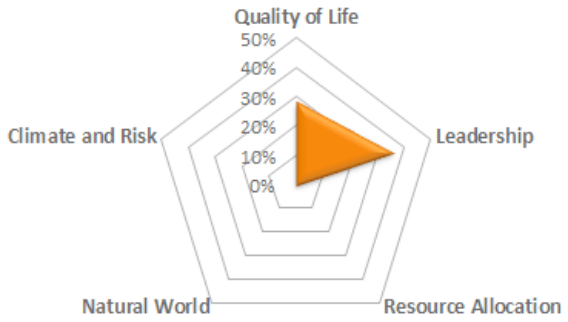

Figure 2: People & Leadership award Summary of results

Figure 3: Climate & Environment award Summary of results

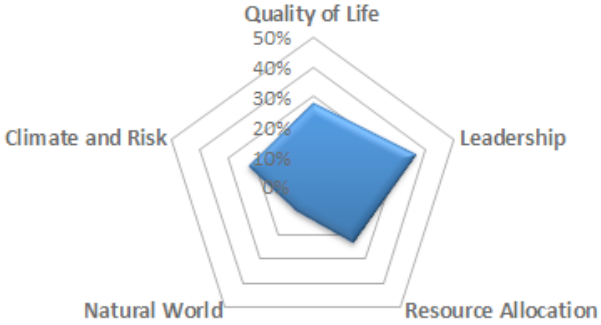

Figure 4: Infrastructure 360 award Summary of results

1. PROJECT DESCRIPTION AND LOCATION

Choluteca I and II are two of three solar photovoltaic power plants developed, constructed, and now operated by SunEdison in the southern region of Choluteca, Honduras. The three plants (being Pacífico I the third) have a total aggregate capacity of 78.6 megawatts and are part of a larger renewable energy program through which the government of Honduras is seeking to develop solar resources to diversify the energy matrix in the country. The present evaluation will focus on the two projects of Choluteca I and II, which have been developed by Soluciones Energéticas Renovables S.A. de C.V. (SERSA), a subsidiary of SunEdison. The third project is considered beyond the scope of this evaluation due to its distance from Choluteca I and II. The two project sites are located 1 km from the community of San José de la Landa and 7.5 km south of the city of Choluteca in two contiguous properties with areas of 55 ha and 96 ha, respectively. The projects are composed of a 151 ha site with photovoltaic modules, administrative offices, power inverters, control buildings, rooms for medium-voltage switchgear, and substation lifts. These two plants have a total capacity of 58 MWp and are expected to generate 112 GWh per year. The Choluteca I plant is based on 16 subfields of 76,320 photovoltaic cells with a nominal capacity of 20 MW, and the Choluteca II plant is based on 23 subfields of 115,280 photovoltaic cells with a nominal capacity of 30 MW. Together they are expected to prevent the emission of 31,810 tons of CO_2 per year.

Energy generated by the plants is being sold to the state-owned utility company, Empresa Nacional de Energía Eléctrica, with which SERSA has signed a 20-year power purchase agreement. The projects will be connected to the Sistema Interconectado Nacional in Choluteca through the Santa Lucía substation, an existing substation located in the outskirts of Choluteca, via two dedicated 34.5 kV single-pole transmission lines. Choluteca I and II will share a 7 km transmission line, and Pacífico I will have one of 4 km. The project is divided into construction and operation phases. The construction phase began in September 2014 and was planned to last 8 months until April 2015. Choluteca I finalized construction in July 2015. The operation phase began on August 4, 2015 after interconnection took place on July 27, 2015. The project life is estimated at 30 years, and the possibility of extending the duration of its operation will be evaluated once the current operation phase ends.

The Choluteca I and II plants have an estimated investment cost of US $61.8 million.[1] The project has sought financing from the International Finance Corporation, Central America Bank for Economic Integration, and the OPEC Fund for International Development. The projects were developed following the International Finance Corporation's 2013 "Good Practice Handbook on Cumulative Impact Assessment" and "Management: Guidance for the Private Sector in

[1] Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 132.

Emerging Markets."

Honduras has an energy deficit, as it is currently unable to meet growing energy demands within the country. The country does not produce any fossil fuels at the moment and 64% of the 1,200 MW of electricity demand is supplied through thermoelectric central plants, emitting 2.4 million tons of CO_2 per year.[2] Petroleum accounts for 53% of energy produced domestically, followed by combustible renewables and waste (44%) and coal (3%). The residential energy consumption constitutes about 47% of national consumption, of which 85% is generated by biomass, primarily firewood.[3]

Because of this, the country has been prioritizing the implementation and development of hydroelectric, photovoltaic, wind, geothermal, and biomass sources of energy for generating renewable energy at lower costs while minimizing negative impacts on the environment. As part of the initiative, the government of Honduras approved decree no. 376-2013 that authorized the operation of 31 renewable energy projects, of which eleven additional solar energy projects and one geothermal plant are in the area of influence of the Choluteca Municipality.[4]

The projects are located 1 km from the community of San José de la Landa, in the Municipality of Choluteca, Honduras. The property is composed of modified habitat as well as pastures and agricultural land and has no households or legally protected areas in its vicinity. The terrain is part of a semi-flat area with a maximum elevation of 10 m above sea level and a slope between 3% and 5%.

The area is vegetated by grasses, bushes, and dispersed trees of different species, located in soils belonging to deciduous broadleaf forest and deciduous secondary vegetation. Limited fauna is found in the area, but some of the existing species include the coyote (*Canis latrans*), the mountain rabbit (*Sylvilagus floridanus*), and the white back skunk (*Mephitis floridanus*). The area is located in the Pacific lowlands of southern Honduras, where the climate has highly seasonal rainfall with very hot and humid summers and a warm winter dry season. The photovoltaic modules are oriented 0° south at an inclination of 13° to benefit from the optimal southern orientation.

[2] Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 26.

[3] SunEdison, *Plan de Gestión Medioambiental y Social: Proyectos Choluteca I y II y Pacífico* (Honduras, 2014), 13.

[4] Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa, Honduras, 2014), 11.

2. APPLICATION OF THE ENVISION RATING SYSTEM

The Envision® system is a set of guidelines that aid in optimizing the sustainability of an infrastructure project during the planning and preliminary design phases, as well as a means to quantify the relative sustainability of the project. Envision consists of 60 credits grouped into five categories: Quality of Life, Leadership, Resource Allocation, Natural World, and Climate and Risk. Each credit pertains to a specific indicator of sustainability such as reducing energy use, preserving natural habitat, or reducing greenhouse gas emissions. Those credits are rated on a five-point scale referred to as a "level of achievement": "improved," "enhanced," "superior," "conserving," and "restorative." Evaluation criteria are provided to determine whether the qualifications for each level of achievement have been met for a particular credit. In each of the five categories there is a special credit called "Innovate or exceed credit requirements." This is an opportunity to reward exceptional performance that applies innovative methods within the subjects that Envision evaluates.

The criteria for the levels of achievement vary from credit to credit, but generally an "improved" level of achievement is awarded for performance that slightly exceeds regulatory requirements. "Enhanced" and "superior" levels indicate additional gradual improvement, while "conserving" often indicates performance that achieves a net zero or neutral impact. "Restorative" is the highest level and is typically reserved for projects that produce an overall net positive impact. The Envision system weighs the relative value of each credit and level of achievement by assigning points. Credit criteria are documented in the Envision Guidance Manual, which is available to the public on the ISI[5] and Zofnass Program[6] websites.

3. QUALITY OF LIFE CATEGORY

Envision's first category, Quality of Life, pertains to potential project impacts on surrounding communities and their well-being. More specifically, it distinguishes infrastructure projects that are in line with community goals, clearly established as parts of existing community networks, and consider long-term community benefits and aspirations. Quality of Life incorporates guidance related to community capacity building and promotes infrastructure users and local members as important stakeholders in the decision-making process. The category is divided into four subcategories: Purpose, Well-being, Community, and Vulnerable Groups.

[5] www.sustainableinfrastructure.org

[6] www.zofnass.org

Purpose

The Purpose subcategory addresses the functional assets of communities such as growth, development, job creation, and generally improving quality of life. Positive results from infrastructure projects can include community education, outreach, knowledge creation, and worker training.

Overall, the project has done an excellent job in improving the quality of life of its surrounding five communities and has shown a deep commitment to establish a relationship with the population and the main stakeholders. From the beginning of the process, the project team developed a close relationship with the surrounding communities of San José de la Landa, Colonia El Edén, Colonia Victor Manuel Argeñal I, and Aldea Montecillos, identifying community needs and goals through demographic studies, surveys, and consultations with the residents. In reaction to concerns voiced by the community, the project team embarked on a series of community-specific projects for the provision of potable water, electricity, and safety in the areas. Specifically, five main projects improving the quality of life of the communities affected by Choluteca I and II were carried out by the developers: construction of an air tank with its plumbing in San José de la Landa; construction of a perimeter wall and access gates to the community education center in Colonia El Edén; drilling a well and installing a water pump and constructing an elevated tank to distribute water to the community by gravity in Colonia Victor Manuel Argeñal I; donation of 100,000 solar panels and around 837,660 HNL in other materials for an electricity project in Aldea Montesillos. The project team also engaged in a series of mitigation strategies to reduce the impact of the actual development of Choluteca I and II on the nearby communities, including a reforestation program and a series of measures to reduce noise and dust generation during the construction phase.

The project has been able to contribute to sustainably developing the area through creating local jobs during the construction phase of the project and through the infrastructure projects in the different communities, which provide access to electricity and clean water to their residents. However, there is no evidence that the project team identified other ways more directly linked to skills development to improve the socioeconomic conditions of the area. Given that such a thorough study was developed to identify community profiles and needs, the project could have a greater impact on the development of local skills and capabilities, either by training and encouraging a more local workforce in the operation phase of the project, creating educational programs around issues of renewable energy, and/or developing educational and skills training workshops in areas of need identified by the community profile.

Well-being

The Well-being subcategory addresses issues related to comfort, health, and mobility of local communities, as well as project workers. Safety is an integral part of the planning process and promotes the expansion of alternative modes of transport.

In their environmental impact assessments, Choluteca I and II identified all negative impacts the project might pose during its construction phase, including a moderate impact on noise levels due to the use of machinery for transportation and module installation. In order to mitigate this, the project restricted the use of machinery to diurnal hours (6:00am–6:00pm) and devised plans to accommodate any exception or necessary work at night, requiring the approval of the community. In this way, the project was able to reduce the impact of noise and vibration during construction, achieving acceptable levels throughout the process. On the other hand, there was no evidence indicating that the project made any efforts to reduce further energy consumption, obtrusive lighting, and glare in the project's operation facilities. A lighting needs assessment could be developed to identify and monitor how much energy the operation facilities need, and then adopt strategies to reduce these levels.

The project also made efforts to improve site mobility and accessibility. During the construction phase, internal roads were built to facilitate communication within the project site. Wayfinding and safety signage facilitating navigation in the area were put into place throughout the site, including the main access road connecting the area to the community of San José de la Landa. The project could still explore new ways of connecting to its surroundings by way of improving existing infrastructure and encouraging the use of other modes of transportation by workers and residents to the area. Some strategies might include evaluating the need for a transportation management plan taking into account the development of SunEdison's photovoltaic plants as well as other renewable energy projects in the area, and working with the local authorities to improve accessibility for non-motorized transportation and public transit and promote alternative transportation for workers to enhance accessibility to the project site.

Community

The Community subcategory covers the visual and functional impacts of infrastructure projects on their immediate surroundings. Projects are encouraged to utilize innovative ways of integrating into the local community without perturbing its character and natural features.

The Honduran Institute of Anthropology and History has found no historical or cultural resources on the project sites of Choluteca I and II. Important archaeological sites were found in

the other photovoltaic plant project site by SunEdison, Pacífico I (which is not part of the scope of this assessment), and various measures were taken to ensure that any vestiges of historic and cultural value were properly identified and preserved when found. This shows the commitment of the project team to the community's historical and cultural value.

The project team has made efforts to mitigate the impact of the project on the views and local character of the area. In the environmental assessment of the project, there was a concern that the proximity of the three solar plants and the transmission lines might potentially have a negative effect in the visual landscape and the agricultural sense of place of the area. A reforestation plan was devised, focusing on the planting of native tree species along the perimeter of the project site to alleviate some of its impacts on the local character of the area. However, no evidence was found indicating this process involved community members in the generation of design guidelines and identification of views and local character to preserve. The project team should consider holding meetings to discuss these matters and, moving forward, should help local communities in developing comprehensive policies and regulations regarding views and appropriateness of projects to local character. Programs for monitoring and enforcement of these measures can also be considered.

It is proved that SunEdison is committed to implement good practices in the creation of public spaces, as demonstrated in their project Pacífico I with the development of the community center in Barrio San Jorge and the upgrade of the Juan Benito Guevara school. Pacífico I is located on the area of influence of Choloteca I and II and therefore all these projects will directly or indirectly benefit the entire population of the zone. According to the information released by the project team the construction of the community center will benefit 149 households estimated on 597 people. The upgrades conducted at the Juan Benito Guevara School in El Edén neighborhood will benefit 346 scholars and 18 teachers. The project should also explore the possibility of developing programs addressing specifically direct areas of influence of Choluteca I and II.

Vulnerable Groups

The Vulnerable Groups subcategory seeks to improve the quality of life of women and diverse communities identified as part of the demographic vulnerable groups of the area. Projects are encouraged to identify and assess the needs and constraints of different groups so they can all benefit from the opportunities provided by the infrastructure projects. This includes taking these populations into account when creating employment opportunities, accessibility, and empowerment.

The project presents opportunities to focus on the improvement of quality of life of vulnerable

groups in the area of influence of Choluteca I and II. In the first place, the projects should identify demographics of vulnerable populations in the area and target any efforts and initiatives to address some of the needs that these groups are facing.

4. LEADERSHIP CATEGORY

The Leadership category evaluates project team initiatives that establish communication and collaboration strategies early on, with the ultimate objective of achieving sustainable performance. Envision rewards stakeholder engagement as well as encompassing a holistic, long-term view of the project's life cycle. Leadership is distributed into three subcategories: Collaboration, Management, and Planning.

Collaboration

The Collaboration subcategory addresses the importance of including input from a wide variety of stakeholders to fully understand synergies, savings, and opportunities for innovation. This type of collaboration necessitates a new kind of leadership and commitment from the project team as well as new ways of managing processes.

The project team has shown a commitment to sustainable development at an organizational level through the corporate policies of SunEdison, and at a project level through the production of environmental assessments including measures to mitigate adverse impacts and through the project's thorough social investment plan. These documents have also allowed the project to outline basic goals and objectives that address the main dimensions of sustainability. There are future opportunities to articulate the commitment to sustainability through clearer specifications of sustainability roles and responsibilities within the organization and the project team.

In terms of collaboration, the project demonstrated active involvement of community stakeholders throughout the construction phase, really including the affected communities in the creation of a social investment plan with specific social projects designed and constructed to improve the quality of community life. Extensive communication and inclusion of stakeholders in selection and development of infrastructure projects is present. This work could be furthered by providing evidence that community input has altered design decisions for the actual photovoltaic project, beyond the social projects in the community.

Finally, the largest opportunity for improvement in this category lies in closer teamwork between the different parties. This close collaboration should be brought into the project early

on with the selection of an appropriate project delivery method. The project team should explore ways to improve performance and reduce costs by employing whole-system design methodologies, increasing the integration of stakeholder participation by reevaluating current team collaboration methodologies, project delivery systems, and contractual relationships. A model based on risk and reward sharing might actually further promote team collaboration, efficiency, and a common goal for different entities.

Management

The Management subcategory covers how a broader and more comprehensive understanding of the project can allow the team to see and pursue synergies between systems, either within the project or among larger infrastructure systems, leading to new ways of managing the project while increasing sustainability and useful life.

The project has made some efforts to reduce waste and improve project performance by identifying project materials needed and seeking out nearby facilities that supply unwanted materials that could meet project needs while also capturing synergy opportunities. It is advised to document the origin of used materials to demonstrate their efforts in using regional materials, first outlining project material needs and then seeking out managers of nearby facilities that could supply by-products or discarded materials to be used in the project's design, construction, and/or operation phase.

The project's photovoltaic plants will be designed to be connected to local electricity grids through single-pole transmission lines connected to an existing substation, Santa Lucía. As part of the project, the substation will be renovated and expanded and the connection of these electrical infrastructures will last for the community beyond the project's useful life. The project has also examined other ways to improve local infrastructure, such as road work within the project site connecting the main existing access road, and social investment projects in nearby communities. Specifically, the following infrastructure projects reflect an effort to improve infrastructure integration in the provision of basic community services: construction of an air tank with plumbing in San José de la Landa, drilling a well and installing a water pump, and the construction of an elevated tank to distribute water to the community by gravity in Colonia Victor Manuel Argeñal I. All these efforts consist of project-specific work that could also benefit from integrating other kinds of existing infrastructure, benefiting from a systems approach that successfully bundles and integrates them. Ultimately, every project should relate to existing community infrastructure elements, enhancing overall community efficiencies and effectiveness.

Planning

The Planning subcategory considers how taking a long-term view of the project can also greatly increase its sustainability. This approach necessitates the understanding of planning regulations to avoid pitfalls and plan effectively for the project's future.

Choluteca I and II has developed a detailed long-term monitoring and maintenance plan, the Operation and Maintenance Manual, describing efforts to prevent failures and correct the performance of all equipment both physically and through digital monitoring programs. The plan includes detailed procedures, visual inspections, controls, measurements, and calibration of equipment, as well as deep cleaning and maintenance of photovoltaic modules, which will allow the plants to operate appropriately throughout their useful life. At the moment, the project has not identified conflicting regulations and policies that might unintentionally create barriers to the implementation of sustainable infrastructure. Further exploration of regulations in place could be an opportunity for the project to further encourage sustainability goals and objectives. It would require working with officials to identify and change laws, standards, regulations, and/or policies that might affect the achievement of sustainability goals, thus raising the standards of local legislation for this project and future ones in the area.

A second area of opportunity lies in designing the project in a way that results in a constructed work that is more durable, flexible, and resilient. While the project team has indicated a desire to extend the project's useful life beyond its first 30 years, no evidence has demonstrated how this desire has affected design and construction considerations to make this extension possible. The project team could incorporate fuller life cycle thinking when planning for such an extension by taking certain design and construction decisions that might enable the expansion, reconfiguration, or multiple uses of components of the project.

5. RESOURCE ALLOCATION CATEGORY

The Resource Allocation category deals with material, energy, and water requirements during the construction and operation phases of infrastructure projects. The quantity and source of these elements as well as their impact on overall sustainability are investigated throughout this section of the Envision rating system. Envision guides teams to choose less toxic materials and promotes renewable energy resources. Resource Allocation is divided into three subcategories: Materials, Energy, and Water.

Materials

The Materials subcategory seeks to minimize the total amount of material used as a primary consideration for infrastructure projects. Minimizing material reduces the amount of natural resources that must be extracted and processed, as well as the energy involved in production and transportation.

Choluteca I and II present a lot of opportunities to develop strategies for further consideration of project materials. It is recommended to conduct a life cycle energy assessment estimating the net embodied energy of project materials, looking at the project materials' energy from extraction, refinement, and manufacture. Such an assessment would enable the project to identify embodied energy levels and seek ways to reduce these by selecting materials with lower embodied energy. The project would also benefit from documenting the origin of used materials and their efforts to use of recycled or regional materials in the project. Utilizing reused materials including structures and material with recycled content would help reduce the use of virgin materials in the project and avoid sending useful materials to landfills. The project should first develop an inventory of materials that could be specified with a level of recycled content, either found on site or in nearby facilities. These efforts would also minimize transportation costs and impacts, retaining regional benefits through local sourcing.

The project makes a considerable effort to divert waste from landfills. The project has developed a waste management plan to decrease waste, classifying waste types and indicating appropriate management and disposal. In order to improve performance in this area, the project should consider ways to quantify these materials by weight or volume in order to keep track of how much of the material is actually being diverted from landfills, since this has only been done for some waste types. Significant efforts have also been seen in the reduction of excavated materials taken off site. Choluteca I and II have reutilized excavated materials in the construction of platforms, roads, buildings, and drainage, amounting to an 81% reutilization of excavated materials.

Finally, the project doesn't encourage future recycling, upcycling, and reuse by designing for ease and efficiency in project disassembly or deconstruction at the end of its useful life. The project team could develop this aspect by including more life cycle considerations in the project beyond construction, such as more flexibility to increase the possibility of alternative future uses or other end-of-life considerations such as recycling and upcycling materials and equipment.

Energy

The Energy subcategory addresses the importance of reducing overall energy use, particularly from nonrenewable fossil fuel sources, which are already becoming scarce.

The project hasn't exhibited specific efforts to reduce energy consumption in its facilities. It should first quantify the energy consumption of its systems during the operation phase, and then devise strategies to achieve energy reduction and savings compared to industry norms.

Choluteca I and II have made an excellent effort in using the generated renewable energy for plant operation. The projects generate a net positive amount of renewable energy. With a total capacity of 58 MWp, the two plants are expected to generate 112 GWh per year. The Choluteca I plant consists of 76,320 photovoltaic cells with a nominal capacity of 20 MW and the Choluteca II plant consists of 115,280 photovoltaic cells with a nominal capacity of 30 MW. The generated energy will be used to power the project installation and to supply electricity to the national power grid.

Finally, SunEdison has developed an Operation and Maintenance Manual to guide the long-term monitoring and maintenance of the project, ensuring that both preventive and corrective maintenance are performed regularly throughout the project operation phase. The plan describes digital monitoring systems such as SCADA and SEEDS.

Water

The water subcategory emphasizes the importance of reducing overall water use, particularly potable water, in the face of the changing climate and increasing population that place future water security at risk. Monitoring and studying water availability as well as looking for alternative water resources are possible directions to emphasize.

Choluteca I and II produced no immediate negatives on freshwater availability on site. The area where the project is located does not have any surface waterways, such as rivers or streams, but does have some aquifers below ground, starting at a 3 m depth. However, no information was provided demonstrating that a comprehensive water availability assessment was performed, identifying available water resources (quantity, quality, rates of recharge) along with project water demands (quantity, quality, reuse opportunities). The ultimate net positive goal would be to replenish the quantity and quality of fresh surface and groundwater supplies, bringing them to an undeveloped, native ecosystem condition.

The project also didn't exhibit specific measures to reduce potable water consumption or

promote the use of gray water, recycled water, and stormwater to meet water needs, instead of relying on bottled water supply. No efforts to monitor water systems were identified either, but given that the project doesn't involve the deployment of water systems for its operation, no immediate recommendations have been put in place.

6. NATURAL WORLD CATEGORY

The Natural World category focuses on how infrastructure projects may impact natural systems and promotes opportunities for positive synergistic effects. Envision encourages strategies for conservation and distinguishes projects with a focus on enhancing surrounding natural systems. Natural World is subdivided into three subcategories: Siting, Land and Water, and Biodiversity.

Siting

The siting subcategory addresses the fact that infrastructure should be sited to avoid direct and indirect impacts on important ecological areas. Projects should avoid areas of high ecosystem value that serve as diverse habitats. Previously developed or disturbed land is ideal for preventing further damage to the environment, improving land value, and remediating contaminated brownfields.

Choluteca I and II avoid development in a site of high ecological value or adverse geology, as well as unsuitable development on steep slopes. The project's surrounding area has undergone extensive historic deforestation for agriculture and livestock production, and its recommended use is for agriculture and livestock due to its soft slope and the loamy, sandy texture of its soils. The two main protected areas near the project, Cerro Guanacaure and Área de Manejo de Hábitat por Especie El Jicarito, are located about 12 km and 8 km away from the project respectively, maintaining a considerable distance from it. There are also no adverse geological formations found on site. The main geological risk is that Honduras is prone to earthquakes. In order to address this, a geotechnical assessment was performed on site to determine the appropriate foundation types based on the soil's' inherent capacities. The project's location on flat land corresponding to a cumulative and erosive floodplain successfully avoids the risks of erosion and landslides that are involved with development on steep slopes.

Given its siting, the project does not preserve prime farmland or greenfields. No specific designation of the area as prime farmland, unique farmland, or farmland of statewide importance has been indicated by the environmental assessments. Since the project is being developed on agricultural land, it does not preserve greenfields, and no other part of the land is identified as a grayfield.

The project presents opportunity for improvement in the areas of preservation of surface water and the site's floodplain functions. The project site includes no rivers or streams, but there are some ponds or natural lagoons that formed part of the water supply for livestock that previously used the site. While the project does not require any consumption of water or modification of water bodies on site, it should clarify the buffer between the photovoltaic modules and the ponds on site to ensure the ponds' preservation. The project will not affect any permanent drainage on site, but it will affect stormwater runoff and infiltration through the construction and installation of infrastructure (drainage ways, internal roads, buildings, parking areas, and solar panels, among others). In order to mitigate these impacts, the project has taken initiatives such as an extensive reforestation project and the development of a drainage system across the site. However, no documentation indicated the extent to which efforts to improve water infiltration and quality have restored the site's floodplain functions to their predevelopment state.

Land and Water

The Land and Water subcategory calls for minimal impact on existing hydrological and nutrient cycles, paying particular care to avoid the introduction of contaminants through stormwater runoff or pesticides and fertilizers.

The project will affect the stormwater runoff and infiltration of the site through the construction and installation of hard-surface infrastructure. In order to mitigate this impact and improve stormwater management, the project has developed a rainwater drainage system consisting of a trench with a trapezoidal shape, with fixed control points every 200 meters to measure the water level. The project should strengthen its efforts to manage stormwater by registering the extent to which it has improved water storage capacity, quantifying the percentage improvement achieved in water storage, infiltration, evapotranspiration, and/or water harvesting capacity, bearing in mind that the site is a greenfield, for which predevelopment conditions serve as the target water storage capacity. The maintenance of vegetation on site involves minimal control measures, including the removal of vegetation that might place the photovoltaic modules under shadow or hinder the movement of vehicles and people around the site. Due to the lack of need, the project exhibits a limited use of herbicides on site. However, it was indicated that herbicides are utilized to control vegetation in areas of fencing as part of the plant's preventive maintenance procedures.

The project does not require any consumption of water nor modification of water bodies on site. Groundwater will not be affected by project activities, but surface water in the form of natural lagoons is exposed to potential contamination due to stormwater runoff. The project

should consider monitoring water quantity and quality to ensure that contamination is being prevented by the stormwater and waste management initiatives.

Biodiversity

The Biodiversity subcategory focuses on how infrastructure projects minimize negative impacts on natural species and their habitats, on and near the site. Special attention must be paid to avoiding introducing and spreading invasive species, as well as the fragmentation of habitats and animal movement.

The project presents many opportunities for improvement in this subcategory. First of all, the development of Choluteca I and II will modify the habitat, given the removal of portions of the vegetation cover, which will affect the habitat for the present fauna. While this impact is considered to be temporary and reversible, it will displace fauna in the region. The project identifies existing habitats and mitigates the impact on the area's flora through its reforestation program, but no documentation was provided demonstrating that monitoring and mitigation strategies have been put in place to maintain net habitat quality and area (particularly relating to fauna), or to provide means for animals to access predevelopment habitat after development is complete. The project also doesn't show the analysis or identification of noninvasive species that might change the function of the area's ecosystem. The project team should identify the invasive species found within 1,000 m of the site and develop a management/maintenance plan outlining strategies to minimize their appearance in the area.

The development of the project involved the compaction, disturbance, and erosion of soils in preparing the project area for construction. The project should make an effort to restore 100% of these disturbed soils, illustrating activities and calculations in order aimed at restoring their ecological and hydrological functions to predevelopment conditions. Finally, the project does not require any consumption of water nor modification of water bodies on site, but it does not provide any evidence that it maintains or enhances hydrological connections, water quality, the function of surface water bodies as habitat, nr sediment transport. The project should develop a habitat study of the existing natural lagoons on site in order to determine how the project maintains their water quality and their function as a habitat.

7. CLIMATE AND RISK CATEGORY

Envision aims to promote infrastructure developments that are sensitive to long-term climate disturbances. Climate and Risk focuses on avoiding direct and indirect contributions to greenhouse gas emissions, as well as promotes mitigation and adaptation actions to ensure

short- and long-term resilience to hazards. Climate and Risk is further divided into two subcategories: Emissions and Resilience.

Emissions

The Emissions subcategory aims to understand and reduce dangerous emissions, both of greenhouse gases and of other pollutants, during all stages of a project's life cycle. Reducing these emissions minimizes short- and long-term risk to the life cycle of the project.

Choluteca I and II had an excellent performance in this category. Given that the project is a photovoltaic plant, it generates electricity from a renewable source and does not involve the use of fossil fuels, therefore preventing the emission of greenhouse gases as part of the process of energy generation. The project is estimated to prevent the generation of 31,810 tons of CO_2 per year, which is equivalent to the contamination produced by the generation of energy from at least 600,000 barrels of heavy fuel per year.

Since the project is a renewable energy generator, each kWh of electricity generated will prevent the emission of CO_2 as well as air pollutants. The construction phase of the project involved dust generation and hydrocarbon emissions due to the use of machinery and vehicles. This was mitigated by establishing maximum speed limits, maintaining the vehicles and machinery regularly, and wetting the road surfaces. However, no additional measures were taken to minimize adverse impacts on air quality beyond those required by regulations.

Resilience

The Resilience subcategory addresses the ability to withstand short-term risks, such as flooding or fires, and the ability to adapt to changing long-term conditions, such as changes in weather patterns, sea level rise, or changes in climate. Increased adaptability and decreased vulnerability ensures a longer useful life and ensures that the project will be able to meet the future needs of the community.

The project team has developed an emergency plan related to short-term emergency control that identifies earthquakes, storms, and floods as the main climate threats for the area, as well as other types of man-made hazards such as fires and electrocutions. The plan includes information such as annual emergency drills for each type of threat, meeting points and evacuation routes, and training for the personnel. However, a more thorough analysis of these threats is necessary to develop more detailed short- and long-term hazard preparation, indicating frequency, forecast, and severity of identified hazards.

This category presents a large opportunity for the project to address issues of climate change. The project could build upon its existing emergency plan to develop a comprehensive plan assessing the project's vulnerability, risk, and adaptation to climate threats with additional, more detailed information on the types of climate threats for the project. This would enable its preparation to be resilient to the consequences of long-term climate change, perform adequately under altered climate conditions, and/or adapt to other long-term change scenarios.

APPENDIX:
APPENDIX A: PROJECT PICTURES AND DRAWINGS

Figure 05: General Map of Projects Choluteca I & II in Choluteca, Honduras.
Sources: SunEdison, *Operation and Maintenance Manual: Proyecto Solar Choluteca I & 2 "SERSA"* (Honduras, 2015), 17.

Figure 06: Area of Influence of the PV Projects Pacífico I, Choluteca I & II.
Sources: SunEdison, *Operation and Maintenance Manual: Proyecto Solar Choluteca I & 2 "SERSA"* (Honduras, 2015), 17.

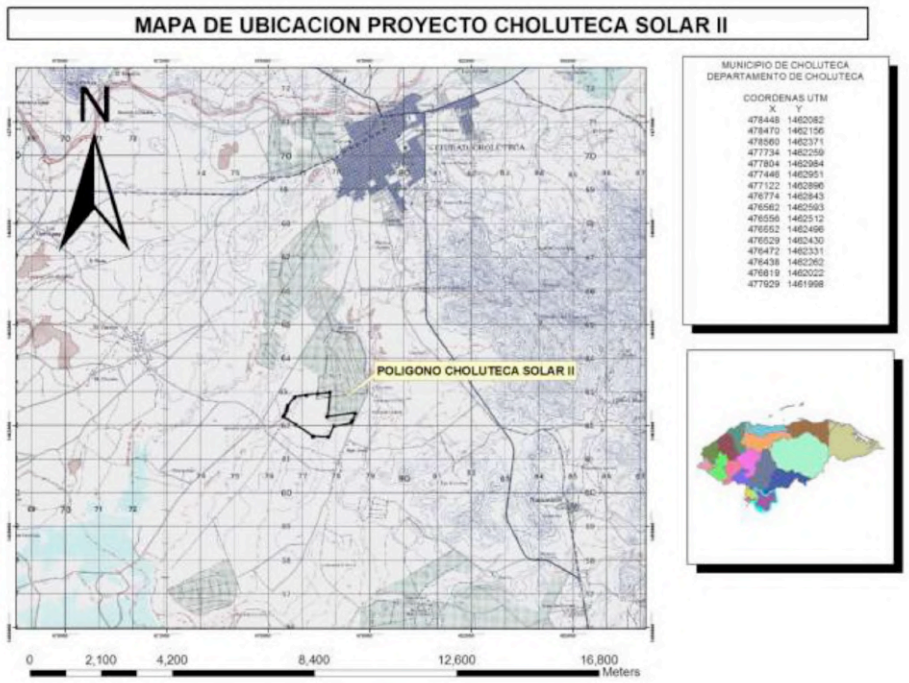

Figure 07: Project Location Map
Sources: Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 36.

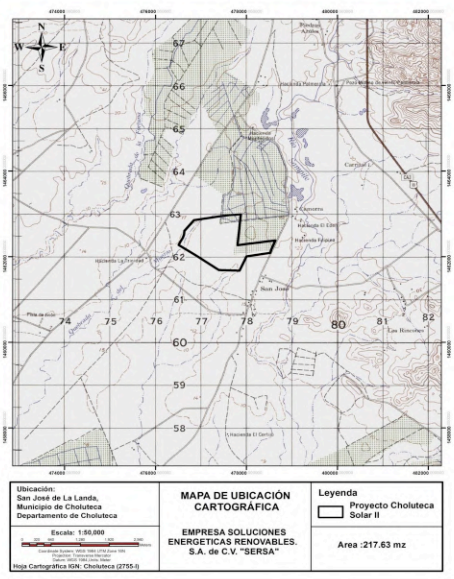

Figure 08: Panoramic View of Project.
Sources: Empresa Soluciones Energéticas Renovables S.A. de C.V. (SERSA), *Plan de Reforestación y Manejo con Especies del Bosque Latifoliado Deciduo* (Choluteca, Honduras, 2014), 6.

No	X	Y
1	478448	1462082
2	478470	1462156
3	478560	1462371
4	477734	1462259
5	477804	1462984
6	477446	1462951
7	477122	1462896
8	476774	1462843
9	476562	1462593

No	X	Y
10	476556	1462512
11	476552	1462496
12	476529	1462430
13	476472	1462331
14	476438	1462262
15	476819	1462022
16	477319	1461682
17	477775	1461665
18	477929	1461998

Figure 09: Panoramic View of Project.
Sources: Empresa Soluciones Energéticas Renovables S.A. de C.V. (SERSA), *Plan de Reforestación y Manejo con Especies del Bosque Latifoliado Deciduo* (Choluteca, Honduras, 2014), 7.

Figure 10: Initial Ground Conditions Before Development.
Sources: Clever Honduras, *Informe de Avance Social de Sitio Pacífico I, Choluteca I y II*. Semana del 30 de abril al 06 de mayo del 2015 (Choluteca, 2015), 8.

Figure 11: Construction of elevated tank to distribute water to the community by gravity in Colonia Victor Manuel Argeñal I.
Sources: Clever Honduras, *Informe de Avance Social de Sitio Pacífico I, Choluteca I y II*. Semana del 06 al 12 de agosto del 2015 (Choluteca, 2015), 5.

Figure 12: Installation of solar panels for Aldea Montesillos.
Sources: Clever Honduras, *Informe de Avance Social de Sitio Pacífico I, Choluteca I y II*. Semana del 16 al 22 de julio del 2015 (Choluteca, 2015), 15.

Figure 13: Construction of water tank in San José de la Landa.
Sources: Clever Honduras, *Informe de Avance Social de Sitio Pacífico I, Choluteca I y II*. Semana del 25 de junio al 01 de julio del 2015 (Choluteca, 2015), 5.

Figure 14: Donation of Materials to community Aldea Montesillos.
Sources: *Anexo Fotográfico, CSR*.

Figure 15: Ground Conditions on January 05, 2015.
Sources: *Anexo Fotográfico, CSR*.

Figure 16: Internal Roads.
Sources: *Anexo Fotográfico*.

Figure 17: Internal Roads.
Sources: *Anexo Fotográfico*.

Figure 18: Signage on site.
Sources: *Anexo Fotográfico*.

Figure 19: Signage on site.
Sources: *Anexo Fotográfico*.

Figure 20: Panoramic View of Project.
Sources: Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 140.

Figure 21: Panoramic View of Project.
Sources: Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 140.

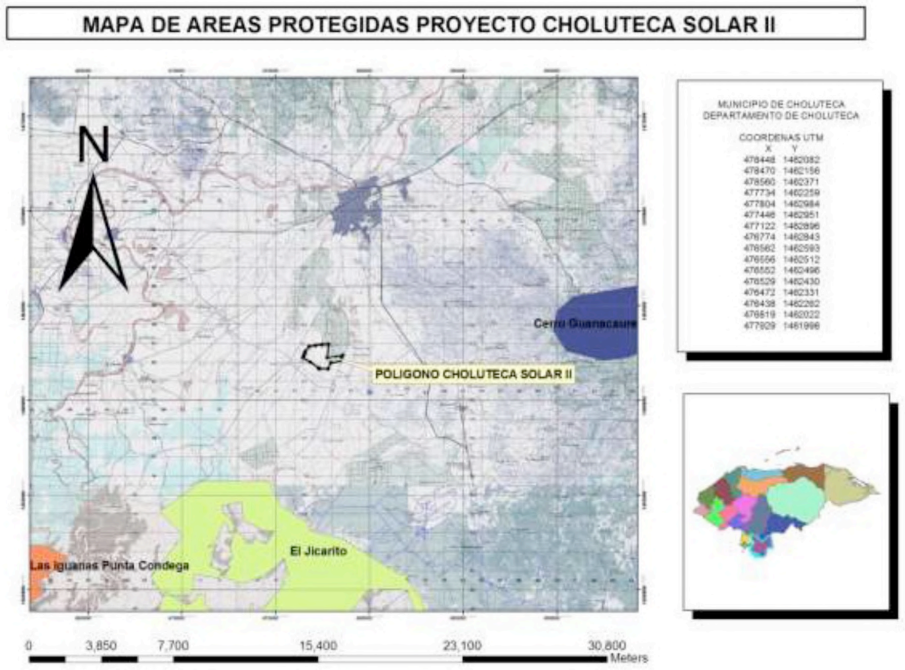

Figure 22: Natural Protected Areas in relation to project site.
Sources: Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 145.

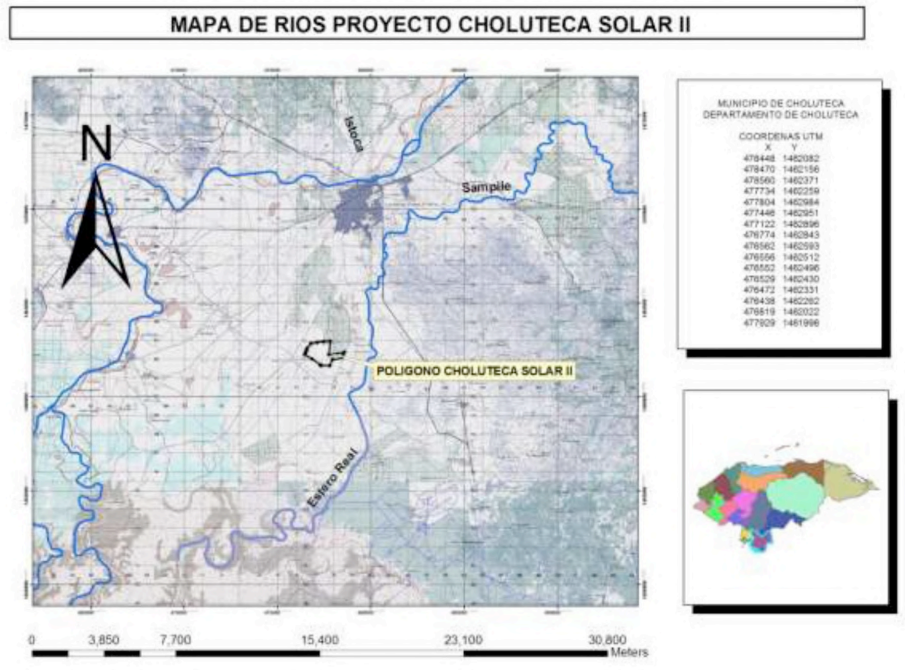

Figure 23: Project Area Hydrology Map.
Sources: Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 142.

Figure 24: Natural Lagoons found on site.
Sources: Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 141.

Figure 25: Natural Lagoons found on site.
Sources: Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 141.

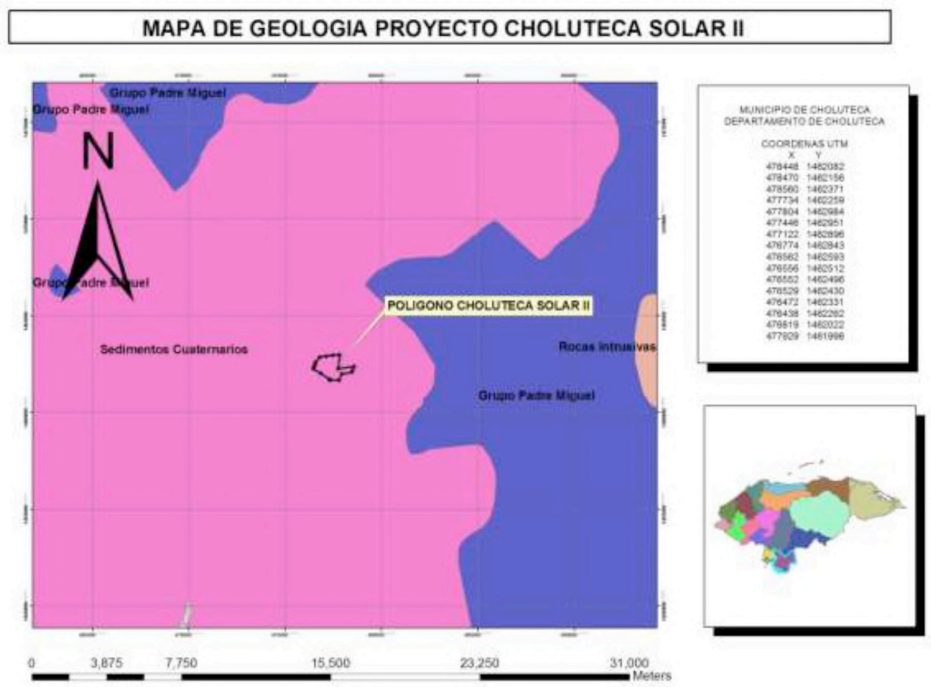

Figure 26: Project Area Geology Map.
Sources: Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 144.

Figure 27: Initial Ground Conditions Before Development.
Sources: Cobra, *Reporte Fotográfico: Proyecto Ampliación de la Sub Estación Santa Lucía 230 kv y 34.5 kv* (2015), 2.

Figure 28: Removal of Topsoil and Relocation of Fauna.
Sources: Cobra, *Reporte Fotográfico: Proyecto Ampliación de la Sub Estación Santa Lucía 230 kv y 34.5 kv* (2015), 2.

Figure 29: Ground Conditions on January 05, 2015.
Sources: Cobra, *Reporte Fotográfico: Proyecto Ampliación de la Sub Estación Santa Lucía 230 kv y 34.5 kv* (2015), 3.

Figure 30: Ground Conditions on January 05, 2015.
Sources: Cobra, *Reporte Fotográfico: Proyecto Ampliación de la Sub Estación Santa Lucía 230 kv y 34.5 kv* (2015), 3.

Figure 31: Excavation of Drainage System during construction phase.
Sources: *Anexo Fotográfico*.

Figure 32: Photovoltaic Modules Layout.
Sources: *Anexo Fotográfico*.

Figure 33: Photovoltaic Modules Layout.
Sources: *Anexo Fotográfico*.

Figure 34: Photovoltaic Modules Relation to the Ground.
Sources: *Anexo Fotográfico*.

Figure 35: Photovoltaic Modules Layout.
Sources: *Anexo Fotográfico*.

Figure 36: Photovoltaic Modules Layout.
Sources: *Anexo Fotográfico*.

APPENDIX B: ENVISION POINTS TABLE

ENVISION POINTS TABLE

			IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
QUALITY OF LIFE	PURPOSE	QL1.1 Improve community quality of life	2	5	10	20	25
		QL1.2 Stimulate sustainable growth and development	1	2	5	13	16
		QL1.3 Develop local skills and capabilities	1	2	5	12	15
	WELLBEING	QL2.1 Enhance public health and safety	2	—	—	16	
		QL2.2 Minimize noise and vibration	1	—	—	8	11
		QL2.3 Minimize light pollution	1	2	4	8	11
		QL2.4 Improve community mobility and access	1	4	7	14	
		QL2.5 Encourage alternative modes of transportation	1	3	6	12	15
		QL2.6 Improve site accessibility, safety and wayfinding	—	3	6	12	15
	COMMUNITY	QL3.1 Preserve historic and cultural resources	1	—	7	13	16
		QL3.2 Preserve views and local character	1	3	6	11	14
		QL3.3 Enhance public space	1	3	6	11	13
	VULNERABLE GROUPS	QL4.1 Identify and address the needs of women and diverse communities *	1	2	3	4	
		QL4.2 Stimulate and promote women's economic empowerment	1	2	3	4	
		QL4.3 Improve access and mobility of women and diverse communities *	1	2	3	4	5
					Maximum QL Points:	194**	
LEADERSHIP	COLLABORATION	LD1.1 Provide effective leadership and commitment	2	4	9	17	
		LD1.2 Establish a sustainability management system	1	4	7	14	
		LD1.3 Foster collaboration and teamwork	1	4	8	15	
		LD1.4 Provide for stakeholder involvement	1	5	9	14	
	MANAGEMENT	LD2.1 Pursue by-product synergy opportunities	1	3	6	12	15
		LD2.2 Improve infrastructure integration	1	3	7	13	16
	PLANNING	LD3.1 Plan for long-term monitoring and maintenance	1	3	—	10	
		LD3.2 Address conflicting regulations and policies	1	2	4	8	
		LD3.3 Extend useful life	1	3	6	12	
					Maximum LD Points:	121*	
RESOURCE ALLOCATION	MATERIALS	RA1.1 Reduce net embodied energy	2	6	12	18	
		RA1.2 Support sustainable procurement practices	2	3	6	9	
		RA1.3 Use recycled materials	2	5	11	14	
		RA1.4 Use regional materials	3	6	9	10	
		RA1.5 Divert waste from landfills	3	6	8	11	
		RA1.6 Reduce excavated materials taken off site	2	4	5	6	
		RA1.7 Provide for deconstruction and recycling	1	4	8	12	
	ENERGY	RA2.1 Reduce energy consumption	3	7	12	18	
		RA2.2 Use renewable energy	4	6	13	16	20
		RA2.3 Commission and monitor energy systems	—	3	—	11	
	WATER	RA3.1 Protect fresh water availability	2	4	9	17	21
		RA3.2 Reduce potable water consumption	4	9	13	17	21
		RA3.3 Monitor water systems	1	3	6	11	
					Maximum RA Points:	182*	

ENVISION POINTS TABLE

			IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
NATURAL WORLD	SITING	NW1.1 Preserve prime habitat	—	—	9	14	18
		NW1.2 Protect wetlands and surface water	1	4	9	14	18
		NW1.3 Preserve prime farmland	—	—	6	12	15
		NW1.4 Avoid adverse geology	1	2	3	5	
		NW1.5 Preserve floodplain functions	2	5	8	14	
		NW1.6 Avoid unsuitable development on steep slopes	1	—	4	6	
		NW1.7 Preserve greenfields	3	6	10	15	23
	LAND & WATER	NW2.1 Manage stormwater	—	4	9	17	21
		NW2.2 Reduce pesticide and fertilizer impacts	1	2	5	9	
		NW2.3 Prevent surface and groundwater contamination	1	4	9	14	18
	BIODIVERSITY	NW3.1 Preserve species biodiversity	2	—	—	13	16
		NW3.2 Control invasive species	—	—	5	9	11
		NW3.3 Restore disturbed soils	—	—	—	8	10
		NW3.4 Maintain wetland and surface water functions	3	6	9	15	19
					Maximum NW Points:	203*	
CLIMATE & RISK	EMISSIONS	CR1.1 Reduce greenhouse gas emissions	4	7	13	18	25
		CR1.2 Reduce air pollutant emissions	2	6	—	12	15
	RESILIENCE	CR2.1 Assess climate threat	—	—	—	15	
		CR2.2 Avoid traps and vulnerabilities	2	6	12	16	20
		CR2.3 Prepare for long-term adaptability	—	—	—	16	20
		CR2.4 Prepare for short-term hazards	3	—	10	17	21
		CR2.5 Manage heat islands effects	1	2	4	6	
					Maximum CR Points:	122*	
					Maximum TOTAL Points:	822*	

* Indigenous or afro-descendant peoples
** Not every credit has a restorative level. Therefore totals include the maximum possible points for each credit whether conserving or restorative.

Figure 37: Envision credits with scores by achievement level. This table includes experimental "Vulnerable Groups" credits developed in collaboration with the Inter-American Development Bank.
Sources: Envision™ and the Zofnass Program for Sustainable Infrastructure

APPENDIX C: GRAPHS

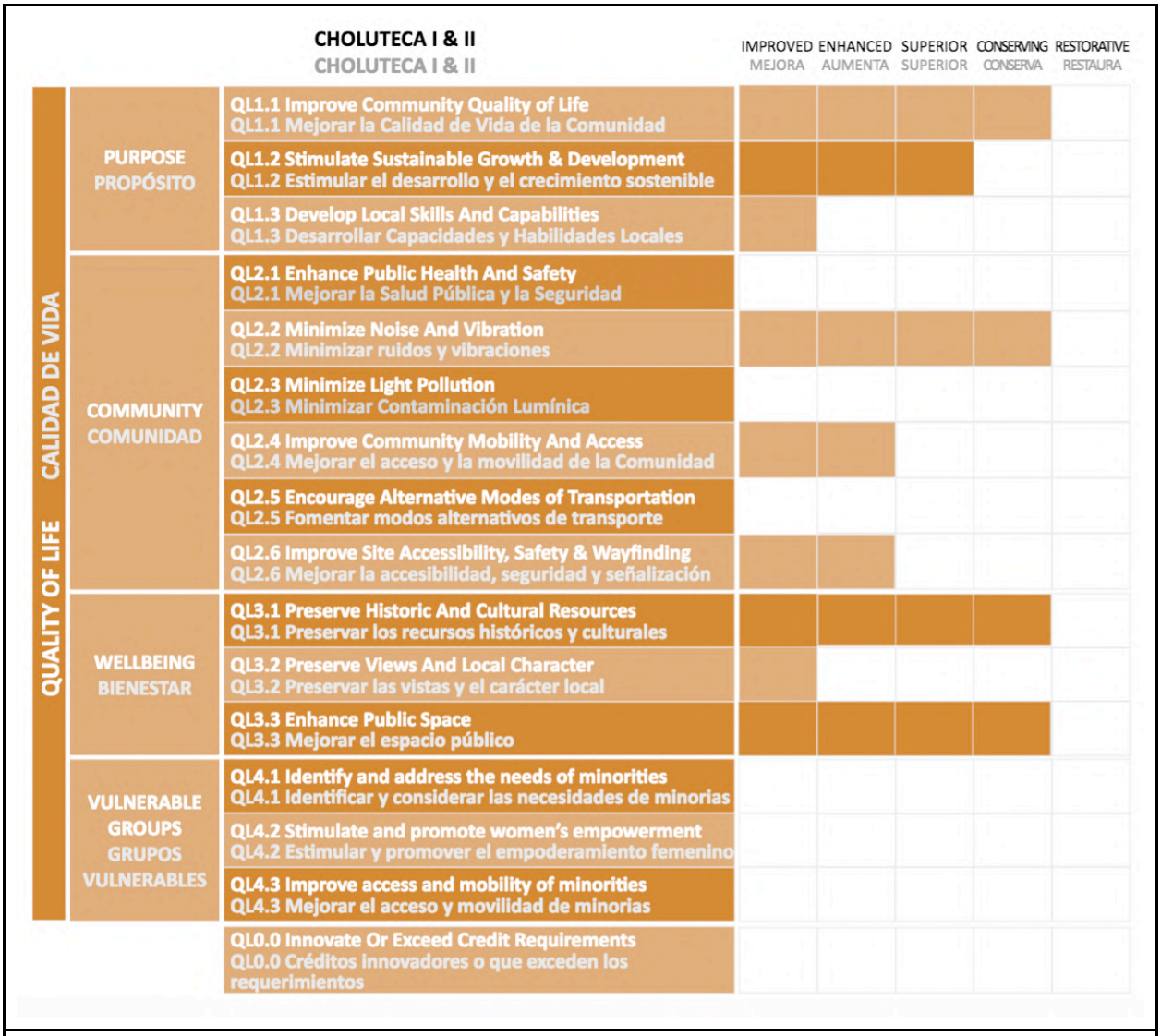

Figure 38: Quality of Life category_ Summary of results

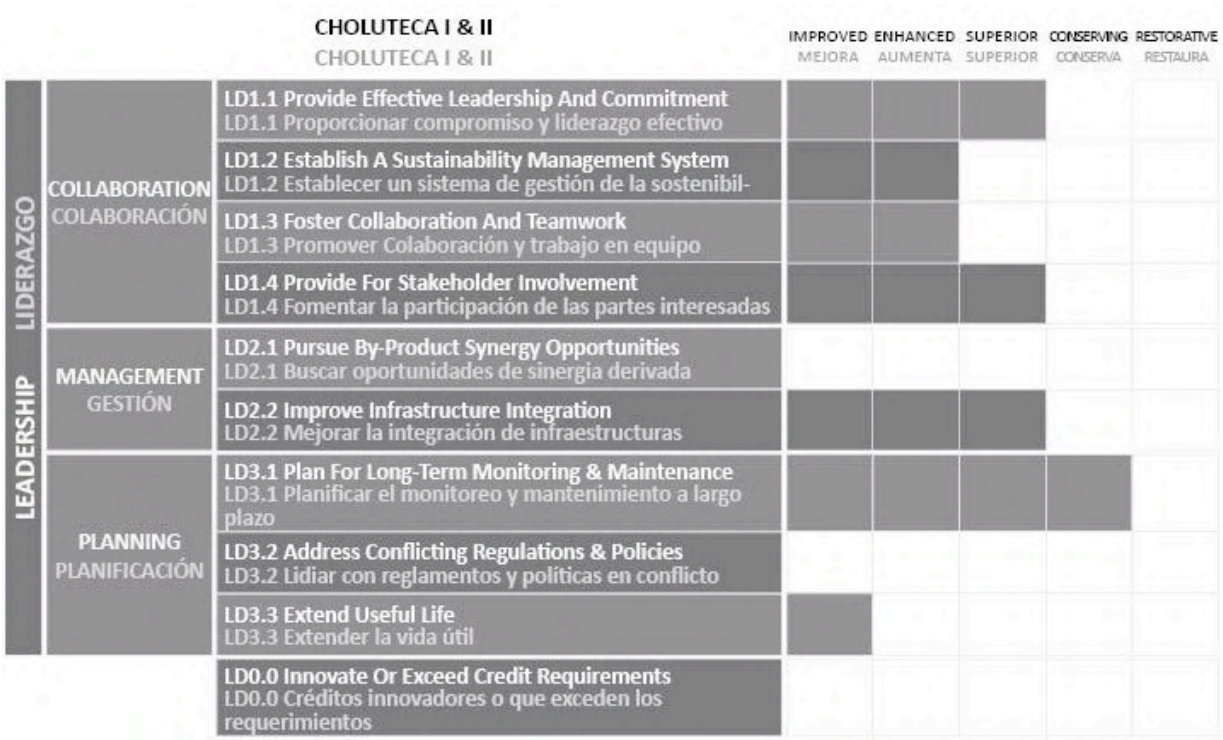

Figure 39: Leadership category_ Summary of results

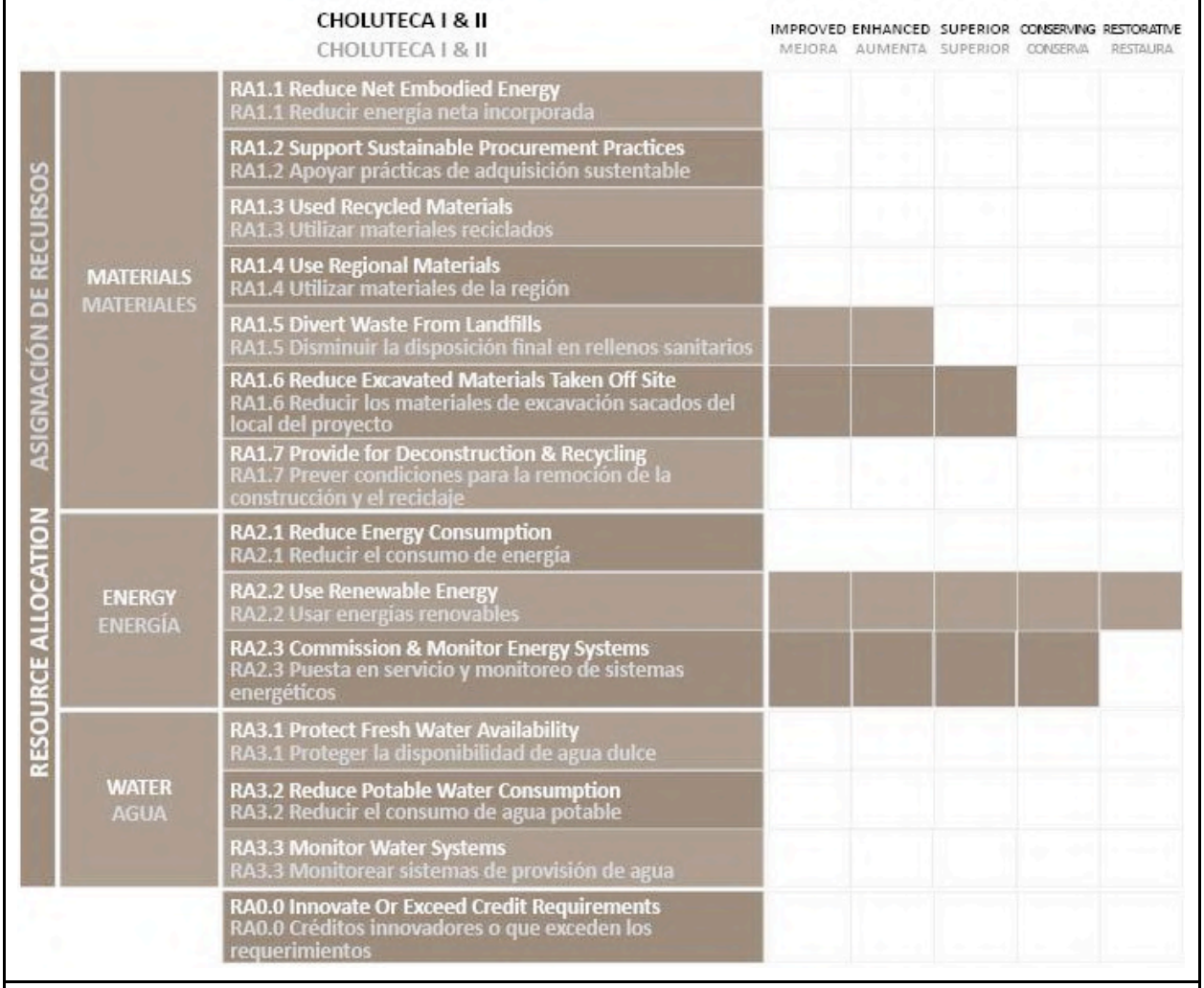

Figure 40:Resource Allocation category_ Summary of results

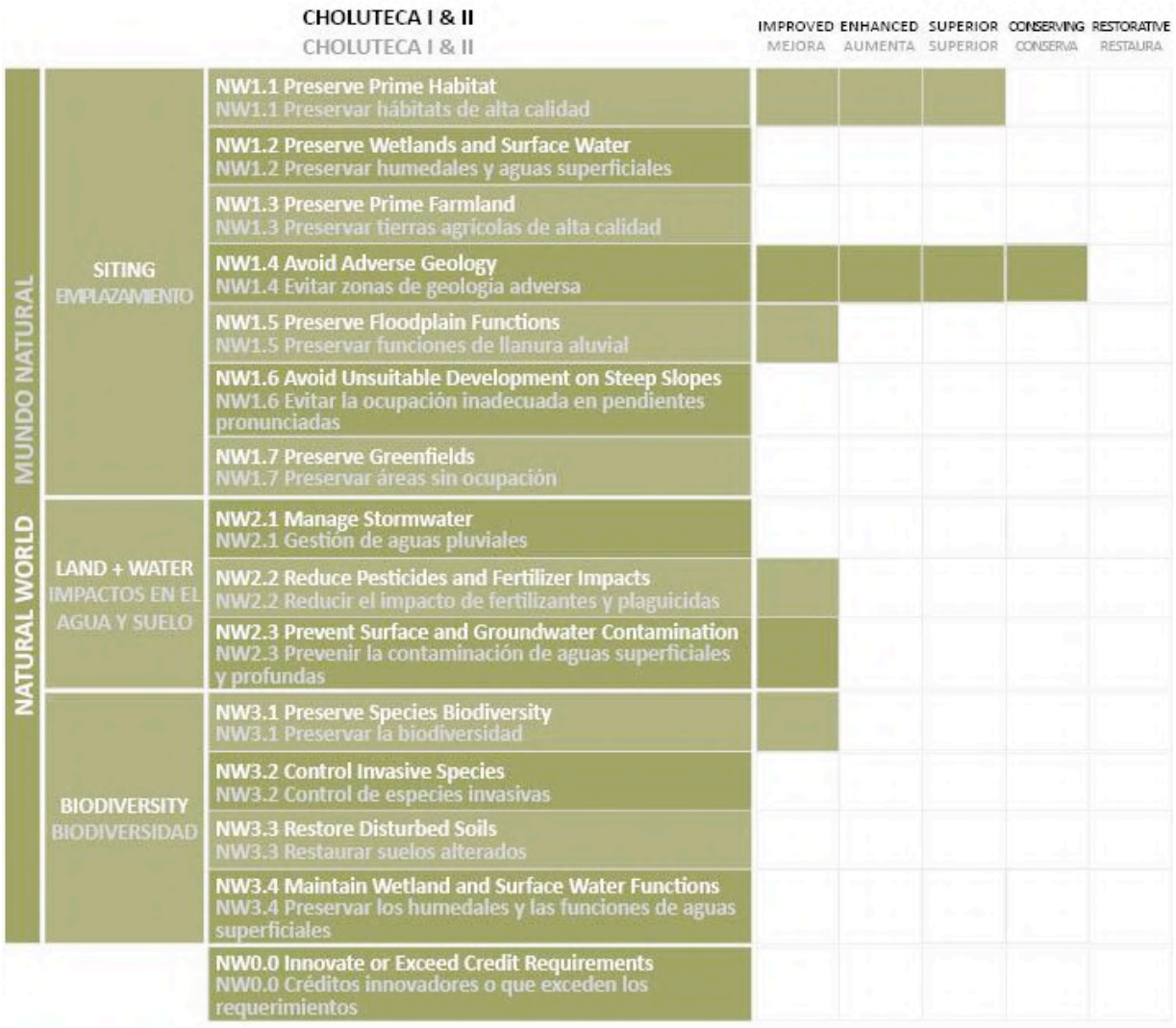

Figure 41: Natural World category_ Summary of results

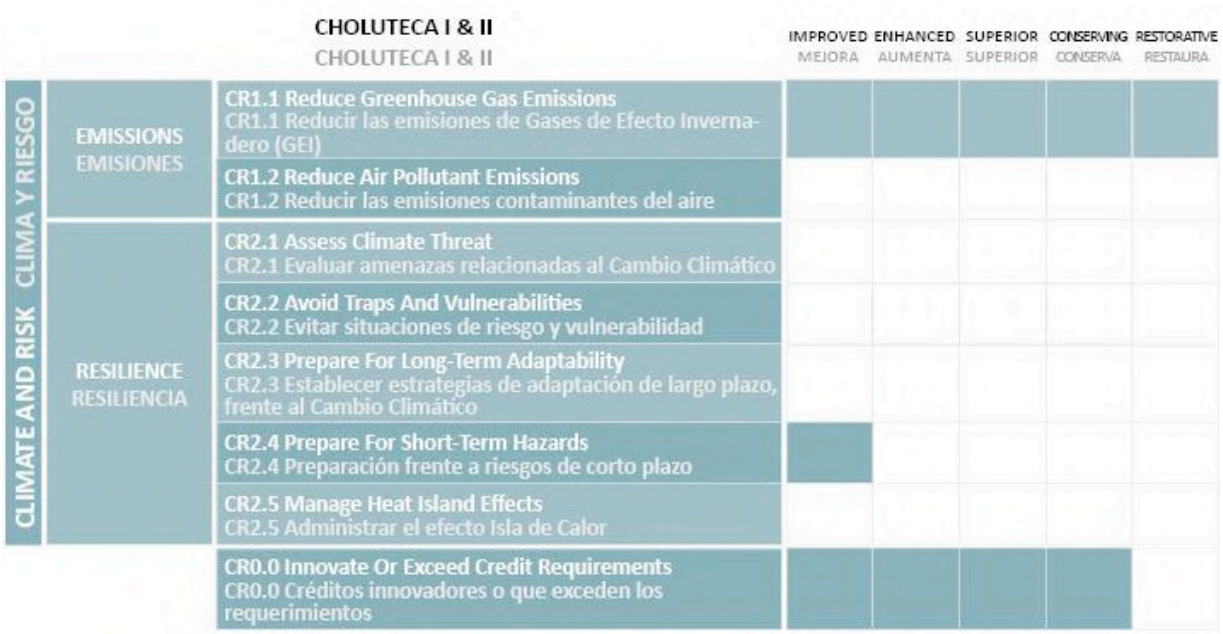

Figure 42: Climate & Risk category_ Summary of results

			CHOLUTECA I & II, HONDURAS	PT.	Performance
1	QUALITY OF LIFE	PURPOSE	QL1.1 Improve Community Quality of Life	20	Conserving
2			QL1.2 Stimulate Sustainable Growth & Development	5	Superior
3			QL1.3 Develop Local Skills And Capabilities	1	Improved
4		COMMUNITY	QL2.1 Enhance Public Health And Safety	0	No Score
5			QL2.2 Minimize Noise And Vibration	8	Conserving
6			QL2.3 Minimize Light Pollution	0	No Score
7			QL2.4 Improve Community Mobility And Access	4	Enhanced
8			QL2.5 Encourage Alternative Modes of Transportation	0	No Score
9			QL2.6 Improve Site Accessibility, Safety & Wayfinding	3	Enhanced
10		WELLBEING	QL3.1 Preserve Historic And Cultural Resources	13	Conserving
11			QL3.2 Preserve Views And Local Character	1	Improved
12			QL3.3 Enhance Public Space	11	Conserving
13		VULNERABLE GROUPS	QL 4.1 Identify and address the needs of women and diverse communities (indigenous or afro-descendant peoples)	0	No Score
14			QL4.2 Stimulate and promote women's economic empowerment	0	No Score
15			QL4.3 Improve access and mobility of women and diverse communities (indigenous or afro-descendant peoples)	0	No Score
			QL0.0 Innovate Or Exceed Credit Requirements	0	0
			QL	66	

			CHOLUTECA I & II, HONDURAS	PT.	Performance
16	LEADERSHIP	COLLABORATION	LD1.1 Provide Effective Leadership And Commitment	9	Superior
17			LD1.2 Establish A Sustainability Management System	4	Enhanced
18			LD1.3 Foster Collaboration And Teamwork	4	Enhanced
19			LD1.4 Provide For Stakeholder Involvement	9	Superior
20		MNGMT.	LD2.1 Pursue By-Product Synergy Opportunities	0	No Score
21			LD2.2 Improve Infrastructure Integration	7	Superior
22		PLANNING	LD3.1 Plan For Long-Term Monitoring & Maintenance	10	Conserving
23			LD3.2 Address Conflicting Regulations & Policies	0	No Score
24			LD3.3 Extend Useful Life	1	Improved
			LD0.0 Innovate Or Exceed Credit Requirements	0	N/A
			LD	44	

			CHOLUTECA I & II, HONDURAS	PT.	Performance
25	RESOURCE ALLOCATION	MATERIALS	RA1.1 Reduce Net Embodied Energy	0	No Score
26			RA1.2 Support Sustainable Procurement Practices	0	No Score
27			RA1.3 Used Recycled Materials	0	No Score
28			RA1.4 Use Regional Materials	0	No Score
29			RA1.5 Divert Waste From Landfills	6	Enhanced
30			RA1.6 Reduce Excavated Materials Taken Off Site	5	Superior
31			RA1.7 Provide for Deconstruction & Recycling	0	No Score
32		ENERGY	RA2.1 Reduce Energy Consumption	0	No Score
33			RA2.2 Reduce Pesticide and Fertilizer Impacts	20	Restorative
34			RA2.3 Commission & Monitor Energy Systems	11	Conserving
35		WATER	RA3.1 Protect Fresh Water Availability	0	No Score
36			RA3.2 Reduce Potable Water Consumption	0	No Score
37			RA3.3 Monitor Water Systems	0	No Score
			RA0.0 Innovate Or Exceed Credit Requirements	0	N/A
			RA	42	

			CHOLUTECA I & II, HONDURAS	PT.	Performance
38	NATURAL WORLD	SITING	NW1.1 Preserve Prime Habitat	9	Superior
39			NW1.2 Preserve Wetlands and Surface Water	0	No Score
40			NW1.3 Preserve Prime Farmland	0	No Score
41			NW1.4 Avoid Adverse Geology	5	Conserving
42			NW1.5 Preserve Floodplain Functions	2	Improved
43			NW1.6 Avoid Unsuitable Development on Steep Slopes	0	No Score
44			NW1.7 Preserve Greenfields	0	No Score
45		L & W	NW2.1 Manage Stormwater	0	No Score
46			NW2.2 Reduce Pesticides and Fertilizer Impacts	1	Improved
47			NW2.3 Prevent Surface and Groundwater Contamination	1	Improved
48		BIODIVERSITY	NW3.1 Preserve Species Biodiversity	2	Improved
49			NW3.2 Control Invasive Species	0	No Score
50			NW3.3 Restore Disturbed Soils	0	No Score
51			NW3.4 Maintain Wetland and Surface Water Functions	0	No Score
			NW0.0 Innovate or Exceed Credit Requirements	0	N/A
			NW	20	
			CHOLUTECA I & II, HONDURAS	PT.	Performance
52	CLIMATE	EMISSION	CR1.1 Reduce Greenhouse Gas Emissions	25	Restorative
53			CR1.2 Reduce Air Pollutant Emissions	0	No Score
54		RESILENCE	CR2.1 Assess Climate Threat	0	No Score
55			CR2.2 Avoid Traps And Vulnerabilities	0	No Score
56			CR2.3 Prepare For Long-Term Adaptability	0	No Score
57			CR2.4 Prepare For Short-Term Hazards	3	Improved
58			CR2.5 Manage Heat Island Effects	0	No Score
			CR0.0 Innovate Or Exceed Credit Requirements	0	N/A
			CR	28	
			Total points	**200**	**0**

Figure 43: Envision credits with scores by achievement level. This table includes experimental "Vulnerable Groups" credits developed in collaboration with the Inter-American Development Bank.
Sources: Envision™ and the Zofnass Program for Sustainable Infrastructure

APPENDIX D: CREDIT DETAIL

CHOLUTECA I & II: CREDIT SPREADSHEET WITH DETAILS

CATEGORY I, PEOPLE AND LEADERSHIP		
SUB CATEGORY: QUALITY OF LIFE		
	Score	**CHOLUTECA I & II**
QL1.1 Improve Community Quality of Life	**20**	**Conserving** Following Honduran environmental impact assessment requirements, the developers of the project conducted a public consultation or socialization process (*Proceso de Socialización* in Cabildo Abierto) with relevant stakeholders for Choluteca I and II on September 12, 2013. At this event, community leaders and municipality authorities agreed with the project and the social investment commitments by developers with the communities under the project's area of influence. After this initial encounter, the project developers have held weekly meetings to identify community needs, go over community profile (census, socioeconomic study, mappings of main stakeholders), complaints and claims procedures, and community projects. A detailed plan for social investment in specific community projects (*Plan de Inversión Social*) was developed and included a community profile assessment outlining needs, opportunities, and issues of each community at a regional and local level. In addition, a detailed *Plan de Trabajo Consulta Ciudadana* was generated to develop a program for social work in the project's area of influence to contribute to long term socio-environmental well-being, establishing weekly meetings, workshops, educational campaigns, and a rigorous communication framework to ensure citizen participation. As established by the environmental impact assessment, due to the nature of the project, most social impacts were identified as positive and related with community development and wellbeing. Due to the construction phase of the project, there will be an increase in dust, emissions, and noise, but the project mitigates this by fostering positive change through investment in the provision of potable water, environmental education, institutional strengthening, and reforestation efforts in the project area of influence. Specifically, five main projects improving the quality of life of the communities affected by Choluteca I and II were carried out by the developers: the construction of an elevated tank with its plumbing in San José de la Landa; the construction of a perimeter wall and access gates to the community education center in the Colonia El Edén; the drilling of a well and installation of a water pump and the construction of an elevated tank to distribute water to the community by gravity in Colonia Victor Manuel Argeñal I; the donation of 100,000 solar panels and around 837,660 HNL in other materials for an electrification project in the community Aldea Montesillos. Each project has a detailed project profile outlining main objectives, characteristics, construction timeline and financing of project, as well as basic community profile for the area where the project will be developed. Meeting minutes and agendas as well as photographs and reports of each of the projects' evolvement have been recorded. *Source:* *Acta de Reunión con familias reubicadas* (Honduras, 2014). ANED Consultores, *Diagnóstico Situacional Comunitario: Aldea San José de la Landa* (Choluteca, Choluteca). ANED Consultores, *Diagnóstico Situacional Comunitario: Caserío Montesillos* (Choluteca, Choluteca). ANED Consultores, *Diagnóstico Situacional Comunitario: Colonia El Edén* (Choluteca, Choluteca). ANED Consultores, *Diagnóstico Situacional Comunitario: Colonia Víctor Argeñal I* (Choluteca, Choluteca). ANED Consultores, *Plan de Inversión Social 2015-2016: Aldea San José de la Landa* (Choluteca, Choluteca). ANED Consultores, *Plan de Inversión Social 2015-2016: Caserío Montesillos* (Choluteca, Choluteca). ANED Consultores, *Plan de Inversión Social 2015-2016: Colonia El Edén* (Choluteca, Choluteca). ANED Consultores, *Plan de Inversión Social 2015-2016: Colonia Víctor Argeñal I* (Choluteca, Choluteca). Clever Honduras, *Informes Semanales de Avance Social de sitio Pacífico I, Choluteca I y II* (Honduras, 2015). *Perfil de Proyecto Colonia El Edén: Construcción Muro Perimetral y Portones Para Centro Educativo*

		(Honduras, 2014). *Perfil de Proyecto Colonia Victor Argeñal I: Perforación de pozo y su bomba* (Choluteca, Honduras, 2014). *Perfil de Proyecto Colonia Victor Argeñal II: Construcción de tanque aéreo que distribuirá agua por gravedad* (Choluteca, Honduras, 2014). *Plan de Actividades para la Ejecución de Proyectos Comunitarios* (2014)
		RECOMMENDATIONS - Provide acknowledgments and endorsements from the community showing the participation process was helpful and their input was appropriately assessed and incorporated into the project design. - Specify which initiatives are implemented as a result of internal company policy, and therefore not a result of complying to regulation.
QL1.2 Stimulate Sustainable Growth & Development	**5**	**Superior**
		The Choluteca I and II projects will generate both direct and indirect sources of employment. Due to the nature of the project, most of the job creation will take place during the construction phase, as the maintenance of the project requires minimal activity, consisting mainly of weekly photovoltaic module cleanings. Nonetheless, local labor has been employed for the project. The project is also engaged in improving the community's livability through restoration efforts to mitigate adverse environmental impacts, as well as specific community projects, such as the construction of water wells and tanks for potable water, donations of materials like power inverters for household electrification, and the improvement of the built infrastructure of an educational center in Colonia El Edén. These projects will support and stimulate the sustainable growth of the communities under the area of influence for both Choluteca I and II.
		Source: ANED Consultores, *Plan de Inversión Social 2015-2016: Aldea San José de la Landa* (Choluteca, Choluteca). ANED Consultores, *Plan de Inversión Social 2015-2016: Caserío Montesillos* (Choluteca, Choluteca). ANED Consultores, *Plan de Inversión Social 2015-2016: Colonia El Edén* (Choluteca, Choluteca). ANED Consultores, *Plan de Inversión Social 2015-2016: Colonia Víctor Argeñal I* (Choluteca, Choluteca). Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa, Honduras, 2014), 16, 20. Soluciones Energéticas Renovables, S.A. de C.V., E*studio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 38.
		RECOMMENDATIONS - Improve job growth, capacity building, productivity, and business attractiveness; specifically through investments in educational programs, workshops, and professional training that may result in the betterment of socio-economic conditions on the area, according to the needs identified in the performed community assessment. At the moment, sustainable economic growth is only linked to the social investment programs of the construction phase of the main infrastructure projects and their indirect impact on quality of life, rather than education and professional development initiatives set forth to improve overall socio-economic conditions. - Improve community cultural and recreational assets that make the local communities more livable. - Once the projects are operating, the team should produce an analysis of the effects of the delivered works on local productivity.
QL1.3 Develop Local Skills and Capabilities	**1**	**Improved**
		The projects will hire locally for the construction phase, but will not have a significant impact on local job creation in the long term due to the low maintenance demand of the project's operation phase. There is no evidence indicating that specific education programs or specialty training were provided, improving the ability of the community workforce to grow and develop capacity in the long term.
		Source: Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa,

		Honduras, 2014), 16, 20. Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Cholutеca Solar II* (Cholutеca, Honduras, 2014), 38.
		RECOMMENDATIONS - Increase emphasis on shifting focus from the project to the community by identifying community employment, training, and worker education needs, and incorporating local hires from diverse group sets and skill mix. - Develop education and training programs that could make a meaningful contribution to the long term competitiveness of the community. - Contribute to local employment and training by hiring local residents in the project, especially those in disadvantaged groups as identified in the community profile studies. - Provide documentation indicating plans and commitments for hiring local workers as well as a statement of the ratio of proposed local hires to overall hires, and the skill mix in relation to overall project hiring and employment.
QL2.1 Enhance Public Health And Safety	**0**	**No Score**
		As part of the project, SunEdison developed a security management plan, outlining the Cholutеca security system, and management procedures to ensure public safety. The specific health and safety risks associated with the project and mitigation strategies for these risks were also outlined in the environmental impact assessment. However, no documentation was provided indicating the employment of new technologies into the project, nor was there anything specifying that the project took into account the health and safety implications of using new materials, technologies, or methodologies above and beyond the regulatory requirements.
		Source: Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Cholutеca Solar II* (Cholutеca, Honduras, 2014), 166-167, 182-187. SunEdison, *Manual de Referencia de la Seguridad y Salud Corporativa*. SunEdison, *Security Management Plan,* (Cholutеca, Honduras, 2015).
		RECOMMENDATIONS - Assess the exposures and risks created by the application of new or non-standard technologies, materials, equipment, and methodologies to be incorporated into the project. - Provide documentation that outlines risks and their respective mitigation strategies for project design, and ensuring public health and safety of employees during the operations phase.
QL2.2 Minimize Noise And Vibration	**8**	**Conserving**
		The projects Cholutеca I and II generated noise through their use of machinery and transportation to and from the project site during construction phase. In order to reduce the noise levels, the operation of machinery has been restricted only to in diurnal hours (6:00am-6:00pm). Work being done at night required authorization from the municipal authorities and notification to neighbors in advance. The electricity transformers to be utilized during the operation phase of the project have a noise level of 61 dB, remaining within the range of acceptable noise level. No monitoring programs were mentioned in the documentation.
		Source: Ecoluz, *Cumulative Impact Assessment: Pacífico I, Cholutеca I y Cholutеca II* (Tegucigalpa, Honduras, 2014), 16, 23. Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Cholutеca Solar II* (Cholutеca, Honduras, 2014), 86, 156, 164, 172-174.
		RECOMMENDATIONS -Provide documentation delineating sources and levels of noise generated during the construction phase. - Generate design proposals for noise and vibration reduction for both the construction and operation phases. - Establish monitoring programs to ensure that noise and vibration target levels are acceptable to the community throughout the project lifespan.
QL2.3 Minimize Light Pollution	**0**	**No Score**
		No documentation has been provided demonstrating an effort to conserve energy and reduce obtrusive lighting and excessive glare in the project installations.
		Source: N/A

		RECOMMENDATIONS - Provide documentation of lighting assessments conducted for the project. - Provide plans, drawings, and/or specifications showing the use of energy-efficient lighting, removal of existing but unneeded lighting, use of automatic turnoff systems, and application of non-lighting alternatives.
QL2.4 Improve Community Mobility And Access	**4**	**Enhanced** The project corresponds to an access road that connects Choluteca and the Community of San José de la Landa. Hence, there will be no access road built near the site since the available rural road system will be used. As part of the project, SERSA has developed a series of internal roads facilitating connection among the elements of the project site. Each road will also include drainage works to prevent on site erosion. A 4 m wide road will be developed to create access to the control area, while smaller access roads between the solar panels will have a 2 m width. Furthermore, during the construction phase of the project, considerations on traffic circulation, and noise and dust generation by machinery use were taken into account. Norms for vehicle use informed policy which was put in place to mitigate any negative impacts to community mobility. *Source:* Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II,* (Tegucigalpa, Honduras, 2014), 21. Ecoluz, P*lan de Unificación de Estudios de Impacto Ambiental: Proyectos Granjas Solares Choluteca I, Choluteca II y Pacífico I* (Honduras, 2014), 10. Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 38. *RECOMMENDATIONS* - Evaluate the need for a transportation management plan for the construction phase of the project, taking into account the development of SunEdison's photovoltaic plants, as well as other renewable energy projects in the area. This could be done in coordination with local authorities and other project developers. - Expand access to consider expected traffic flows and volumes of the surrounding community. Work with decision-makers at adjacent facilities and transportation hubs to determine the best modes of access.
QL2.5 Encourage Alternative Modes of Transportation	**0**	**No Score** The city of Choluteca is a major transit point on the Pan-American Highway of Honduras and counts with a major bus station. No documentation has been provided regarding traffic and alternative modes of transportation in the area, or demonstrating an effort to improve site accessibility to non-motorized transportation and public transit. *Source:* N/A *RECOMMENDATIONS* - Improve accessibility to non-motorized transportation and public transit, and promote alternative modes of transportation for workers, in order to enhance accessibility to the project site. - Provide documents and drawings showing that the constructed work is within a convenient walking distance to multi-modal transportation hubs.
QL2.6 Improve Site Accessibility, Safety & Wayfinding	**3**	**Enhanced** During its operation phase, the project will implement preventive strategies to ensure site safety and accessibility. These measures include periodic inspection and maintenance of roads, caution signs, speed limits for vehicles, and signage indicating basic safety measures according to location on site. Specific routes were mapped for the transit of vehicles during construction phase. No documentation has been provided demonstrating the improvement of accessibility on site for pedestrians during the operation phase, other than safety signage. *Source:* *Anexo Fotográfico* Ecoluz, *Plan de Unificación de Estudios de Impacto Ambiental: Proyectos Granjas Solares Choluteca I, Choluteca II y Pacífico I* (Honduras, 2014), 10-11. Soluciones Energéticas Renovables, S.A. de C.V., E*studio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 187, 192-193. *RECOMMENDATIONS* - Create clear, identifiable, and intuitive signage for safe access and egress in order to improve

		wayfinding.
QL3.1 Preserve Historic and Cultural Resources	**13**	**Conserving**
		No historic or cultural resources were found on the project sites of Choluteca I and II. However, in 2013, the Honduran Institute of Anthropology and History found five locations with pre-Hispanic archaeological remains in the area of Pacífico I site and developed a plan to evaluate and manage the area. Due to this, the project team has put in place a series of steps taken to identify and preserve cultural resources on site. If any remains were found during construction phase, they would need to be reported to the Instituto Hondureño de Antropología e Historia and halt all construction activities until the institute inspects the site.
		Source: *Informe de Cumplimiento de Control Ambiental Sub Estación El Bijagual y Sub Estación Santa Lucía*, 5. Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 157.
		RECOMMENDATIONS N/A
QL3.2 Preserve Views and Local Character	**1**	**Improved**
		The *Cumulative Impact Assessment* by Ecoluz brings up the concern that the proximity of the solar plants and the T-lines might potentially have a negative effect in the visual landscape and the agricultural sense of place of the area. The assessment suggests that two potential mitigation strategies to this would include planning to maximize use of shared T-lines and to create green barriers by planting native trees around solar park boundaries. The Reforestation Plan update of July 2015 indicated that the site perimeter would be reforested with native trees of rapid growth and multiple uses, including the *Senna siamea* and *azadirachta indica crecentia cujete*. The trees will be planted at a distance of 2 m between them, considering their canopy growth, which will allow them to blend into the visual environment of the site.
		Source: Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa, Honduras, 2014), 19-20, 24, 26. Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 139-140. Empresa de Sistemas Fotovoltaicos de Honduras, *Informe de Avance Julio 2015: Plan de Restauración a través de Reforestación* (Choluteca, Honduras, 2015).
		RECOMMENDATIONS - Develop an inventory of all natural landscape features and view resources to be protected and plan for addressing public views in the project design. - Meet with officials and decision-makers to discuss policies and regulations as well as to identify views, natural landscape features, and important local character traits to be maintained. - Develop programs for monitoring and reinforcement of landscape character preservation. - Assist local communities in developing more comprehensive policies and regulations regarding views and fit of projects with local character.
QL3.3 Enhance Public Space	**11**	**Conserving**
		It is proved that SunEdison is committed to good practices in the creation of public spaces, as demonstrated in their project Pacífico I with the development of the community center in Barrio San Jorge and the upgrade of the Juan Benito Guevara school. Pacífico I is located on the area of influence of Choloteca I and II and therefore all these projects will directly or indirectly benefit the entire population of the area. According to the information released by the project team the construction of the community center will benefit 149 households estimated on 597 people. The upgrades conducted at the Juan Benito Guevara school in El Edén neighborhood will benefit 346 scholars and 18 teachers.
		Source: *Perfil de Proyecto Colonia El Edén: Construcción Muro Perimetral y Portones Para Centro Educativo* (Honduras, 2014 *Plan de Actividades para la Ejecución de Proyectos Comunitarios* (2014)

		RECOMMENDATIONS - Identify influence of the new public spaces in the population located closer to the project Choluteca I and II. - Consider the creation of public space (e.g. parks, plazas, recreational facilities) in a way that significantly enhances community livability.
QL 4.1- Identify and address the needs of women and diverse communities (indigenous or afro-descendant peoples)	**0**	**No Score** The project team performed a situational study for each one of the affected communities, including demographic information and a diagnostic test of the current socio-economic situation in each area. However, no documentation has been provided identifying or addressing the needs of women and vulnerable groups within the communities. *Source:* N/A *RECOMMENDATIONS* - As part of the community assessment, identify and address the different needs and interests of women or other vulnerable groups and minorities (eg. indigenous). - Work with designers and decision-makers to address diverse communities and gender equality concerns. - Develop, implement, and monitor appropriate gender-sensitive health and safety methodologies during construction and operation phase.
QL4.2 - Stimulate and promote women's economic empowerment	**0**	**No Score** The company is an Equal Opportunity Employer, ensuring that employees are hired regardless of their race, color, religion, sex, national origin, age, disability or genetic information. No documentation has been providing showing the promotion of women's economic empowerment through sustainable livelihoods, local procurement, job creation, capacity building, and training programs. *Source:* N/A *RECOMMENDATIONS* - Initiate efforts to increase women's economic empowerment through employment opportunities and direct investment in women and diversity groups. - Establish specific targets and/or develop a strategy to increase the proportion of women in local employment, skills training and/or as local suppliers.
QL4.3 - Improve access and mobility of women and diverse communities (indigenous or afro-descendant peoples)	**0**	**No Score** No documentation has been provided indicating that the location, design, and construction of the project followed an understanding of the various patterns and needs of mobility of different social groups. *Source:* N/A *RECOMMENDATIONS* - Provide safe access to adjacent facilities, amenities, and transportation hubs accounting for the different patterns of mobility and access for women and/or diverse groups. - Adopt strategies to improve safety of public transit and/or non-motorized transportation for women and children.
QL0.0 Innovate Or Exceed Credit Requirements		
	66	

SUB CATEGORY:LEADERSHIP		
	Score	**CHOLUTECA I & II**
LD1.1 Provide Effective Leadership And Commitment	**9**	**Superior**
		The project has shown its commitment to sustainability through the organizational statements of SunEdison and through the project's leadership and commitment to sustainable performance by means of its project-specific initiatives to mitigate environmental impacts and its plan for social investment in the project's surrounding communities. In its report *Social, Environmental, Safety and Health Management System*, SunEdison establishes its commitment to implementing best practices in sustainable development by constructing guidelines established by GDAs, best practice regulations, and lessons from previous projects and regions around the world. The SEMS manual is their tool for the achievement of sustainable requirements across all projects regardless of location. It also outlines their commitment with all stakeholders to conserve energy and natural resources, achieve zero waste and emissions, and prevent all injuries, illnesses, and incidents for their employees. Another source, their *Plan de Gestión Medioambiental y Social,* has also stated SunEdison's commitment to sustainable development through the preservation of natural resources and the minimization of adverse effects of their operations, products, and services.
		Source: MEMC, *Social, Environmental, Safety and Health Management System (SEMS),* (2012). SunEdison, *Plan de Gestión Medioambiental y Social: Proyectos Choluteca I y II y Pacífico* (Honduras, 2014), 4.
		RECOMMENDATIONS - Develop a specific organizational and project report for sustainability principles, policies, and measures. - Provide public statements from leaders in the project owner's organization regarding their commitment to the principles of sustainability.
LD1.2 Establish A Sustainability Management System	**4**	**Enhanced**
		The project has outlined basic goals and objectives that address the main dimensions of sustainability to be addressed. It has developed a detailed environmental impact assessment with a plan to mitigate adverse effects on the environment, as well as a plan for social investment to identify goals and needs of the surrounding communities and improve their living conditions through social projects. Overall, documents showcasing the plans and projects put into place and their verification throughout project development demonstrate environmental and social performance considerations have been fully addressed. However, there is no documentation indicating that a comprehensive sustainability management system with defined roles and responsibilities within the organization and the project team has been developed. By clarifying the structure and organization of this sustainability management system, the authority of the parties involved to affect change can be validated and made sufficient. This will enable the development of mechanisms sufficient to manage change and handle project complexities where authority and responsibility for sustainability are at high levels in the project team organization.
		Source: ANED Consultores, Plan de Inversión Social 2015-2016: Aldea San José de la Landa. Choluteca (Choluteca). ANED Consultores, Plan de Inversión Social 2015-2016: Caserío Montesillos (Choluteca, Choluteca). ANED Consultores, *Plan de Inversión Social 2015-2016: Colonia El Edén* (Choluteca, Choluteca). ANED Consultores, *Plan de Inversión Social 2015-2016: Colonia Víctor Argeñal I,* (Choluteca, Choluteca). MEMC, *Social, Environmental, Safety and Health Management System (SEMS)*, (2012). Ecoluz*, Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa: 2014). Ecoluz, *Plan de Unificación de Estudios de Impacto Ambiental: Proyectos Granjas Solares Choluteca I, Choluteca II y Pacífico I* (Tegucigalpa: 2014). Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca: 2014).
		RECOMMENDATIONS - Consolidate all sustainability efforts currently present in the project into a comprehensive sustainability management system enabling the organization to clarify its goals, objectives, and policies across all dimensions of sustainability. This begins with the creation of a sustainability

		policy that defines the scope of the project and the project team's commitment to sustainability performance improvement. - Clearly assign project roles, responsibilities, and authorities for addressing the issues of sustainability in the project. Provide organizational flowcharts and documentation showing which people are responsible for these issues, their position within the project organization, and their authority to make project decisions and affect change.
LD1.3 Foster Collaboration And Teamwork	**4**	**Enhanced**
		As indicated in the Plan de Gestión Medioambiental y Social, SunEdison is committed to maintaining an open dialogue with its clients and stakeholders to work in a cooperative way throughout the project, and to establish relationships with suppliers and contractors to closely work together to improve the results of the SSM. The actual Social, Environmental, Safety and Health Management System (SEMS) establishes that project planning and execution teams are the core teams in the project organizational structures, and that contractual arrangements fall under the SunEdison Primary Contact, where the EPC Contractor and O&M hold independent contracts with SunEdison. No documentation was provided indicating an integrated early collaboration of different parties involved took place or that an integrated project delivery system and a risk-reward sharing strategy were adopted with all team stakeholders.
		Source: MEMC, S*ocial, Environmental, Safety and Health Management System (SEMS),* (2012), 13-16, 22-25, 31-81. SunEdison, *Plan de Gestión Medioambiental y Social: Proyectos Choluteca I y II y Pacífico,* (Honduras, 2014), 4.
		RECOMMENDATIONS - Promote the development of an integrated project delivery system, where the project team members work together early in the planning and design stages of the project to understand how their design assumptions and decisions affect the work of others, positively or negatively. This includes members who are traditionally involved in later stages of the project such as the constructor. - Explore ways to improve performance and reduce costs employing whole systems design methodologies. - Consider a risk-reward sharing strategy as a contractual relationship between the owner and the design team to minimize inefficiencies and maximize collaboration throughout the project development.
LD1.4 Provide For Stakeholder Involvement	**9**	**Superior**
		The participation of community stakeholders has been a considerable priority for the project team since the beginning of the project. A Plan de Trabajo Consulta Ciudadana was developed to outline the program for social investment in the community, and to establish the basis for stakeholder involvement. The plan includes the development of a community diagnosis, workshops in surrounding sectors and municipalities, the surveying of all households, the development of the Plan de Inversión Social, and the supervision of activities involved with the social projects being developed in the area. Stakeholder involvement was also important for selecting social improvement projects carried out in each surrounding community. The project has developed weekly reports of progress in its social investment plan, involving frequent community meetings and workshops, including photographic records, memoranda, and meeting agendas. The selection of the social investment projects was recognized by the community, allowing them to select the most necessary infrastructure projects based on community assessments and their experience. The project team has also put in place a successful mechanism to receive community complaints and suggestions throughout all phases of the project, showing how most of these have been promptly addressed. Some examples include reducing vehicle speed due to dust generation and street improvements in November 2014. While the project successfully involves all stakeholders, there is a large focus on involvement in the design and development of the social investment projects and less so in the design development of the photovoltaic project. The project should also integrate more community feedback into decision-making process for design and development of the actual photovoltaic plants.

		Source: Alcaldía Municipal de Cholutecа, Departamento Desarrollo Comunitario, *Socialización proyecto de energía solar Soluciones Energéticas Renovables S.A.* (Cholutecа, Honduras, 2013), 1-5. ANED Consultores, *Diagnóstico Situacional Comunitario: Aldea San José de la Landa* (Cholutecа, Cholutecа). ANED Consultores, *Diagnóstico Situacional Comunitario: Caserío Montesillos* (Cholutecа, Cholutecа). ANED Consultores, *Diagnóstico Situacional Comunitario: Colonia El Edén* (Cholutecа, Cholutecа). ANED Consultores, *Diagnóstico Situacional Comunitario: Colonia Víctor Argeñal I* (Cholutecа, Cholutecа). ANED Consultores, *Plan de Inversión Social 2015-2016: Aldea San José de la Landa* (Cholutecа, Cholutecа). ANED Consultores, *Plan de Inversión Social 2015-2016: Caserío Montesillos* (Cholutecа, Cholutecа). ANED Consultores, *Plan de Inversión Social 2015-2016: Colonia El Edén* (Cholutecа, Cholutecа). ANED Consultores, *Plan de Inversión Social 2015-2016: Colonia Víctor Argeñal I* (Cholutecа, Cholutecа). Clever Honduras, *Informes Semanales de Avance Social de sitio Pacífico I, Cholutecа I y II* (Honduras, 2015). SunEdison, *Plan de Trabajo: Desarrollo de un Programa de Gestión Social en el Área de Influencia Directa de los Proyectos Granjas Solares Pacífico I, Cholutecа I y Cholutecа II* (Honduras, 2014).
		RECOMMENDATIONS - Provide evidence of community involvement in the design and development of photovoltaic plants. Assess feedback received by community and apply it to project decisions. Actions taken are based on community and stakeholder feedback, modified according to feasibility.
LD2.1 Pursue By-Product Synergy Opportunities	**0**	**No Score**
		No documentation was provided indicating the identification, assessment, and use of unwanted by-products from nearby facilities. There were no efforts to look for opportunities to obtain by-products or discarded materials and resources from nearby locations.
		Source: N/A
		RECOMMENDATIONS - To demonstrate an understanding of the principles of industrial ecology, managers should identify nearby facilities who may have by-products or discarded materials that can be used on the project.. - Develop constructive discussions with regulatory agencies, policymakers, or standard-setting organizations as well as managers of nearby facilities with potential byproducts to pursue opportunities to improve project performance and reduce project costs by using by-products or discarded materials and resources near the site. - Evaluate the potential use of by-products or discarded materials and resources from nearby operations during the design, construction, or operations stage of the project.
LD2.2 Improve Infrastructure Integration	**7**	**Superior**
		The project consists of a series of photovoltaic plants to be integrated into the national electric grid, the Sistema Interconectado Nacional in Cholutecа, through the Santa Lucía substation, an existing substation located in the outskirts of Cholutecа, via two dedicated 34.5 kV single-pole transmission lines. Cholutecа I and II will share a 7 kilometer transmission line with a 15 meter right-of-way, and Pacífico I a 4 kilometer right-of-way. The existing substation was renovated and expanded to facilitate its integration with these new energy generation sources, and will improve the electricity infrastructure for the future of the Cholutecа communities beyond the life of the projects. Other projects for infrastructure improvement have also been carried out, but with a focus on internal systems rather than infrastructure integration. The project developed a series of internal roads to facilitate communication within the project site, taking into account drainage work to prevent erosion on site. No work will be carried out outside of the project site, where the area already counts with a main access road communicating the project with the Community of San José de la Landa. Likewise, some of the social improvement efforts such as building water wells to provide communal access to clean water, and efforts for electrification for the Aldea de Montesillos community showcase isolated project-specific efforts to improve infrastructure.

		Source: Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa, Honduras, 2014), 5-8, 21, 25. Ecoluz, P*lan de Reubicación de Viviendas: Proyectos Granjas Solares Choluteca I, Choluteca II, y Pacífico I* (2015). *Informe de Cumplimiento de Control Ambiental Sub Estación El Bijagual y Sub Estación Santa Lucía. Perfil de Proyecto Colonia Victor Argeñal I: Perforación de pozo y su bomba* (Choluteca, Honduras, 2014). *Perfil de Proyecto Colonia Victor Argeñal II: Construcción de tanque aéreo que distribuirá agua por gravedad* (Choluteca, Honduras, 2014). Soluciones Energéticas Renovables, S.A. de C.V., E*studio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 36, 38.
		RECOMMENDATIONS - Participate in multi-sectoral strategic planning for sustainability and integrating the project into community sustainability plans. - Work with the locals to identify existing community elements in the natural and/or built environment that could improve the economic growth and development capacity of the area. Plan and design the project to incorporate the restoration of these elements as part of a comprehensive strategic sustainability plan.
LD3.1 Plan For Long-Term Monitoring & Maintenance	**10**	**Conserving**
		SunEdison has developed an *Operation and Maintenance Manual* to guide the long-term monitoring and maintenance of this specific project, ensuring that both preventive and corrective maintenance are performed regularly. The plan details maintenance procedures, including visual inspections, controls, measurements, and calibration of the physical equipment, and deep cleaning and maintenance of the photovoltaic modules, as well as other digital monitoring systems such as the SCADA and SunEdison Energy and Environmental Data System (SEEDS). The SCADA control system located in the control center monitors the function of inverters, trackers, MV cells, energy meter, and weather station. The SEEDS is SunEdison's platform for monitoring and communications, including a set of sensors to measure environmental data. The *Plan de Gestión Medioambiental y Social* also contains company-wide procedures for monitoring and maintenance, as well as the respective individuals responsible for certain parts of the processes.
		Source: SunEdison, *Operation and Maintenance Manual: Proyecto Solar Choluteca I & 2 "SERSA"* (Honduras, 2015). SunEdison, *Plan de Gestión Medioambiental y Social: Proyectos Choluteca I y II y Pacífico* (Honduras, 2014).
		RECOMMENDATIONS - Designate individuals or organizations to monitor and maintain the constructed works in Choluteca I & II. - Provide an explanation of how funding will be allocated, saved, and maintained at sufficient levels to fund the necessary monitoring and maintenance.
LD3.2 Address Conflicting Regulations & Policies	**0**	**No Score**
		The project team indicated it implemented standards and regulations above the national Honduran regulations, but no evidence of efforts to affect legislation has been made in the favor of furthering sustainability in infrastructure projects in the area. No documentation was provided identifying legislation that unintentionally creates barriers to implementing sustainable infrastructure. Furthermore, there is no effort to assess the negative impacts from conflicting regulations and policies or mitigating these negative effects.
		Source: N/A
		RECOMMENDATIONS - Identify and assess applicable laws, standards, regulations, and/or policies with requirements that appear to be unintentionally countering sustainability goals, objectives, and practices. - Work with regulators to mitigate the negative effects of the legislation identified previously on the implementation of sustainable infrastructure.

LD3.3 Extend Useful Life	**1**	**Improved** The project team has indicated that at the end of the useful life of the project there will be an evaluation of whether to continue facility operation and possibly extend its use. However, no documentation has been provided explaining how the project was designed to make on site structures more durable and resilient to extend its useful life. *Source:* Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa, Honduras, 2014). Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II.* (Choluteca Honduras, 2014), 24, 41. *RECOMMENDATIONS* - Create the project in a way that adds flexibility to the constructed works, enabling easy reconfiguration and refurbishment. - Enhance durability and resiliency of the project. The longer the useful life of physical structures, the less it will need to be replaced, reducing energy, water, and materials required for a rebuild. - Incorporate flexibility in the project to increase the possibilities for alternative future uses.
LD0.0 Innovate Or Exceed Credit Requirements		*N/A*
	44	

CATEGORY II: CLIMATE AND ENVIRONMENT		
RESOURCE ALLOCATION		
	Score	**CHOLUTECA I & II**
RA1.1 Reduce Net Embodied Energy	**0**	**No Score** No documentation was provided demonstrating a life-cycle energy assessment was performed estimating the net embodied energy of project materials. There is no evidence any demonstrable energy savings are achieved as compared to industry norms as a result of this assessment. *Source:* N/A *RECOMMENDATIONS* - Develop a life-cycle energy assessment calculating the initial embodied energy from project materials' extraction, refinement, and manufacture is calculated. - Using the embodied energy data obtained, design the project to produce a 10-100% reduction in embodied energy over the project life. This may include reducing the quantity of materials and selecting materials with lower embodied energy.
RA1.2 Support Sustainable Procurement Practices	**0**	**No Score** SunEdison is committed to establishing relationships with providers and contractors who follow the responsibilities and objectives of the company's sustainability policy. The company also requires all contractors and subcontractors to demonstrate their commitment to recycling and giving details of their own recycling plans. However, no guidelines were found indicating SunEdison's principles and commitments as a company regarding the selection of suppliers, contractors, and collaborators, nor the extent to which they follow sustainability principles and standards. Overall, no documentation was found demonstrating policies or practices in place requiring the procurement of materials from suppliers incorporating sustainability policies. *Source:* SunEdison, *Plan de Gestión de Residuos: Planta Solar Fotovoltaica Conectada a Red, Choluteca I y II, Pacífico.* (Choluteca, Honduras, 2014), 4-9.

		SunEdison, *Plan de Gestión Medioambiental y Social: Proyectos Choluteca I y II y Pacífico* (Honduras, 2014), 4.
		RECOMMENDATIONS -Develop policies and criteria for supplier identification and selection, specifying how the project team's procurement program operates. - Refine criteria for selection of manufacturers and suppliers to include policies regarding material selection, ensuring the reliance on third-party certified materials and supplies. - Develop clear supplier performance specifications stating the characteristics of products and materials to be supplied, packaging, use, disposal and product takeback. Showcase an increased emphasis on supplier social and ethical performance. - Provide documentation from manufacturers or suppliers to demonstrate that sustainable practices are employed for percentage of purchased products.
RA1.3 Used Recycled Materials	**0**	**No Score**
		No documentation was provided demonstrating the project uses recycled materials, specifying reused materials, including structures and material with recycled content to reduce the use of virgin materials, nor avoiding sending useful materials to landfills.
		Source: N/A
		RECOMMENDATIONS - Identify appropriate reuse of existing structures and materials on site and incorporate them into the project. - Develop an inventory of project materials specifying recycled content. The inventory should include the name of the product, the name of the manufacturer, the weight or volume of the material, and the percentage of recycled content. - Calculate the percentage of total reused or recycled project materials by weight or volume.
RA1.4 Use Regional Materials	**0**	**No Score**
		As indicated in the *Informe de Cumplimiento de Medidas de Control Ambiental: Choluteca Solar I*, the project utilizes soils from site excavation for the construction phase. However, there was no documentation indicating the extent to which the project team minimizes transportation costs and impacts or retains regional benefits through specifying local sources. The project must quantify the percentage of locally sourced materials and have at least 30% of its materials be locally sourced to score in this credit.
		Source: Karla Ramos, *Informe de Cumplimiento de Medidas de Control Ambiental: Choluteca Solar I* (Honduras, 2015), 4.
		RECOMMENDATIONS - Identify locally sourced materials, plants, aggregates, and soils. - Calculate the percentage of total project materials by cost that are locally sourced. Reused materials, either on-site or sourced within a 300 mile radius, and materials harvested on-site, including retained plants, count toward meeting the credit requirements. - Achieve at least a 30% of locally sourced materials for project.
RA1.5 Divert Waste From Landfills	**6**	**Enhanced**
		According to the Environmental Information of Wastes, the project achieves a 100% recycling rate for non-hazardous waste of cardboard and plastics, reusing 134,824 kg/year out of 134,824 kg/year and 15,827 kg/year of 15,827 kg/year respectively. The project team has also developed a comprehensive waste management plan to decrease waste generated and divert waste from landfills during operation. It has classified all waste types and indicated their compositions, origins, management strategy, and treatment accordingly. Most waste types will be taken to authorized recycling centers, but three types were taken to landfills for disposal. No specific reduction measures and percentages were provided for all types of materials recycled and reused by weight or volume. This information was only available for two waste types.

		Source: *Environmental Information of Wastes* SunEdison, *Plan de Gestión de Residuos: Planta Solar Fotovoltaica Conectada a Red, Choluteca I y II, Pacífico* (Choluteca, Honduras, 2014).
		RECOMMENDATIONS - Include the volume or weight of anticipated waste generation in order to be able to compare to industry norms. - Provide an inventory of project waste streams and potential sites for acceptable reuse or recycling. - Calculate the total waste reduction measures and percentage of materials diverted to recycling or reuse. These should be calculated as the ratio of material diverted from landfills against the total waste generated during construction or operation.
RA1.6 Reduce Excavated Materials Taken Off Site	**5**	**Superior**
		As indicated in *the Plan de Unificación de Estudios de Impacto Ambiental: Proyectos Granjas Solares Choluteca I, Choluteca II*, the material removed during excavation was reused for filling afterward. Excavation in Choluteca I of material volume was 61,074.89 m^3, and 55,979.45 m^3 of these materials were used to build platforms, roads, buildings, and drainage. This implies a reutilization of about 91%, leaving a difference of 5,095 m^2 of material to be left on site or taken to a landfill off site. In Choluteca II 27,093.009 m^3 of fill was excavated, of which 16,510.228 m^3 was used to build platforms, roads, buildings, and drainage systems. This implies a reutilization of about 60% with a difference of 10,582.781 m^3. Adding the total material excavated and reutilized for both projects (88,167.899m^3 total excavated, 72,489.678 m^3 total reutilized), Choluteca I and II reused 82% of the excavated material on site.
		Source: Ecoluz, *Plan de Unificación de Estudios de Impacto Ambiental: Proyectos Granjas Solares Choluteca I, Choluteca II y Pacífico* I (Honduras, 2014), 11. SunEdison, *Anexo 01.I Cálculos del Movimiento de Tierras: Choluteca Solar I (*Honduras, 2014), 24. SunEdison, *Anexo 01.II Cálculos del Movimiento de Tierras: Choluteca Solar II* (Honduras, 2014), 37.
		RECOMMENDATIONS N/A
RA1.7 Provide for Deconstruction & Recycling	**0**	**No Score**
		There is no documentation indicating the project encourages future recycling, up-cycling, and reuse by designing for ease and efficiency in project disassembly or deconstruction at the end of its useful life.
		Source: N/A
		RECOMMENDATIONS - Expand the scope of the project to include more life cycle elements beyond construction. This might include designing to include flexibility for increasing the possibility of alternative future uses or other end-of-life considerations such as recycling and upcycling materials and equipment. - Provide an inventory of materials incorporated into the design that retains some value for the future and calculate a general percentage of total materials by cost, weight, or volume likely to be recycled at end of life. - Provide evidence that the design team has facilitated future disassembly and recycling of materials.
RA2.1 Reduce Energy Consumption	**0**	**No Score**
		No documentation was provided indicating that the project has conserved energy by reducing overall operation and maintenance energy consumption throughout the project life cycle compared to industry norms. The project should move beyond monitoring energy consumption to identify and incorporate energy efficient equipment and processes to reduce energy consumption in operation and maintenance compared to the set benchmark of the industry.
		Source: SunEdison, *Operation and Maintenance Manual: Proyecto Solar Choluteca I & 2 "SERSA"*

		(Honduras, 2015).
		RECOMMENDATIONS - Identify and analyze opportunities for reducing energy consumption in the operation and maintenance of the constructed works. - Conduct a feasibility and cost analysis to determine the most effective methods for energy reduction. This may include an inventory of energy saving methods considered, and design documents demonstrating the incorporation of the selected strategies into the design. - Quantify the resulting energy savings by calculating the energy consumption according to industry norm to use as a benchmark, and by performing calculations to compare how the energy saving strategies have reduced energy consumption against the benchmark.
RA2.2 Use Renewable Energy	**20**	**Restorative**
		Choluteca I and II generate a net positive amount of renewable energy. These two plants have a total capacity of 58 MWp and are expected to generate 112 GWh per year. The Choluteca I plant consists of 76,320 photovoltaic cells with a nominal capacity of 20 MW and the Choluteca II plant consists of 115,280 photovoltaic cells with a nominal capacity of 30 MW.
		Source: Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa, Honduras, 2014), 5. Ecoluz, *Plan de Unificación de Estudios de Impacto Ambiental: Proyectos Granjas Solares Choluteca I, Choluteca II y Pacífico I.* (Honduras, 2014). Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014).
		RECOMMENDATIONS N/A
RA 2.3 Commission & Monitor Energy Systems	**11**	**Conserving**
		SunEdison has developed an *Operation and Maintenance Manual* to guide the long-term monitoring and maintenance of the project, ensuring that both preventive and corrective maintenance are performed regularly throughout the project operation phase. The plan describes digital monitoring systems such as the SCADA and SEEDS. The SCADA control system located in the control center monitors the function of inverters, trackers, MV cells, energy meter and weather station and the SEEDS (SunEdison Energy and Environmental Data System) is SunEdison's platform for monitoring and communications, including a set of sensors to measure environmental data.
		Source: SunEdison, *Operation and Maintenance Manual: Proyecto Solar Choluteca I & 2 "SERSA"* (Honduras, 2015). SunEdison, *Plan de Gestión Medioambiental y Social: Proyectos Choluteca I y II y Pacífico* (Honduras, 2014).
		RECOMMENDATIONS N/A
RA3.1 Protect Fresh Water Availability	**0**	**No Score**
		The area where the project is located does not have any superficial waterways, such as rivers or streams. There are some natural lagoons that previously formed a source of water supply for livestock activities. Some aquifers can be found below ground, starting at 3m. The area is not part of any water basin. During the operation phase of the project, a water well will be perforated to supply water for domestic use. Residual waters will be managed through the construction of a septic tank. No documentation was provided showing that the project team has conducted a comprehensive water availability assessment, identifying numeric characteristics of available water resources (quantity, quality, rates of recharge) and project water demands (quantity, quality, re-use opportunities).
		Source: Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 139-144.
		RECOMMENDATIONS - Develop a comprehensive water availability assessment determining the location, quantity, quality, and rate of charge of the water resources available in the project. - Assess the full dimensions of the project's water requirements quantitatively, estimating average peak demands and long term needs, reporting long-term availability and replenishment of fresh water supply, creating an inventory of opportunities for water reuse or groundwater recharge on

		site, calculating the volume of freshwater discharge after use, and indicating the location of discharge and impact on receiving water quantity and quality. - Incorporate design features to minimize long-term negative net impact on groundwater quality and quantity to achieve a net positive impact on water resources.
RA3.2 Reduce Potable Water Consumption	**0**	**No Score**
		During the construction phase of the project, potable water supply and disposal of residual water will be provided by the company in charge of construction. During the operation phase, potable water will be supplied through water bottles. There is no documentation indicating the reduction of overall potable water consumption or the promotion of the use of greywater, recycled water, and stormwater to meet water needs.
		Source: Soluciones Energéticas Renovables, S.A. de C.V. *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 40, 165, 178.
		RECOMMENDATIONS - Identify potable water reduction strategies during operation and maintenance of the project, considering alternatives such as non-potable water, recycled greywater, and stormwater. - Develop a feasibility and cost analysis to determine the most effective methods for potable water reduction to incorporate into the design. - Calculate the estimated annual water consumption over the life of the project to be able to compare its performance against industry norms as a benchmark.
RA3.3 Monitor Water Systems	**0**	**No Score**
		No documentation was provided indicating the implementation of programs to monitor water systems performance during operations or the project's impact on receiving waters. However, the project does not involve the deployment of water systems for its operation.
		Source: N/A
		RECOMMENDATIONS N/A
RA 0.0 Innovate Or Exceed Credit Requirements		*N/A*
	42	

NATURAL WORLD		
	Score	**CHOLUTECA I & II**
NW1.1 Preserve Prime Habitat	**9**	**Superior**
		The project avoids development in a site of high ecological value. The Choluteca I and II sites are located 1 km away from the community of San José de La Landa and 7.5 km south of the city of Choluteca. The contiguous sites have an area of 151.34 hectares, and have no households or legally protected areas in their vicinity. The site limits to the north with the agricultural lands of Empresa Agrícola Montesillos, to the south with the photovoltaic plant of Mecer and two private properties, to the east with a secondary road, and to the west to lands of Grupo Campesino San Jorge. The Choluteca Municipality has undergone extensive historic deforestation for agriculture and livestock production and is largely constituted at present by highly modified pastures or rangelands with remnants of tropical forests. The recommended use for the site is agriculture due to its soft slope and the loamy, sandy texture of its soils. The two main protected areas near the project, Cerro Guanacaure and Area de Manejo de Hábitat por Especie el Jicarito, are located 12.27k and 8.07 km away from the project, respectively.
		Source: Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa, Honduras, 2014), 7. Empresa Soluciones Energéticas Renovables S.A. de C.V. (SERSA), *Plan de Reforestación y Manejo*

		con Especies del Bosque Latifoliado Deciduo (Choluteca, Honduras, 2014), 4. Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 36-37, 144-147.
		RECOMMENDATIONS - Provide more specific documentation identifying areas of prime habitat near the project site aside from natural protected areas and indicating that the existing prime habitats near the project site have been protected by establishing a minimum 300 ft. natural buffer zone between them and the developed project. - Shift from avoidance and maintenance of prime habitats to restoration by developing a restoration plan for the area, significantly increasing the areas of prime habitat and connectivity to them. This could be done by producing habitats that are part of a protective buffer zone in the site of the project or adjacent to the site.
NW1.2 Preserve Wetlands and Surface Water	**0**	**No Score**
		The project area belongs to the Río Sampile Basin, distributing its waters to the wetlands of Estero el Pedregal. The project sites are located at an elevation of 20-60 meters above sea level in the valley. There are no superficial bodies of water such as rivers or streams, but there are some ponds or natural lagoons that formed part of the source of water supply for livestock that was previously on the site. The project does not require any consumption of water nor modification of water bodies on site, but no documentation was provided clarifying the buffer between the photovoltaic modules and the water ponds on site.
		Source: Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa, Honduras, 2014), 18. Empresa Soluciones Energéticas Renovables S.A. de C.V. (SERSA), P*lan de Reforestación y Manejo con Especies del Bosque Latifoliado Deciduo* (Choluteca, Honduras, 2014), 5. Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 140-142.
		RECOMMENDATIONS - Avoid development within 15 m (50 feet) from a body of water, - Establish a vegetation and protection zone (VSPZ) at least 100 m (300 feet) away from any body of water. Activities prohibited in this buffer zone would include construction of any structure or road, non-native vegetation removal, and grading, filling, dredging or excavation. If applicable, restore previously degraded buffer zones to a natural state as part of establishing the VSPZ.
NW1.3 Preserve Prime Farmland	**0**	**No Score**
		The project is located in an area characterized by the presence of edaphic soils, known as Coray Soils. This type of alluvial soil is poorly drained, shallow, and forms on ignimbrites. The limits of the site area covered by clay soils that are heavy and poorly drained. The recommended use for these soils is agriculture due to its soft slope and the loamy, sandy texture of its soils. No specific designation of the area as prime farmland, unique farmland, or farmland of statewide importance has been indicated by the environmental assessments.
		Source: Empresa Soluciones Energéticas Renovables S.A. de C.V. (SERSA), *Plan de Reforestación y Manejo con Especies del Bosque Latifoliado Deciduo* (Choluteca, Honduras, 2014), 10-12.
		RECOMMENDATIONS - Identify soils designated as prime or unique farmland. If prime farmland is identified on site, establish a Vegetation and Soil Protection Zone (VSPZ) where no more that 10% of the area can be developed. If applicable, restore previously developed areas deemed prime farmland into a productive state.
NW1.4 Avoid Adverse Geology	**5**	**Conserving**
		The project area belongs to the Río Sampile Basin and is located at an elevation of 20-60 meters above sea level in the valley. The site does not cross any river and has no superficial bodies of water such as rivers or streams. There will be no impact on subterranean waters as the project does not require any consumption of water nor modification of water bodies on site. The zone where the project is located corresponds to the geological group Padre Miguel (Tpm), and is constituted by volcanic rocks, sedimentary rocks, and washes of rhyolite, andesite, and basalt. The site is located in a plane constituted by alluvial deposits (Qal), which are formed by continental and marine sediments, and materials derived from pre-existing rocks consisting of gravel, sands, and

		finer sediments accumulated in conglomerates. Honduras is affected by earthquakes occurring in five tectonic areas (Zonas Benioff, Zona Volcánica, Depresión Honduras, Borde de la placa del Caribe, and Zona Interplaca). For the area of the project, the peak acceleration is of 0.35, for which a return period of 95 years has been calculated based on the report "Seismic Hazard Analysis of Honduras" performed by The John Blume Earthquake Engineering Center. A geotechnical assessment was performed on site to then determine the corresponding foundation types based on the soil's' inherent capacities, but no displacement is anticipated given the site's slight slope.
		Source: Empresa Soluciones Energéticas Renovables S.A. de C.V. (SERSA), *Plan de Reforestación y Manejo con Especies del Bosque Latifoliado Deciduo* (Choluteca, Honduras, 2014), 10. Geotecnia y Pavimentos, *Informe Preliminar Proyecto Fotovoltaico Choluteca* (Choluteca, 2014). Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 37, 140-144, 155-156.
		RECOMMENDATIONS - Provide documentation showing hazardous areas and plans illustrating buffers from these sources. - Provide documentation indicating that no earthquake faults affect underlying aquifers.
NW1.5 Preserve Floodplain Functions	**2**	**Improved**
		The project site is located in flat land belonging to the Río Sampile Basin at an elevation of 20-60 meters above sea level in the valley with no superficial bodies of water such as rivers or streams. The project will not affect any permanent drainage on site, but it will affect the stormwater runoff and infiltration of the site through the construction and installation of infrastructure (drainage ways, internal roads, buildings, parking areas, solar panels, among others. In order to mitigate these impacts, shared water management systems have been developed, an emergency plan for the preparation and response in case of inundation has been outlined, and an extensive reforestation project consisting of the planting of native species on site will prevent erosion and the degradation of water both qualitatively and quantitatively. The project has also developed a drainage system designed to evacuate rainwater consisting of a trench with a trapezoidal shape, to be maintained every 6 months. However, no documentation indicated the extent to which efforts to improve water infiltration and quality have restored the site's floodplain functions to their pre-development state.
		Source: Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa, Honduras, 2014), 15, 20. Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 155-156. SunEdison, *Plan de Gestión Medioambiental y Social: Proyectos Choluteca I y II y Pacífico* (Honduras, 2014), 71
		RECOMMENDATIONS - Provide thorough analysis of the floodplain, such as documentation showing the location of the project relative to the 100-year or design floodplain, illustrating that pre- and post- floodplain storage and elevations to demonstrate that the project does not increase flood elevations outside of project easements. - Document strategies used to maintain pre-development floodplain infiltration, such as the amount of impervious surfaces, the establishment of vegetation and soil protection zones, and other strategies to allow for natural floodwater infiltration. - Enhance connectivity and sediment transport by modifying or removing structures that are frequently damaged by floods.
NW1.6 Avoid Unsuitable Development on Steep Slopes	**0**	**No Score**
		Choluteca I & II are being developed on a site with no prominent elevations or depressions. The projects are located on flat land and their surroundings correspond to a cumulative and erosive floodplain, therefore no concrete effort has been required from the project team side in order to avoid steep slopes.
		Source: Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 25.

		RECOMMENDATIONS N/A
NW1.7 Preserve Greenfields	**0**	**No Score**
		According to the *Envision Manual Glossary* (p.171), greenfields are undeveloped land in a city or rural area that are being considered for development. Greenfields may contain natural landscape, natural amenities, or agricultural land. As the project is being developed on agricultural land, it is therefore not preserving greenfields without any other part of the land identified as a greyfield.
		Source: Empresa Soluciones Energéticas Renovables S.A. de C.V. (SERSA), *Plan de Reforestación y Manejo con Especies del Bosque Latifoliado Deciduo* (Choluteca, Honduras, 2014), 12.
		RECOMMENDATIONS - Conserve undeveloped land by locating projects on previously developed greyfield and/or sites classified as brownfields.
NW2.1 Manage Stormwater	**0**	**No Score**
		The project will affect site stormwater runoff and infiltration through the construction and installation of infrastructure (drainage ways, internal roads, buildings, parking areas, solar panels, among others). The project has developed a drainage system designed to evacuate rainwater consisting of a trench with a trapezoidal shape, where each 200 meters operate as fixed control points to measure the water level. The depth of the trench at each control point must be checked every 6 months and if the depth has been reduced more than 30 cm, it must be cleaned. No documentation indicated the extent to which the project has improved water storage capacity, quantifying the percentage of improvement of water storage, infiltration, evapotranspiration, and/or water harvesting capacity that the system achieves given that the site is a greenfield, which has a target water storage capacity to pre-development conditions.
		Source: Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa, Honduras, 2014), 15. SunEdison, *Operation and Maintenance Manual: Proyecto Solar Choluteca I & 2 "SERSA"* (Honduras, 2015), 31-33. Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 155-156.
		RECOMMENDATIONS - Determine and document the initial, post-development, and target water storage, infiltration, evaporation, water harvesting and/or cistern storage capacities. For greenfields, the target water storage capacity is the site's water storage capacity previous to the development of the project. - Create and develop an erosion, sedimentation, and pollution control plan for all construction activities associated with the project. - For higher achievement, extend the water storage capacities to larger than established for pre-development conditions.
NW2.2 Reduce Pesticides and Fertilizer Impacts	**1**	**Improved**
		The maintenance of vegetation on site involves minimal control measures, including the removal of vegetation that might place the photovoltaic modules under shadow or hinder the movement of vehicles and people around the site. Environmental regulation prohibits the use of herbicides to avoid this types of vegetation from growing. However, it was indicated that herbicides are utilized to control vegetation in areas of fencing as part of the plant's preventive maintenance procedures.
		Source: SunEdison, *Operation and Maintenance Manual: Proyecto Solar Choluteca I & 2 "SERSA"* (Honduras, 2015), 31, 100.
		RECOMMENDATIONS - Provide plans and drawings showing how these controls would be designed and installed. If applicable, demonstrate that the mix of pesticides and fertilizers to be used on the finished project have low toxicity, persistence, and bioavailability.
NW2.3 Prevent	**1**	**Improved**

Surface and Groundwater Contamination		The project has developed a detailed waste management plan where the issue of residual waters is addressed. These waters are defined as rainwater, runoff, and sewage (domestic, treated, sanitary). Residual waters produced by sanitary use will be managed and treated according to legislation, avoiding contamination on site. There will be no impact on subterranean waters given the nature of the project activities but superficial bodies of water in the form of natural lagoons could be affect by rainwater and runoff despite the development of a drainage system on site. No documentation was provided indicating that long term monitoring was put in place to oversee the quantity and quality of surface and groundwater.
		Source: Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa, Honduras, 2014), 15. Soluciones Energéticas Renovables, S.A. de C.V., E*studio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 40, 155-156. SunEdison, *Plan de Gestión de Residuos: Planta Solar Fotovoltaica Conectada a Red, Choluteca I y II, Pacífico* (Choluteca, Honduras, 2014), 10.
		RECOMMENDATIONS - Provide documentation establishing that there is no direct connection to receiving waters from the site of the construction works, or that an appropriate monitoring program is implemented to verify pollutant loading, biological impact, and impact on receiving water flow. - If applicable, establish adequate and responsive surface water quantity and quality monitoring systems. - For projects that involve the construction of water wells for provision of drinking water, provide documentation that protection plans and other requirements have been put in place.
NW3.1 Preserve Species Biodiversity	**2**	**Improved**
		While the project site contains largely modified habits, the land still contains native biodiversity value and a population of native species of plants and animals that supports it, which has been identified by the project team. The area is characterized by the predominance of grasses, shrubs and scattered trees of different species and stages of development established in poorly drained soils belonging to Deciduous Broadleaf Forest. The presence of fauna is minimal but some of the species found on site include the coyote, the wild rabbit, and the white back skunk. Some vertebrates include the gray iguana, the green iguana, the armadillo, and the porcupine, as well as three reptile species and at least 10 species of birds. The project will modify the habitat due to the removal of portions of the vegetation cover, which potentially affects the habitat for the present fauna. This impact is considered to be minimal as the habitat for the fauna on site was severely affected when the site was previously altered for agricultural purposes, with the removal of the natural vegetation of the previously existing deciduous forest. The impacts of the removal of topsoils in the project area are considered to be temporary and reversible. The development of the project will also result in the displacement of fauna in the region. Animals in the habitats within the project site will move to adjacent or nearby habitats, which will also be affected by the development of other renewable energy projects in the area. While the project identifies existing habitats and mitigates the impact on the area's flora through its reforestation program, no documentation was provided demonstrating that monitoring and mitigation strategies have been put in place to maintain net habitat quality and area (particularly relating to fauna), and provide means for animals to access pre-development habitat after development is complete.
		Source: Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa, Honduras, 2014), 19. Empresa Soluciones Energéticas Renovables S.A. de C.V. (SERSA), *Plan de Reforestación y Manejo con Especies del Bosque Latifoliado Deciduo* (Choluteca, Honduras, 2014), 11-12. Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 146-147, 156, 180-181.
		RECOMMENDATIONS - Shift from protection to enhancement and restoration of habitats. Develop an analysis of existing habitats on site and outline strategies for mitigation of disturbed habitats. This may include GIS analyses and surveys outlining movement corridors between habitat areas and potential barriers to these corridors on-site. - Develop habitat improvement strategies to ensure that existing habitats are protected and

		upgraded, while also restoring and creating new habitats, improving and expanding wildlife corridors and existing habitats. - Develop a Regional Biodiversity Action Plan among project developers to evaluate opportunities for collaborative effort in habitat restoration among all renewable projects being developed in the area.
NW 3.2 Control Invasive Species	**0**	**No Score** No documentation was provided demonstrating the use of non-invasive species nor the control or elimination of existing invasive species. These invasive species may invade and overcome native species through several mechanisms or change the function of an ecosystem. *Source:* N/A *RECOMMENDATIONS* - Provide a list and map of all invasive species in the region found on or within 1000 m of the site. - Present a management/maintenance plan outlining strategies for minimizing the potential for invasive species to re-appear or enter the site, as well as strategies of monitoring and removing invasive species in the future. - If applicable, rehabilitate and restore habitats to pre-invasive state.
NW3.3 Restore Disturbed Soils	**0**	**No Score** The development of the project entailed soil compaction, disturbance, and erosion in preparation of the project area for construction. This impact may be considered temporary as the infrastructure can be removed at the end of project life and the may be restored for agricultural, livestock, or other uses. No documentation was provided demonstrating that 100% of the disturbed soils were restored. *Source:* Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa, Honduras, 2014), 16. *RECOMMENDATIONS* - Illustrate in plan the soil restoration activities, including areas of disturbance and areas restored. - Show calculations that prove that 100% of the disturbed soils have been restored.
NW3.4 Maintain wetland and surface water functions.	**0**	**No Score** The site has no superficial bodies of water such as rivers or streams, but there are some ponds or natural lagoons that formed part of the source of water supply for livestock that was previously on the site. The project does not require any consumption of water nor modification of water bodies on site but it does not provide any evidence that it maintains or enhances any of the four variables considered in this credit: maintenance of hydrologic connection, water quality, the function of superficial water bodies as habitat, and sediment transportation. *Source:* Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa, Honduras, 2014), 18. Empresa Soluciones Energéticas Renovables S.A. de C.V. (SERSA), *Plan de Reforestación y Manejo con Especies del Bosque Latifoliado Deciduo* (Choluteca, Honduras, 2014), 5. Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 140-142. *RECOMMENDATIONS* - Provide documentation showing how the water quality of the natural lagoons will be maintained or enhanced throughout the project lifespan. - Perform a habitat survey of the water body and reference areas near the photovoltaic plants, and make a plan to maintain and enhance any habitat for aquatic and riparian species through plantings and appropriate physical modifications. - Indicate whether the project maintains or restores sediment transportation in the area.
NW 0.0 Innovate Or Exceed Credit Requirements		*N/A*
	20	

CLIMATE AND RISK		
	Score	**CHOLUTECA I & II**
CR1.1 Reduce Greenhouse Gas Emissions	**25**	**Restorative** This project generates electricity from a renewable source and does not involve the use of fossil fuels, therefore preventing the emission of greenhouse gas emissions as part of the process of energy generation. The project is estimated to prevent the generation of CO2 emissions by 31,810 tons of CO2 every year. This is equivalent to the contamination produced by the generation of energy from at least 600,000 barrels of heavy fuel per year. *Source:* Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 17, 138. *RECOMMENDATIONS* N/A
CR1.2 Reduce Air Pollutant Emissions	**0**	**No Score** Given the nature of the project as a renewable energy generator, each kW/h of electricity generated by the project will prevent the emission of CO2 as well as air pollutants. Some dust generation and hydrocarbon emissions took place during the construction phase of the project due to the use of machinery and vehicles. This was mitigated by establishing maximum speed limits, maintaining the vehicles and machinery regularly, and wetting the road surfaces. In the analysis conducted there is no evidence of the measurement of the six criteria pollutant (carbon monoxide, lead, nitrogen dioxide, ozone, particle pollution, and sulfur dioxide). No additional measures were taken to minimize adverse impacts on air quality beyond those required by regulation. *Source:* Ecoluz, *Cumulative Impact Assessment: Pacífico I, Choluteca I y Choluteca II* (Tegucigalpa, Honduras, 2014), 13, 15. Soluciones Energéticas Renovables, S.A. de C.V., *Estudio de Impacto Ambiental Choluteca Solar II* (Choluteca, Honduras, 2014), 166, 179-180. *RECOMMENDATIONS* - Provide documentation of expected emissions and prevention plans for all six criteria pollutants (particulate matter, ground level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, lead, and noxious odors).
CR2.1 Assess Climate Threat	**0**	**No Score** The project has not developed a comprehensive Climate Impact Assessment and Adaptation Plan including vulnerability, risk, and adaptation assessments, developed in collaboration with the local emergency management department as well as the local community. The project identifies the most important risks and natural phenomena that could impact the region of Honduras and therefore the project site as part of its emergency plan *Plan de Preparación y Respuesta ante las Emergencias de la Planta Fotovoltaica de Choluteca I y II*. The plan identifies earthquakes, storms, and floods as the main climate threats for the area, as well as fires and electrocutions. As part of the preparation plan, the project team performs annual emergency drills for each type of threat, establishes meeting points and evacuation routes, trains the personnel, and has established an alarm and emergency lighting system. Detailed preparation and protocols have been developed for each of the three climate threats identified in the plan. While the plan is very developed, it does not meet the level of specificity required of a comprehensive Climate Impact Assessment and Adaptation Plan. The plan must incorporate specific information of the site's climatic conditions and the frequency, intensity, and forecasting of the identified natural climate threats. It should also reflect community and local stakeholders' involvement in its development.

		Source: SunEdison, *Plan de Gestión Medioambiental y Social: Proyectos Choluteca I y II y Pacífico* (Honduras, 2014), 52-76.
		RECOMMENDATIONS - Develop a Climate Impact Assessment and Adaptation Plan identifying climate change risks and possible responses. The plan should take into account the impacts of a changing climate on the range of operating conditions assumed in the design of the project. These include sea level rise, higher ambient temperatures, increased frequency and intensity of storms, flooding, extended droughts, etc. The plan should assess the risk of changing conditions to the efficient operation of the constructed works as well as to the operation of other related infrastructure. The plan should also address recovery from extreme events. This would include calculating or locating expected changes in flood elevations and sea level rise for the project location and developing an inventory of structures in the areas of possible inundation that are important to the successful operation of the project. - Engage the community during the planning process as well as the local emergency management department.
CR2.2 Avoid Traps And Vulnerabilities	**0**	**No Score**
		The project team has not provided any documentation on the avoidance of traps and vulnerabilities that could create high long-term costs and risks for affected communities.
		Source: N/A
		RECOMMENDATIONS - Evaluate the possible resource constraints and vulnerabilities that the community could face in the future due to climate change among others and identify potential approaches and practices to address them. Work directly with decision makers and stakeholders in the community to evaluate these potential resource issues in more detail and reach a more integrated risk assessment. - Assess long term risks and consider alternatives, and outline potential traps (resource, configuration, and standards traps) and vulnerabilities as well as associated potential costs and risks.
CR2.3 Prepare For Long-Term Adaptability	**0**	**No Score**
		No documentation was provided demonstrating the preparation of the project for resiliency in the face of long-term climate change, adequate performance under altered climate conditions, or adaptation to other long-term change scenarios.
		Source: N/A
		RECOMMENDATIONS - Identify specific measures taken to address the potential consequences of long-term climate change such as sea level rise, increased intensity and frequency of extreme weather events, extended droughts, heat waves, increased ambient temperatures, and others. Some of these strategies might include structural changes, decentralized systems, natural systems with green infrastructure solutions, alternative supply options, adaptive capabilities, and site selection. - Provide plans, designs, and documents that show restoration and rehabilitation efforts. Implement strategies that prepare for or mitigate the negative consequences of climate change, or other significant alterations in environmental and operating conditions.
CR2.4 Prepare For Short-Term Hazards	**3**	**Improved**
		The project team has developed an emergency plan related to short-term emergency control that identifies earthquakes, storms, and inundations as the main climate threats for the area, as well as other types of man-made hazards such as fires and electrocutions. As part of the preparation plan, the project team performs annual emergency drills for each type of threat, establishes meeting points and evacuation routes, trains the personnel, and has established an alarm and emergency lighting system. Detailed preparation and protocols have been developed for each of the three climate threats identified in the plan. However, there is no documentation indicating frequency, forecast, and severity of identified hazards.
		Source: SunEdison, *Plan de Gestión Medioambiental y Social: Proyectos Choluteca I y II y Pacífico*

		(Honduras, 2014), 52-76.
		RECOMMENDATIONS - Provide a list of anticipated natural hazards in the area and their predicted frequency and severity, including but not limited to wildfires, floods, tornadoes, hurricanes, earthquakes, tsunamis, and man-made hazards. - Explain the strategies in the project that are meant to cope with each event and how they surpass existing codes and regulations. Provide documentation of strategies used and how they minimize the risk of future hazards using environmental restoration.
CR2.5 Manage Heat Island Effects	**0**	**No Score**
		No documentation was provided indicating the reduction of localized heat accumulation or the management of microclimates.
		Source: N/A
		RECOMMENDATIONS - Provide drawings showing all non-roof non-vegetated areas of the site and the surfacing material (mainly on the office buildings areas). - Provide documentation of all shaded areas, assumed at noon on summer solstice, and a list of plant species used and expected growth rates showing projected shading five years from planting. - Provide documentation of roof or surface areas, surface material, and corresponding solar reflectance index (SRI).
CR0.0 Innovate Or Exceed Credit Requirements		*N/A*
	28	
OVERALL:	**200**	**CHOLUTECA I & II**

APPENDIX E: SOURCES

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